

# SIEMENS

## SINUMERIK

### SINUMERIK Integrate MMT, MMP, AMC, AMM, AMP

#### Operating Manual

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#### Preface

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Valid for:

SINUMERIK 840D sl/ 840DE sl/ 840Di sl/ 840DiE sl  
SINUMERIK 840D/840Di/810D control systems




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|  |
|--|
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| indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.  |
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# Preface

## SINUMERIK documentation

The SINUMERIK documentation is organized in the following categories:

- General documentation
- User documentation
- Manufacturer/service documentation

## Additional information

You can find information on the following topics at [www.siemens.com/motioncontrol/docu](http://www.siemens.com/motioncontrol/docu):

- Ordering documentation/overview of documentation
- Additional links to download documents
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Under the following link you will find information to individually compile OEM-specific machine documentation based on the Siemens content:

[www.siemens.com/mdm](http://www.siemens.com/mdm)

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- [www.siemens.com/sitrain](http://www.siemens.com/sitrain)  
SITRAIN - Siemens training for products, systems and solutions in automation technology
- [www.siemens.com/sinustrain](http://www.siemens.com/sinustrain)  
SinuTrain - training software for SINUMERIK

## FAQs

You can find Frequently Asked Questions in the Service&Support pages under Product Support. <http://support.automation.siemens.com>

## **SINUMERIK**

You can find information on SINUMERIK under the following link:

[www.siemens.com/sinumerik](http://www.siemens.com/sinumerik)

## **Target group**

The operating manual is aimed at all machine tool users. The document describes all the facts the user needs to know.

## **Requirement (area of validity)**

This manual is valid for use with the following product versions:

Manage MyTools (MMT) Version 2.5

Manage MyPrograms (MMP) Version 2.5

Analyze MyCondition (AMC) Version 4.12

Access MyBackup (AMB) Version 4.12

Access MyMachine (AMM/E) Version 2.0

Analyze MyPerformance (AMP) Version 2.5

## **Benefits**

The operating manual allows the target group to get familiar with the software user interface. Based on the manual, the target group is capable of responding to problems and to take corrective action.

## **Standard scope**

This documentation describes the functionality of the standard scope. Additions or revisions made by the machine manufacturer are documented by the machine manufacturer.

Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

Furthermore, for the sake of clarity, this documentation does not contain all detailed information about all product types and cannot cover every conceivable case of installation, operation or maintenance.

## **Technical Support**

You will find telephone numbers for other countries for technical support in the Internet under <http://www.siemens.com/automation/service&support>

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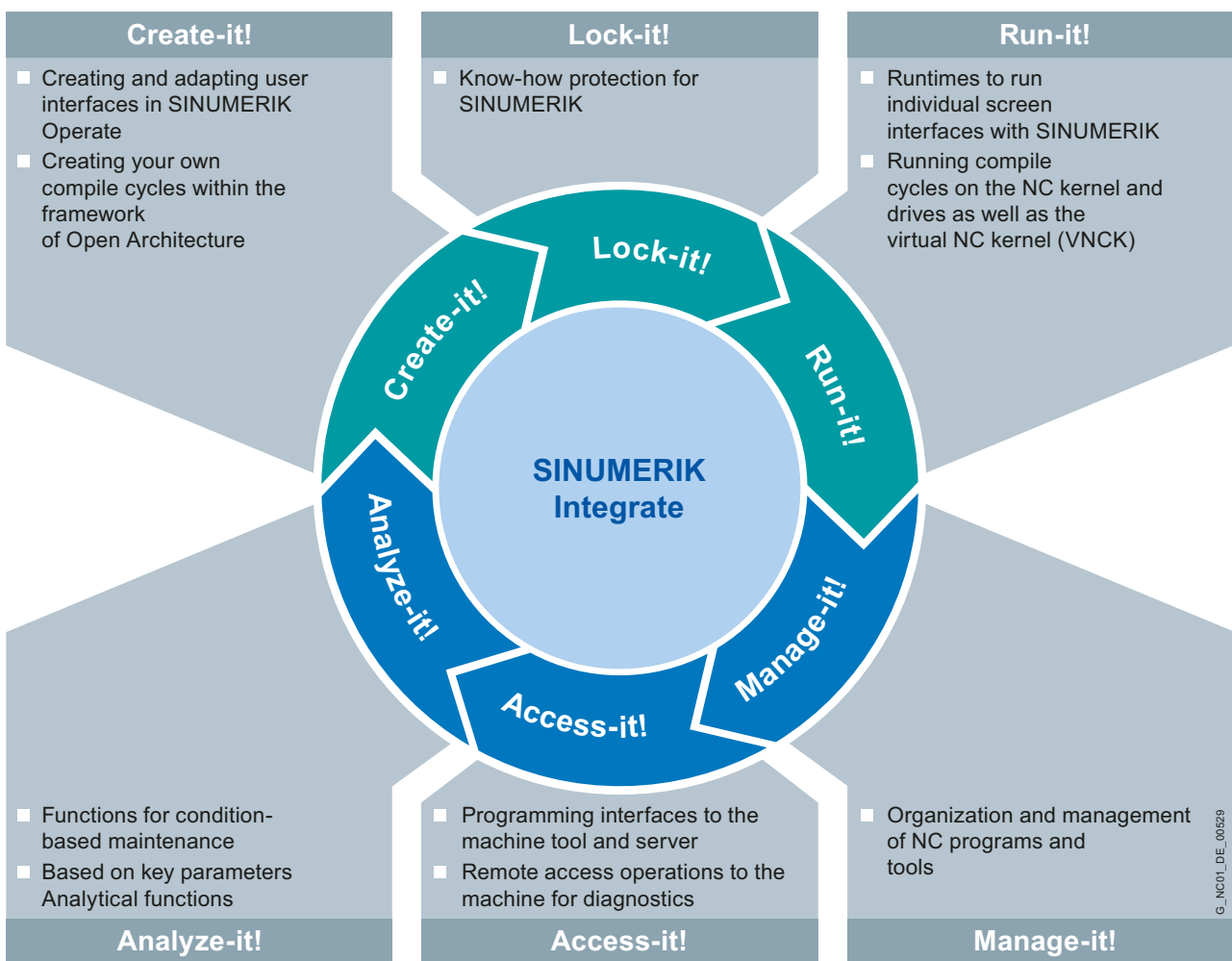
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## Introduction

### 1.1 Product overview

Harmonized to address your particular requirements, you can access the various software modules of SINUMERIK Integrate. A total of six modules are available, which completely cover all aspects of machine integration into your communication, engineering and production processes.



The applications described in this manual are incorporated in the Manage-it!, Access-it! and Analyze-it! modules.

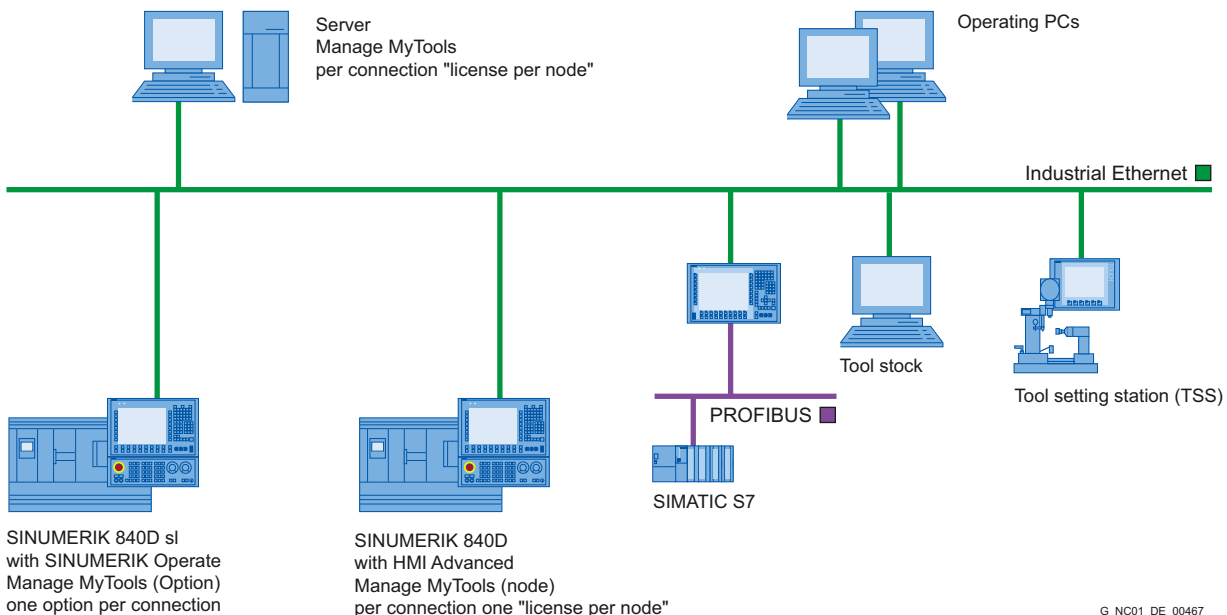
**Modified application names**

In the process of launching SINUMERIK Integrate, the previous names of the applications were combined and given standard names under the new SINUMERIK Integrate brand label.

The following table provides you with a comparison regarding what the corresponding software solutions were previously called and what the new applications are called under SINUMERIK Integrate:

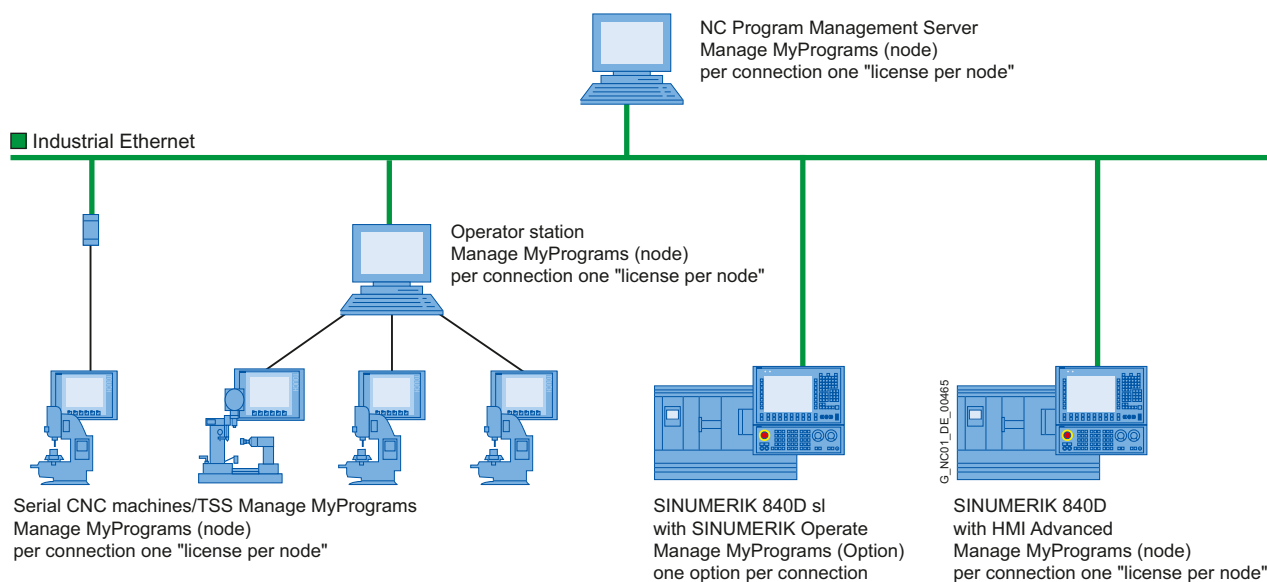
| Previous name   | New name<br>SINUMERIK Integrate                              |
|---|--|
|   | <b>Manage-it!</b>  |
| MCIS TDI  | Manage MyTools (MMT)   |
| MCIS DNC  | Manage MyPrograms (MMP)                                      |
|   | <b>Access-it!</b>  |
| MCIS ADDM   | Access MyBackup (AMB)  |
| Machine diagnostics via the Internet<br>Remote STEP 7 | Access MyMachine/Ethernet (AMM/E)<br>Access MyMachine/STEP 7 |
|   | <b>Analyze-it!</b>   |
| ePS Condition Monitoring                              | Analyze MyCondition (AMC)                                    |
| MCIS MDA  | Analyze MyPerformance (AMP)                                  |

**Example: System with Manage MyTools (MMT)**



G\_NC01\_DE\_00467

## Example: System with Manage MyPrograms (MMP)



## 1.2 Introduction

### What is SINUMERIK Integrate?

SINUMERIK Integrate supports the maintenance, service and production of machine tool manufacturers and manufacturing companies. This is done using software services that are available both on the CNC machine and on the PC.

Manage MyPrograms (MMP), Manage MyTools (MMT) and Analyze MyPerformance (AMP) provide assistance in the production planning, in the provision of the NC programs and tools required for the manufacturing (depending on the order situation).

Analyze MyPerformance (AMP) is used by the machine operator during production to display the actual status during manufacturing (quantities in relation to the target/actual) and possible sources of losses, both of a technical and organizational nature, and to tackle improvements. Generally with technical sources of losses, the maintenance is consulted.

This requires both Internet access and a control on the CNC machine that complies with the specifications.

The following services are part of SINUMERIK Integrate:

### Access MyMachine (AMM)

In the event of a fault, the service organization of the machine manufacturer has fast access to important machine control data and diagnostic functions. In that way, the machine manufacturer or maintenance department of the end user can immediately analyze the current condition of the machine in which a fault occurred.

Remote access to the control system is via a secure Internet infrastructure and allows the exchange of information and remote control of the CNC.

- Desktop control
- File transfer
- Setting-up a conference call
- Recording of a remote access

### Control monitor services (AMC)

Recording of an event history with the documentation of the current status of the machine at this time. This allows the status of the machine to be analyzed and compared with earlier statuses should a fault occur. The current status of the machine is documented using the following events and data:

- Alarms, PLC events, time intervals, combinations of machine signals
- Violation of limit value and predefined interval value from Condition Monitoring
- Series of measurements/tests and operating performance monitors
- Manual help request by the machine operator in the event of faults
- HMI action log, machine data, NC status data
- PLC trace, PLC data blocks
- Certain files (e.g. log files) of the control

### Analyze MyCondition (AMC)

The current machine status is acquired and documented on the basis of predefined, standardized tests and continuous recording of status parameters (traverse path, traverse time and traverse operations for one axis). The test parameters can be defined centrally and configured with appropriate warning limits. Using series of measurements, it is also possible to identify trends and apply them as a basis for optimizing maintenance and service activities.

The machine operator can then carry out these predefined tests quickly and easily and without additional test equipment.

The following tests and monitors are available:

- Circularity test
- Equability axis test
- Universal axis test
- NC monitor
- Variable monitor

## **Data services**

The current control archives (e.g. NC and PLC archives) are saved on the server. In the event of an error, the backup copy is loaded back to the control in a controlled process or used as a reference for comparisons of Control Monitors.

## **Workflow services**

Messaging provided by internal and external media (SMS, e-mail, servicing) initiates servicing and maintenance procedures. Maintenance activities are planned, monitored and documented directly on the machine.

The advantages of maintenance schedules are:

- Load- and consumption-based predictive maintenance.
- Automatic triggering of work processes by detected faults
- Planning of the schedule and contents of condition monitors and monitoring of their execution.

The Workflow Services can respond to all event sources of the Control Monitor Services and Condition Monitor Services.

## **Administration services**

Functions for the administration of the system:

- Creation and administration of machines
- Creation and administration of users
- Assignment of access rights for external organizations
- Access to service data / invoices





# Logging on to SINUMERIK Integrate

## 2.1 Default setting

### Overview

Important default settings are configured automatically while the server is being installed. This includes:

- Domain (depending on the application, e.g. MMP, MMT, AMP, etc.)
- Organization (ORG)
- Users of the organization (IBN, ADMIN)

You can log on immediately as user, see Section: Logging on a user (Page 17)

### References

For more information, please refer to the Function Manual, SINUMERIK Integrate AMB, AMC, AMM, Section: Management.

## 2.2 Logging on a user

### Logging on a user

You can log on immediately in SINUMERIK Integrate as an "IBN" or "ADMIN" user.

---

#### Note

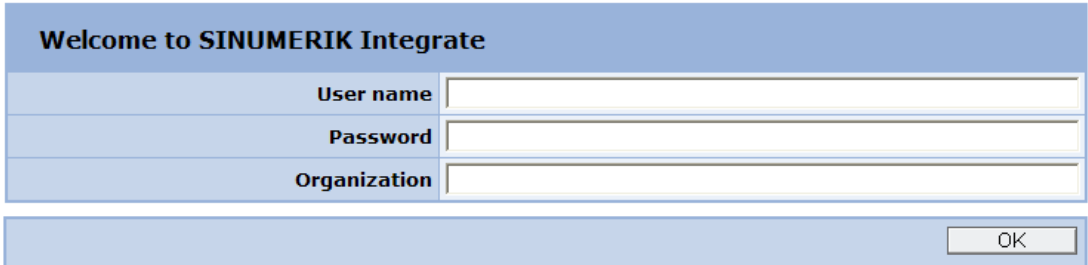
The "IBN" user has administration and configuration rights.

The "ADMIN" user has administration rights.

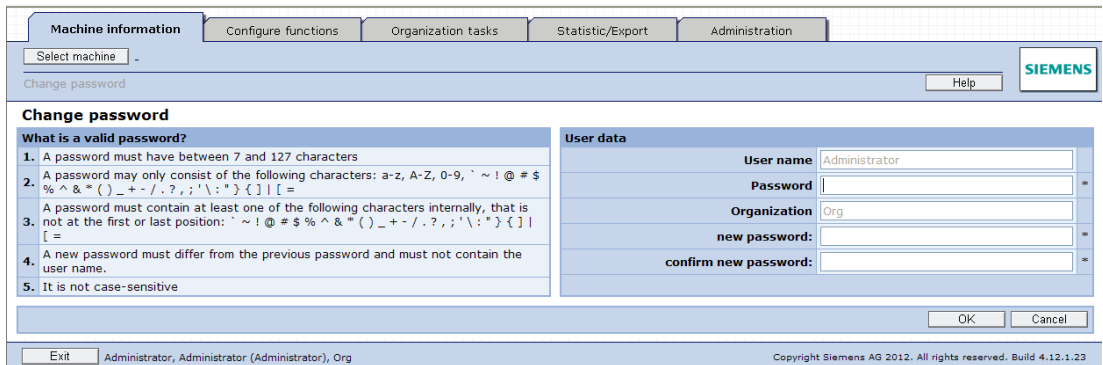
---

Logging on as "IBN"

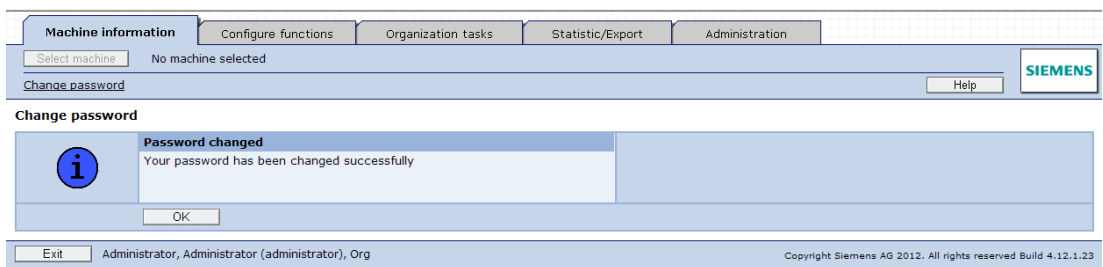
1. Call SINUMERIK Integrate.  
Enter the "ibn" password in the entry field and confirm with "OK".



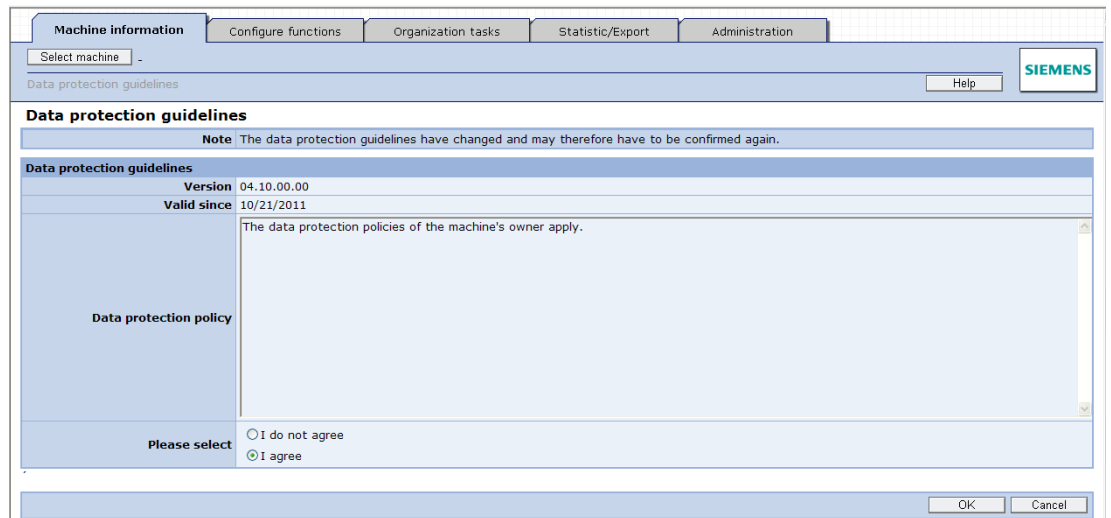
2. The "Machine information" tab opens.  
Enter a new password in the "Password" entry field in "User data".  
Note the password rules defined in the left-hand window.



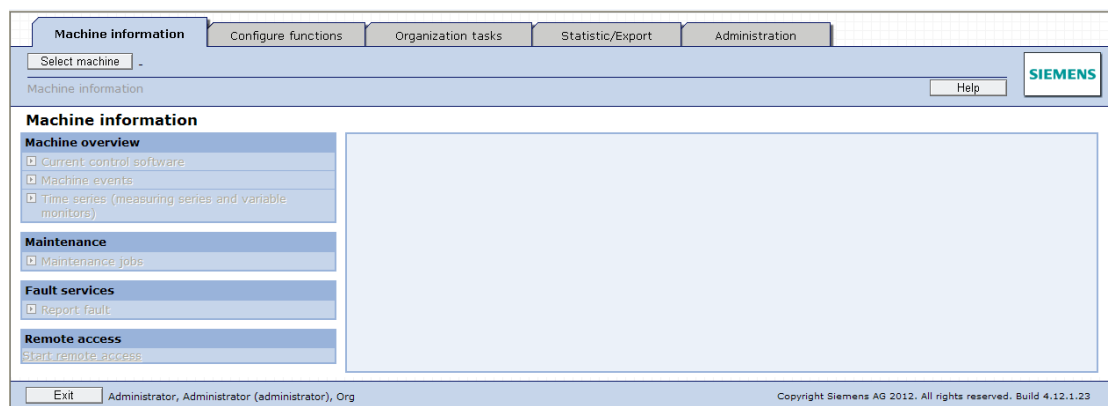
3. Once the password has been changed successfully, an appropriate dialog box is displayed.  
Confirm with "OK".



- Also confirm the data protection regulations with "OK".



- You are now logged on to the server.  
The "Machine Information" window is displayed.



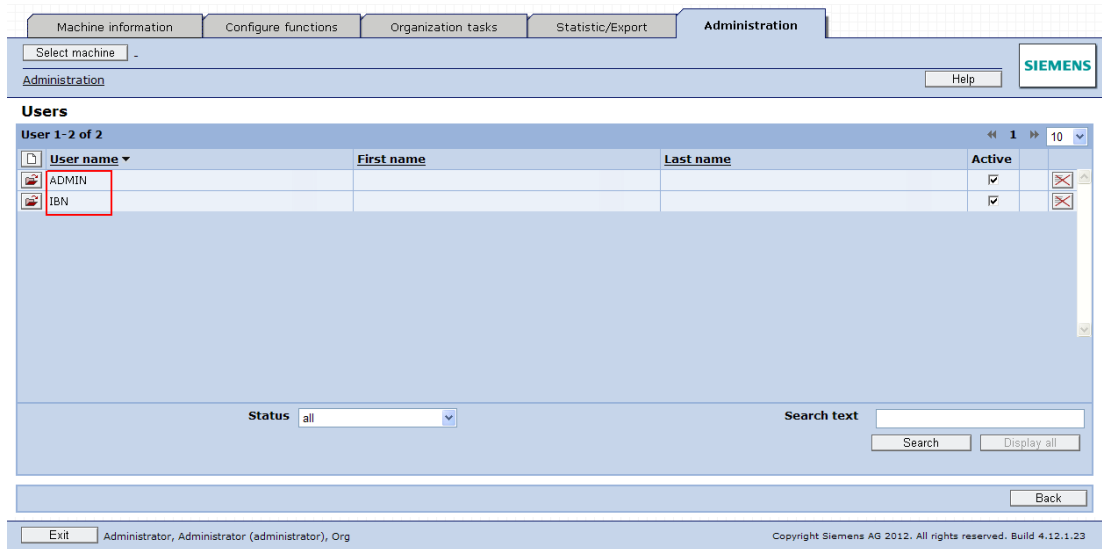
## Note

### Data protection regulations

If you do not accept the data protection regulations, you are automatically logged off from the server and must log on again.

## Logging on as "ADMIN"

You can log on to the server as "ADMIN" user in the same way as described in Section "Logging on as IBN".



## 2.3 Changing the password

### Operating sequence

On the control with HMI-Advanced, select "Home" on the Start screen.

### Application

The "Change password" function can be found on the right-hand softkey menu on the "Home" screen. Every user can change his or her password in accordance with the specified guidelines.

### General sequence:

1. Enter the current password.
2. Enter the new password.
3. Repeat the new password.
4. Press the "OK" softkey to confirm the password change.

## Visualized input sequence

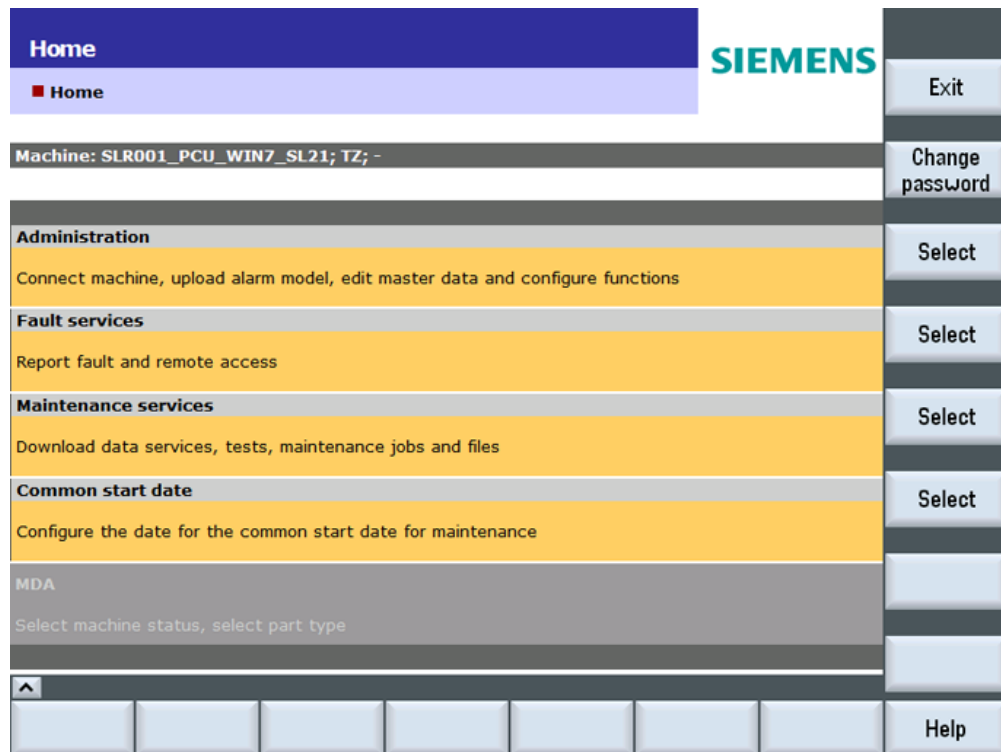


Figure 2-1 Change the password on the HMI



Figure 2-2 Enter the password on the HMI

## "Auto Login"

If the administrator has activated the "Auto Login" function for the MO when the machine was set up, it will enable the user to log on to SINUMERIK Integrate without specifying a user name or organization.



# Manage MyTools (MMT)

## 3.1 Introduction

Tool management is one of the central tasks of CNC production. Problem-free sequences in the planning are required as well as the provision of tools and a high degree of rationalization.

This is where Manage MyTools makes the difference. It makes this rationalization potential transparent and provides functions that optimize the tool circulation in the production and minimize the downtimes on the machine tools due to missing tools.

The following application options are available:

- Single machine
- Flexible transfer lines
- Entire machine park
- SINUMERIK 840D sl CNC with HMI-Advanced and SINUMERIK Operate
- SIMATIC S7-based controls
- Integration of tool setting stations
- Factory-wide tool management systems

Manage MyTools has the correct connection concepts and functions for a complete overview of the tools used and for a closed tool data circuit in the production.

## 3.2 Prerequisite

The Manage MyTools interfaces have been designed to run and operate not only on a SINUMERIK platform (function keys), but also on a PC platform (pull-down menus).

### SINUMERIK

Standard tool management must be installed for use with SINUMERIK. SINUMERIK without standard or machine-manufacturer-specific tool management can be configured as S7-based machines or are connected specifically for the project.

### Third-party control

In the case of third-party controls, the manageable tool data is reduced to a simplified tool data structure.

See Creating a tool magazine with PLC-based tool management (PCU/NCU) (Page 60)

### Requirement

- Manage MyTools workplace PCs must be Windows-based
- The control must be addressable via Ethernet.
- The interface must be OPC-capable.
- If tools stored in tool cabinets are to be recorded and managed by MMT a workplace PC for loading and unloading the tools (e.g. a Windows PC integrated in the network) must be assigned to the respective storage location.
- Manage MyTools requires unrestricted administrator rights for the installation and operation.

---

#### Note

##### Hardware/software

Refer to the current Commissioning Manual for the requirements placed on the hardware/software.

---

## 3.3 Configuration

The Manage MyTools Configuration application can be started via the shortcut on the desktop or via the Windows start menu > Manage MyTools > Manage MyTools Configuration.

Manage MyTools Configuration is a Windows-based application for the configuration and setting of MMT for plants and individual machines. This allows all settings to be entered "offline" on a PG/PC or directly on the control itself.

---

#### Note

Controls with multiple network connections must be addressed using the IP address as the network address, not the host name of the control.

---



The configuration tool is divided into several areas.

### Configuring the plant (tab: Plant hierarchy)

The tree structure (Explorer) of the plant is configured here. You can structure the plant or add or delete the following components:

- Groups (e.g. central unit)
- Units (e.g. machine)
- Magazines

Observe the following when configuring the plant tree:

- Theoretically there is no limit to the maximum number of levels the plant tree may have. In general, we do not recommend that you exceed a depth of five levels.
- Path names within the plant structure or the configuration are subject to the restrictions of the respective operating system.
- All nodes in the tree must have unique names. The only exception to this rule is for the identifiers used for the magazines. Magazines are always at the bottom level and are only required to be unique within their own group.

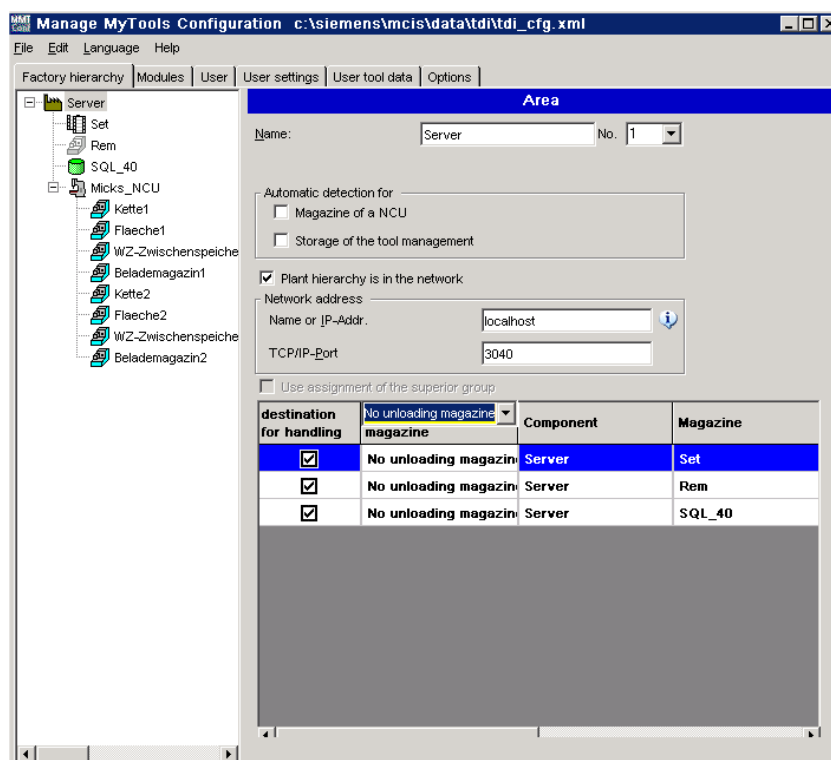


Figure 3-1 Manage MyTools Configuration on a PC

Depending on whether the configuration is carried out on the PC or on a machine, different plant components can be configured.

The following components are available on a PG/PC:

- Groups (e.g. central unit)
- Units (e.g. machine)
- Magazines (containers)

**Note**

Areas cannot be set up on the PCU/NCU (unit).

**Creating a unit**

1. Select the Plant hierarchy tab in order to define the individual components of the unit/plant. A unit is set up as default setting in the Explorer tree.
  - The Explorer structure is built up on the left-hand side of the window.
  - Depending on the components to be created, prompts for the settings are displayed on the right-hand side of the window.

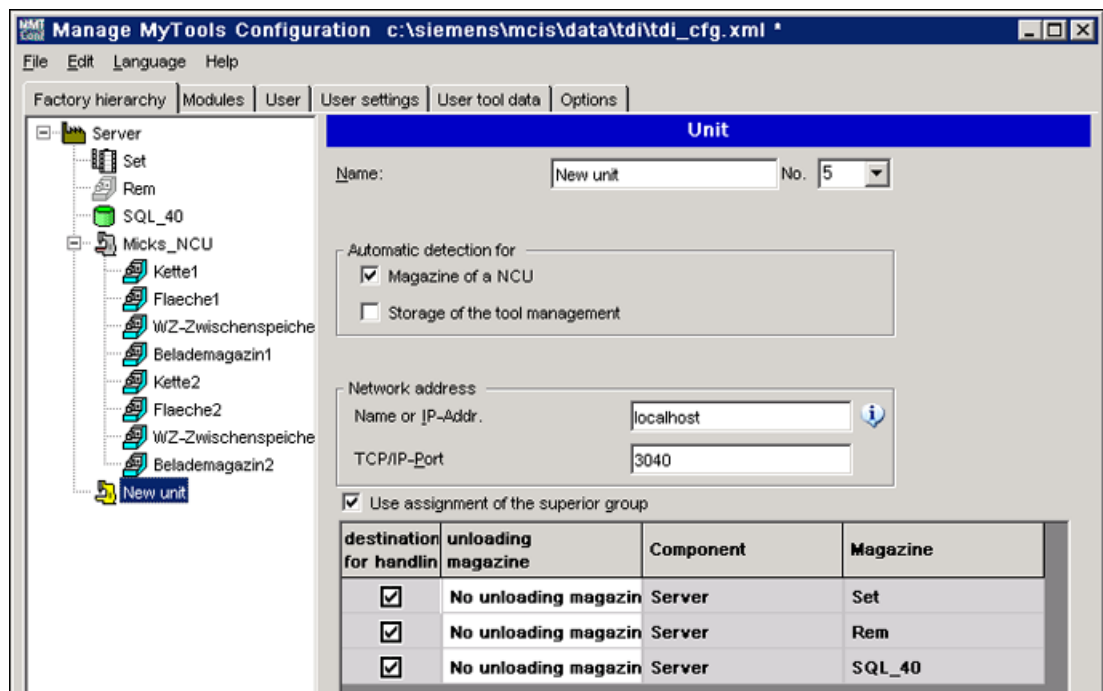


Figure 3-2 Configuring a unit/plant

**Note**

Confirm the acceptance of the rejection of the changes by clicking "Accept" or "Cancel". If this is not possible, a prompt appears when you attempt to save the data, which must be acknowledged by clicking "Yes", "No" or "Cancel".

### Enabling modules (tab: Modules)

In this area you can enable individual modules depending on the licenses you have purchased.

### User administration (tab: Users and User settings)

You configure users and user groups in this area. The rights and functions for users and user groups are specified here. You also specify the rights and default settings for each user.

### Properties of the configuration

1. Select the menu command "Edit" > "Properties of the configuration" to assign a user-specific version identifier to the current configuration.

The following fields are provided in the "Properties of the Configuration..." window:

| Setting                     | Meaning   |
|-----------------------------|---|
| Version                     | Freely assignable version ID<br>Default: Empty  |
| CRC32                       | Identification stamp from the configuration file  |
| Central database<br>Details | Call of the central database <ul style="list-style-type: none"> <li>• Use default database</li> <li>• Use other database</li> </ul> |

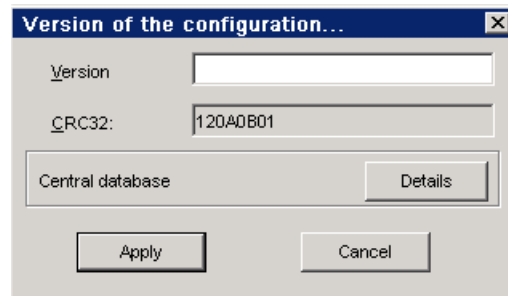


Figure 3-3 Properties of the configuration

2. Click the "Details" button at "Central database".  
The "Central Database" window appears.
3. Select the desired database.

### 3.3.1 Configuring components on a PC

You can create and configure all components of a plant on a PG/PC. After completing the configuration, it can then be copied to the various plant components.

See Section: Importing existing plant components (PC/PCU) (Page 48) or

See Section: Exporting the configuration (PC/PCU) (Page 52)

The default unit can be used as a starting point and other components added to it via the "Edit" button or by selecting "Unit" and right-clicking.

A distinction is made between the following components:

#### Inserting a group

This function can be used to create a new group with two additional new units below the default unit.

1. Select the respective component if you want to assign a new name.

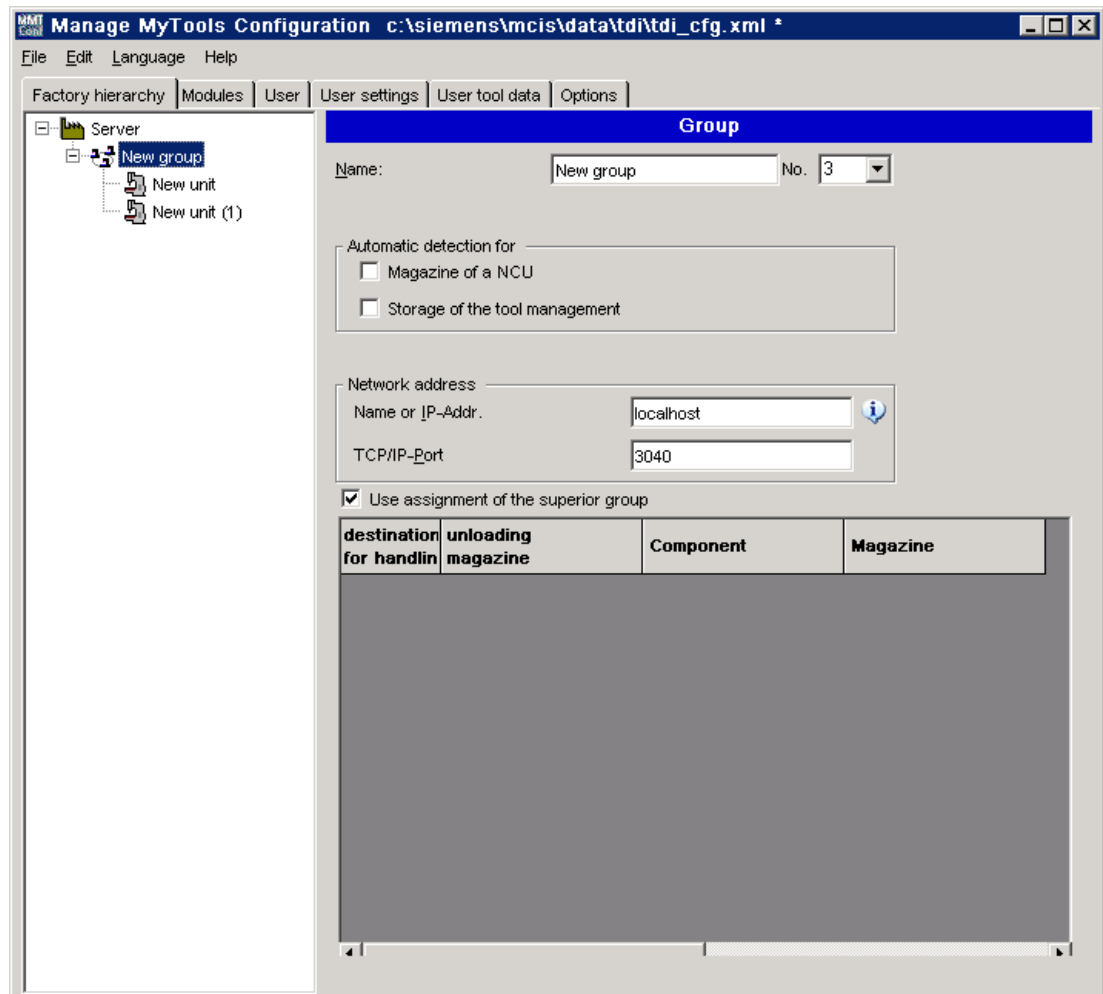


Figure 3-4 Inserting a group, PC

## Inserting a unit

You create a new unit here. The position of the unit within the Explorer hierarchy is determined by the position of the cursor when the unit is inserted.

The position of the unit within the hierarchy can be changed at any time using drag and drop.

If you are using the standard tool management, you can activate the "Automatic magazine detection for" function for each unit by selecting the following:

|  | Meaning  |
|--|--|
| Machine magazines of an NCU with TOOLMAN | Automatic detection of all the active tool magazines in the NCU (unit).                            |
| Cabinet of the TOOLMAN                   | The cabinet of the standard tool management is represented as a separate magazine in the Explorer. |

If either of these two options is activated, the color of the icon representing the unit changes from gray to yellow. You will not then be able to add any more magazines.

---

### Note

If automatic magazine detection is activated, a magazine detection run will be executed (according to the selected option) every time you restart the control (power on reset). Generally, you can deactivate the options for automatic magazine detection after commissioning.

If, when configuring the standard tool management, a name was not assigned to the magazine, then instead of the general magazine names, MMT adds the magazine numbers.

---

### Note

Before installing Manage MyTools, make sure that the magazine names in the SINUMERIK tool management are clearly defined!

---

## Example of an illegal configuration

|           |                   |      |                                    |
|-----------|-------------------|------|------------------------------------|
| TO area 1 | - Magazine name 1 | = M1 |                                    |
| TO area 1 | - Magazine name 2 | = M2 |                                    |
| TO area 1 | - Magazine name 3 | =    | not permitted, name not defined    |
| TO area 2 | - Magazine name 1 | = M1 | not permitted, name already exists |
| TO area 2 | - Magazine name 2 | = M2 | not permitted, name already exists |

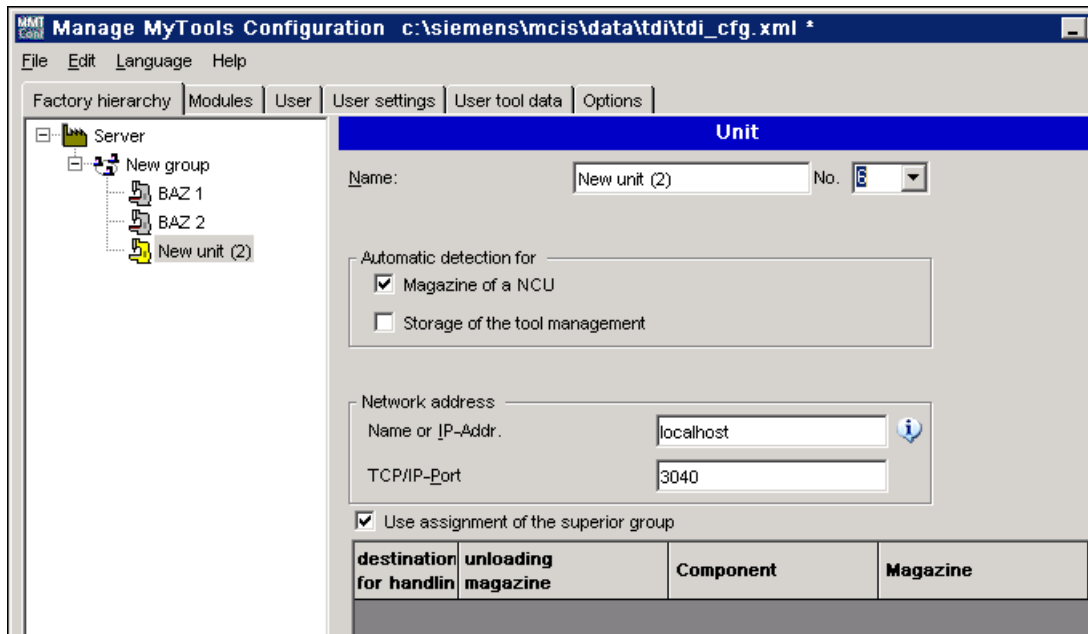


Figure 3-5 Inserting a unit, PC

### Adding a magazine

You insert a new tool magazine here. The position of the unit within the Explorer hierarchy is determined by the position of the cursor when the unit is inserted. The position of the unit within the hierarchy can be changed at any time using drag and drop.

Specify the type of tool magazine when adding the magazine.

The following options are available:

- Tool magazine with standard tool management, see Section: Creating a tool magazine with standard tool management (PC) (Page 32)
- Tool cabinet with standard tool management, see Section: Creating a tool cabinet with standard tool management (PC) (Page 33)
- Tool magazine with PLC-based tool management, e.g. in Transline HMI Pro with DBxx or machine-manufacturer-specific tool management, see Section: Creating a tool magazine with PLC-based tool management (PC) (Page 35)

- External magazine/database  
e.g. for machine-manufacturer-specific tool management,  
see Section: Creating an external magazine/database (PC) (Page 37)
- RPC container

### Note

If an external tool magazine does not have dedicated management, MMT will assume the tool management role.

On a unit with standard tool management, unlike automatic and complete detection of all configured tool magazines, this function can be used to display specific individual magazines.

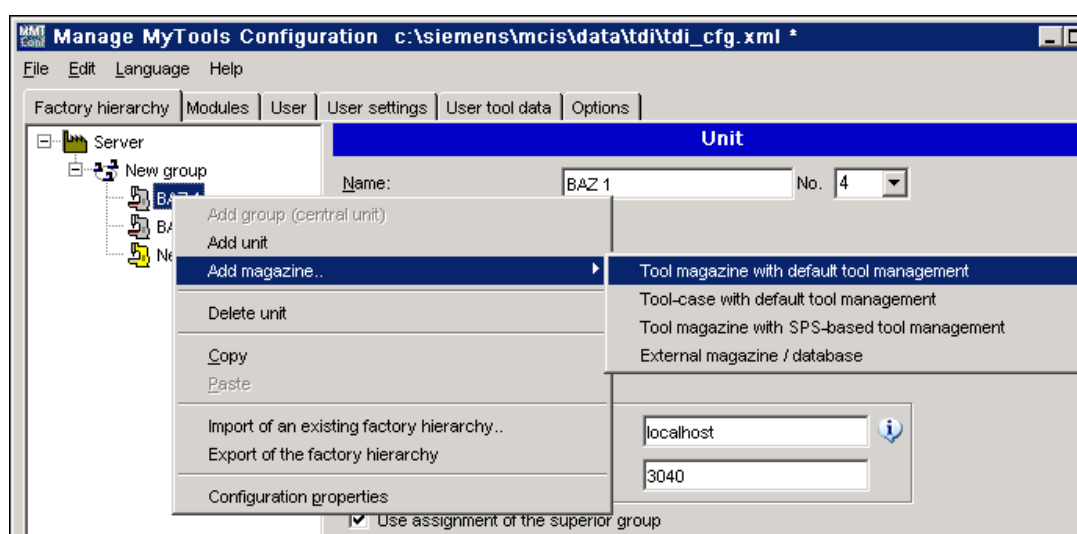


Figure 3-6 Inserting a magazine, PC

### Assigning loading and unloading magazines

If you assign loading and unloading magazines to a unit, this is performed with the table in the lower part of the window.

| Columns            | Meaning   |
|--------------------|---|
| Loading magazine   | Marks the magazine as loading magazine.   |
| Unloading magazine | Specifies the use as unloading magazine. Change the entry via a drop-down list. |
| Component          | Name of the component on which the magazine is located.                         |
| Magazine           | Name of the magazine.   |

3.3 Configuration

- From all of the higher-level external magazines, up to ten can be specified as loading magazines and up to two as unloading magazines.
- With the unloading magazines, it is also possible to specify the type of tools to be unloaded into this magazine:
  - Either one for all tools ("Unloading magazine (all tools)")  
- OR -
  - One each for worn ("Only worn tools") and for partly worn tools ("Only partly worn tools").

The settings for all of the groups and units can be adopted for the next level in the hierarchy via "Adopt setting from predecessor". When this option is set, you can no longer change the settings.

**Note**

If magazines have been configured for units on a PC, once the configuration is complete it must be exported to the units concerned.

3.3.1.1 Creating a tool magazine with standard tool management (PC)

The following entries are required when you create a magazine with standard tool management.

**Functions**

|                    | Meaning  |
|--------------------|--|
| Magazine           | Assignment of the magazine name<br>Note:<br>May be identical to the name of the relevant magazine in the standard tool management, also refer to the "to_ini.ini" file of the NC-active data \$ TC _ MAP2 [< Mag.No.>]=<Mag-Name>.         |
| Magazine number    | Assignment of the magazine number<br>Note:<br>The number must be identical to the number of the corresponding magazine in standard tool management, see the "to_ini.ini" file of the NC-active data on the unit \$ TC _ MAPX [< Mag.No.>]. |
| NCDDE machine name | Assignment of the NCDDE machine name<br>Note:<br>The name must be identical to the entry in the "mmc.ini" file of the unit.  |
| TO area            | Definition of the TO area<br>Note:<br>TO area in which the magazine is valid.  |



|  | Meaning   |
|--|---|
| Permit data transfer without PLC acknowledgement | If you add complete tool containers (e.g. tool cartridges) to the machine or insert single tools directly in magazine locations, you can use this function to deactivate scanning of PLC acknowledgements. This means that the tool data is entered directly in the magazine list with MMT. For further details, see Section: Tool handling (Page 98) |
| Available location types                         | When automatic magazine identification is active, the magazine location types are identified for the standard tool management and entered in the table for the relevant magazine. The table cannot be modified.   |

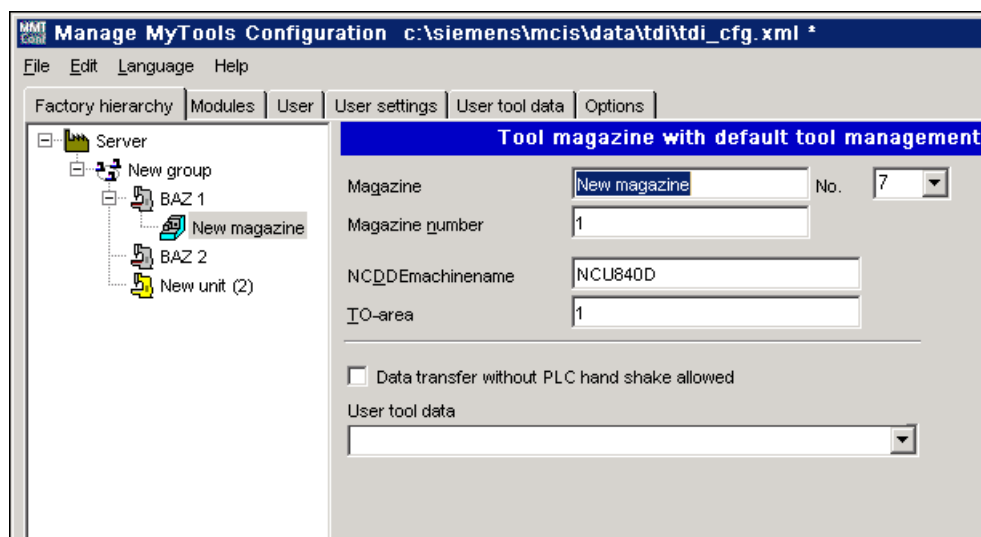


Figure 3-7 Tool magazine with standard tool management, PC

### 3.3.1.2 Creating a tool cabinet with standard tool management (PC)

The following entries are required when you create a tool cabinet with standard tool management as magazine.

|          | Meaning   |
|----------|---|
| Magazine | Assignment of the magazine name, freely selectable.   |
| Number   | Assignment of the magazine number<br>Note: If unique numbering is needed, we recommend that the default numbers are used. |

|   | Meaning   |
|---|---|
| Use tool cabinet of the tool management | If this setting is active, MMT uses the data of the standard tool management.   |
| Use other database                      | If the tool data is being managed in another part of the database, other than that used by the standard tool management, you can enter the database path for the tool magazine created here.<br><br>Example: Managing a tool cabinet on a PC:<br>Provider=Microsoft.Jet.4.0;Data Source=c:\OwnFiles\wzaccess.mdb<br><br>Note:<br>The supply of the provider is not necessary for MS Access! |

**Procedure**

1. Click "Check" to check the plausibility of the entered data.
2. After a successful check, click "Accept".  
The entries are transferred to the configuration file.

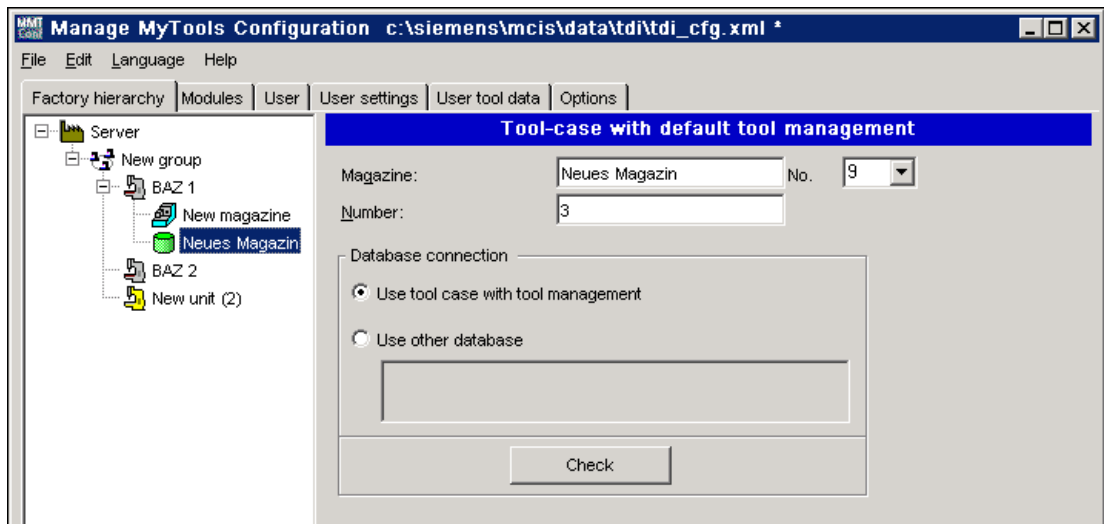


Figure 3-8 Tool cabinet with standard tool management, PC

### 3.3.1.3 Creating a tool magazine with PLC-based tool management (PC)

The following entries are required when you create a tool magazine of a PLC-based tool management.

#### Topic

|       | Meaning   |
|-------|---|
| Topic | Information required for setting up OPC communication to a specific NC or SIMATIC S7. A separate topic must be specified for each unit. |

- Enter a protocol ID in the "Topic" entry field for each station and assign a unique, protocol-specific connection name for the OPC server. This connection name is specified during station configuration.  
Syntax example: S7: [S7-connection-1]

More detailed information about the protocol ID and the connection name can be found in the respective product documentation.

#### References

// SIMATIC NET – CD: Industrial Communication with PG/PC, Section: OPC process variables for SIMATIC NET → S7 communication

#### Selecting a data block

|                     | Meaning   |
|---------------------|---|
| DB no.              | By default, DB59 is used with a maximum of 96 tools. The tool data is stored starting at data word 3148 (if there are 48 tools, tool data is saved as of data word 1908). |
| Number of tools     |   |
| First DBD tool data |   |

#### Note

The following DBDs are used (= managed tool data in the DB) in the DB for each tool:

- DBD1 = actual value (actual value of tool life for Transline)
- DBD2 = prewarning limit (pre-alarm for Transline)
- DBD3 = extended alarm
- DBD4 = setpoint (alarm limit for Transline)

This assignment also applies for the other DBs.

**Offset bit**

The offset bit is set whenever changes are made to tool offsets / monitoring data under "Details" in the overview window of the actual tool data. The default setting for the address of DB59 is:

- DB no. = 59
- Byte = 633
- Bit = 1

You can change this byte address, but it must comply with the DB59 structure.

**Counting method**

There are a number of options for the tool life counting method in MMT:

|        | Meaning   |
|--------|---|
| NCU    | The actual value is counted down from 100% (= setpoint) to 0.                 |
| TL2000 | The actual value is counted up from 0 to 100% (= setpoint or extended alarm). |

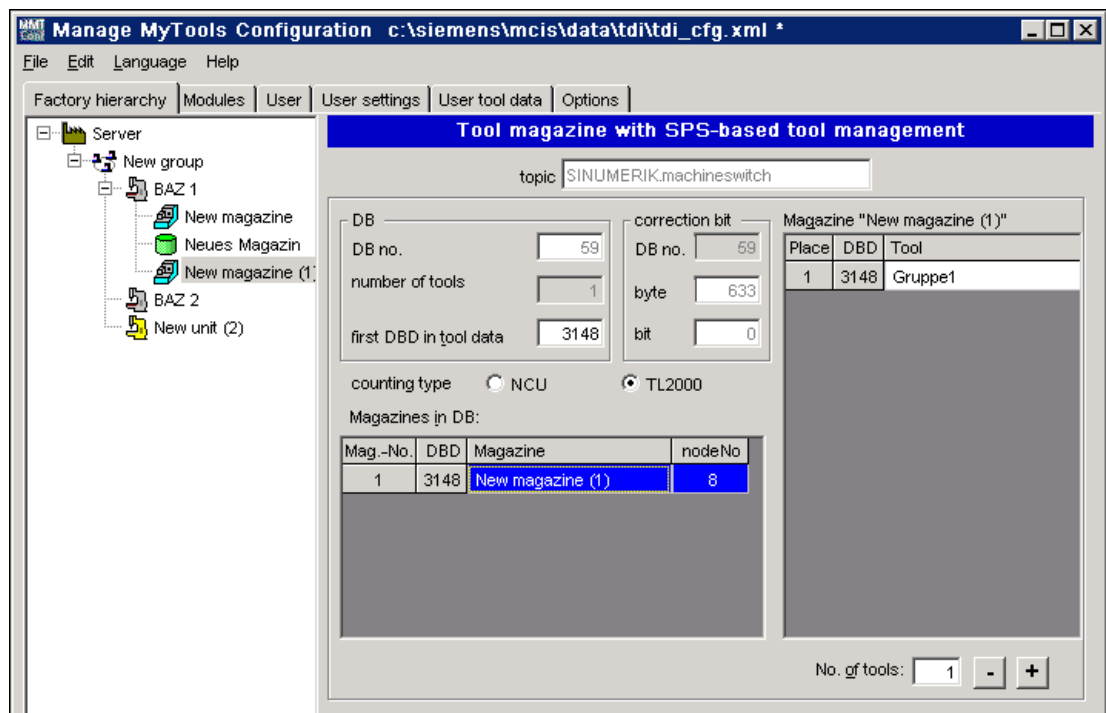


Figure 3-9 Tool magazine with PLC-based tool management, PC

**Assigning tool identifiers to the machine magazines**

The tools contained in the magazine must be entered in the "Tool" column in the "New magazine" list box in the "Magazine" list for each magazine with the tool identifier and on a location-specific basis.

### Defining tools for magazine locations

The number of magazine locations required is defined in the "Number of tools" entry field. The plausibility of the number of tools specified for each magazine is checked.

### Creating additional magazines

If additional magazines are to be created in DB59 within the selected unit, this is done by selecting the unit in the Explorer structure and "Add magazine".

The new magazine is added to the "Magazine in the DB" list box.

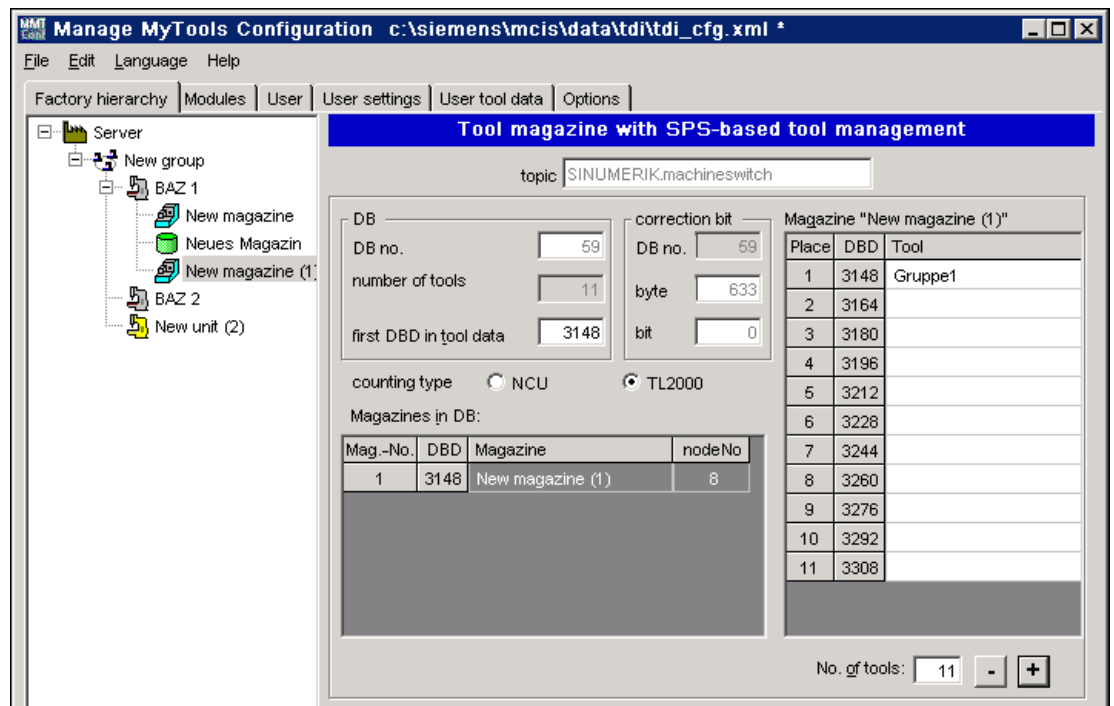


Figure 3-10 Creating additional magazines, PC

#### 3.3.1.4 Creating an external magazine/database (PC)

### Creating

You must make the following settings if you use an external tool cabinet or database (e.g. MSDE, MS Access) to store tool data.

|                 | Meaning   |
|-----------------|---|
| Magazine        | Assignment of the magazine name, freely selectable.   |
| Magazine number | Assignment of the magazine number.<br>Note:<br>If unique numbering is required, retain the magazine numbers proposed by the Manage MyTools Configuration. |

|                    | Meaning   |
|--------------------|---|
| Magazine locations |   |
| Unlimited          | The number of locations is not limited.                 |
| Number             | Limits the number of locations to the specified number. |

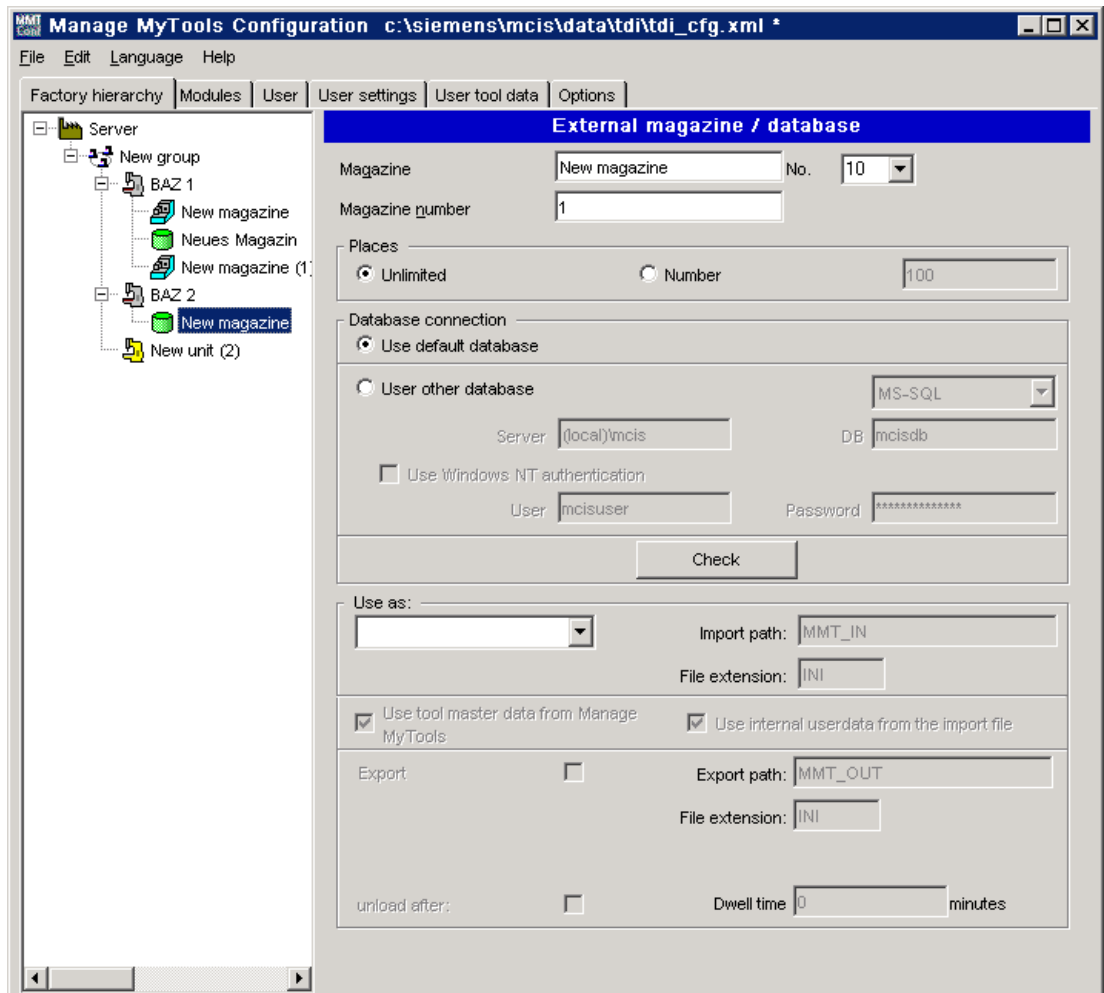


Figure 3-11 External magazine / database, PC

Database access, default database

|                      | Meaning  |
|----------------------|--|
| Use default database | If this option is selected, the database created during setup is used. The grayed-out entry fields contain the default parameters. |

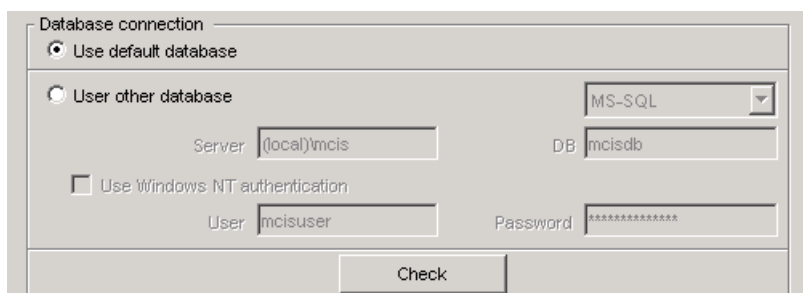


Figure 3-12 Use default database, PC

### Use other database

#### SQL Server 2005 / SQL Server 2008 / MSDE

|                     | Meaning   |
|---------------------|---|
| Server              | Server name or IP address of the SQL server.  |
| DB                  | Complete path incl. file name.<br>Note:<br>Always in relation to the local path on the target computer of the configuration.                                |
| Use safe connection | The database logon is performed on the basis of the MS Windows NT security mechanisms.<br>This means that the "User" and "Password" fields are deactivated. |
| User                | Database user name<br>Note:<br>Required only if you are not working with integrated security.   |
| Password            | Password for the database user name<br>Note:<br>Required only if you are not working with integrated security.  |

#### MS Access

|                     | Meaning   |
|---------------------|---|
| Server              | Server name or IP address of the SQL server.  |
| DB                  | Complete path incl. file name.<br>Note:<br>Always in relation to the local path on the target computer of the configuration.                                |
| Use safe connection | The database logon is performed on the basis of the MS Windows NT security mechanisms.<br>This means that the "User" and "Password" fields are deactivated. |
| User                | Database user name.<br>Note:<br>Required only if you are not working with integrated security.  |

|          | Meaning   |
|----------|---|
| Password | Password for the database user name.<br>Note:<br>Required only if you are not working with integrated security. |

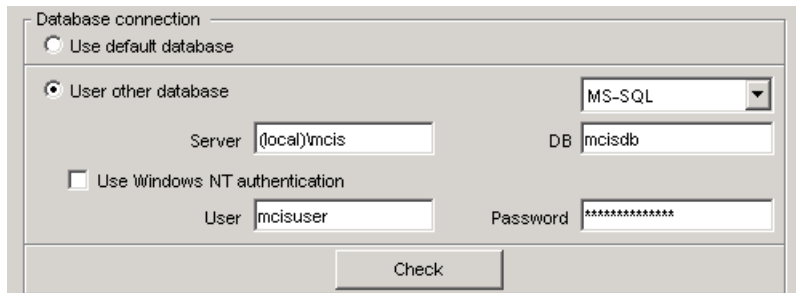


Figure 3-13 Connecting the Access database, PC

### Creating a setting magazine

If MMT is to accept tool data from an external source (e.g. a tool setting station, higher-level tool management system), then an external magazine / database must be defined as a setting magazine. Make the special entries in the "Use as" window area.

|   | Meaning  |
|---|--|
| Import path                                 | Directory in which the tool data files from the tool setting station are saved. The default entry "MMT_IN" is relative to the installation directory of MMT. Alternatively, you can enter a full path.   |
| File extension                              | Specification of the file extension.   |
| Take into account tool master data from MMT | When importing a tool data file, a check is performed as to whether tool master data already exists for this tool. The data to be imported is then compared to the existing master data. If this data does not match, an import is not performed.<br><br>If this option is not selected, the tool data is imported, irrespective of whether and which tool master data exists for this tool. |
| Use internal user data of the import file   | The internal user data is not taken from the MMT tool master data, but from the TO file of the tool setting station.<br><br>The internal user data is the "tool and cutting-edge-related user data".   |
| Tool-related user data                      | \$TC_TPCx (1 => x => max. 10)  |
| Cutting-edge-related user data              | TC_DPCx (1=> x => max. 10)   |



**Note**

If no setting magazine is configured when configuring a unit, the "Balance calculation" tool planning function is not available.

The tool and cutting-edge-related user data is not set by default in the tool management. This data is enabled and configured by the machine tool manufacturer.

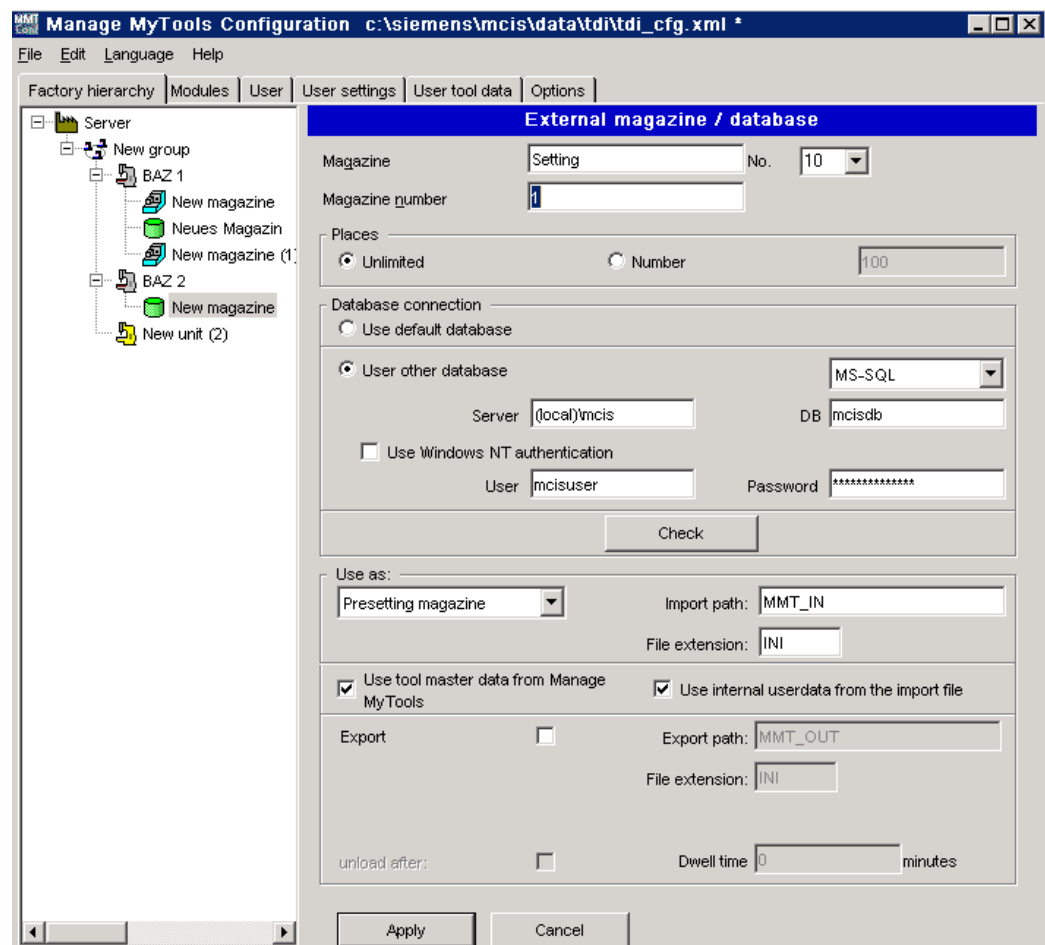


Figure 3-14 Using a setting magazine, PC

### Creating a removal magazine

In the "Transfer" operating area of Manage MyTools, you can transfer worn tools to a removal magazine. You must set up an external magazine / database for this functionality and define it as removal magazine.

With removal magazines, the user can unload tools from the magazine after a defined time. Activate the option via the "Unload after" checkbox. A time period in minutes can be defined in the "Dwell time" entry field, see Section: Balance deallocation (Page 179).

|             | Meaning  |
|-------------|--|
| Export path | Directory in which MMT saves the tool data files of the removal magazine. Make this setting to store a tool data file. The default entry "MMT_OUT" is relative to the installation directory of MMT. Alternatively, you can specify a full arbitrary path. |
| Dwell time  | Time period (in minutes) after which a tool unloaded to the tool removal magazine is deleted automatically from this magazine (depending on setting) or stored as a tool data file in the export path.   |

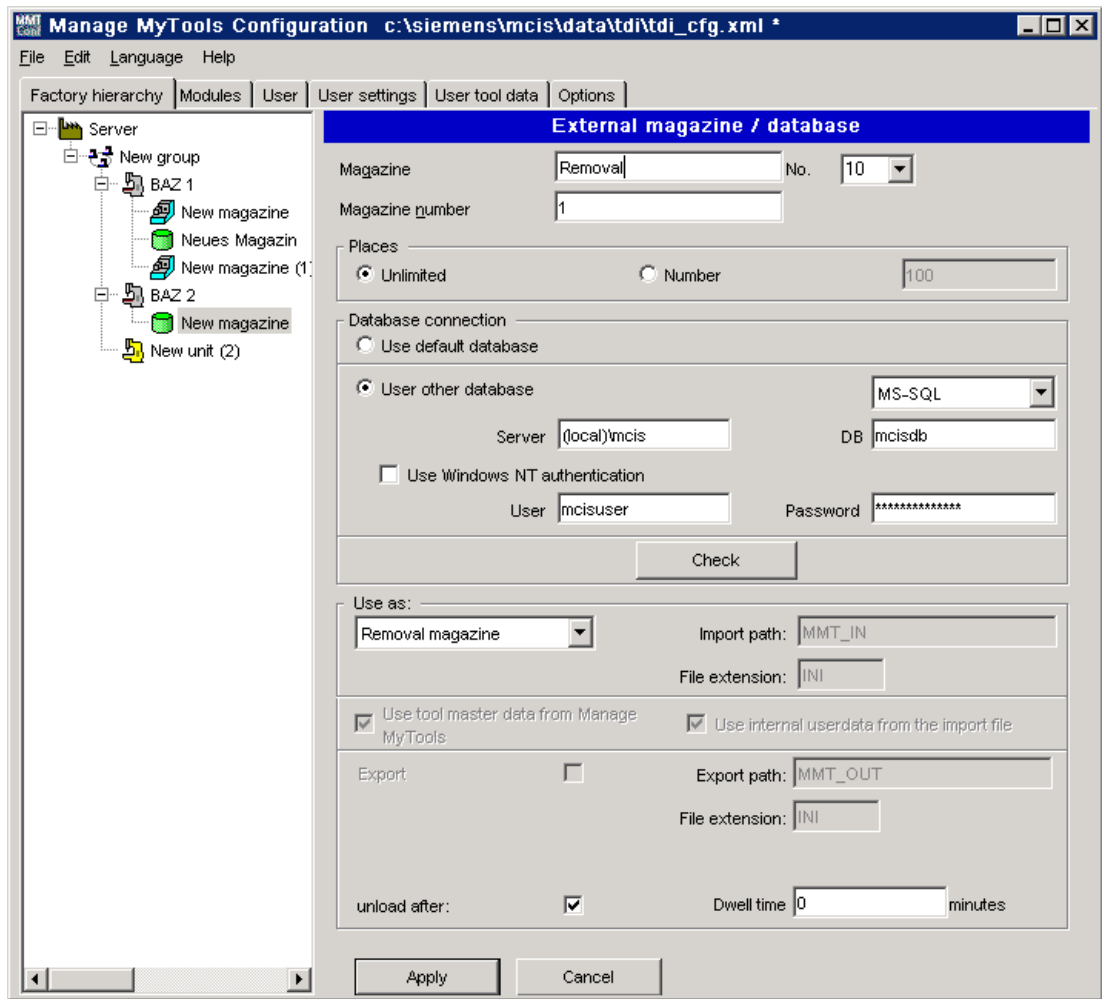


Figure 3-15 Using a removal magazine, PC

### Creating an RPC SINUMERIK tool magazine

The following entries are required if you want to create a tool magazine of a master-computer-supported tool management.

|          | Meaning   |
|----------|---|
| Magazine | Assignment of the magazine name, freely selectable.   |
| Number   | Assignment of the magazine number.<br>Note:<br>If unique numbering is required, retain the default numbers. |

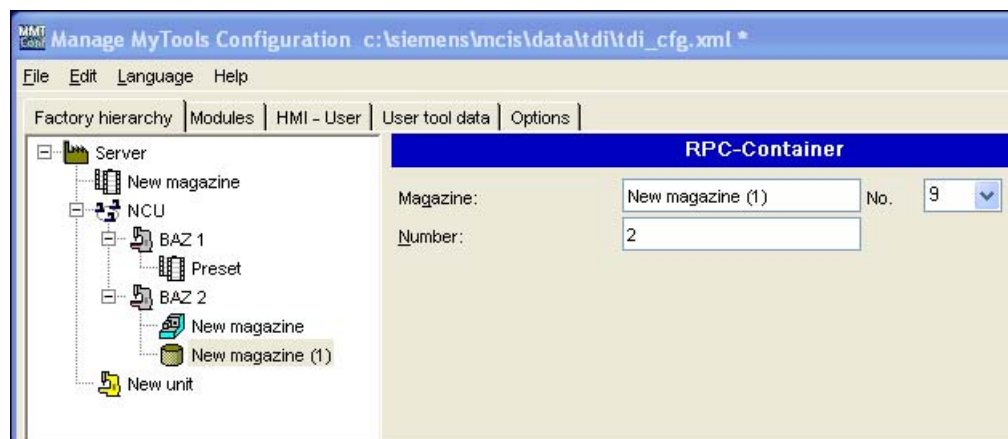


Figure 3-16 RPC SINUMERIK magazine, PC

#### Note

RPC SINUMERIK is not contained in the scope of delivery of Manage MyTools and must be ordered separately.

For a detailed description, see:

RPC SINUMERIK Computer Link, Description of Functions

#### 3.3.1.5 Enabling modules for the PC

The individual modules can be enabled by entering license keys.

#### Procedure

1. You will find the license key for Manage MyTools in the "Remark" field on the "Certificate of License" document.
2. The enabling applies to the station currently selected in the Explorer and its subordinate stations. The enabling takes effect after the export to the relevant target hardware.

3. While the license key is being entered, the modules are displayed in plain text.
4. Click the "Accept" button.

When the tab is shown again, the license keys with an asterisk (\*) are grayed out.

**Note**

Modules are not installed as part of the enabling/export process.

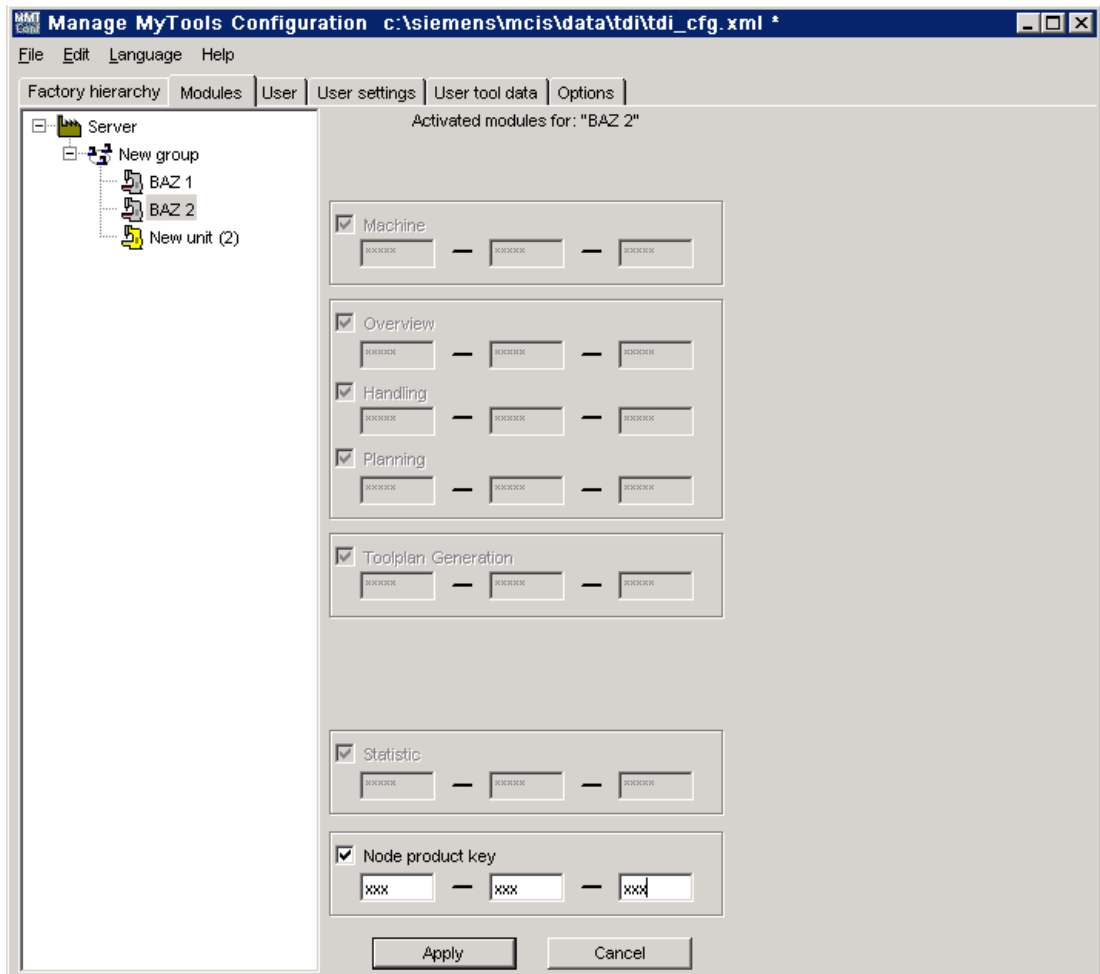


Figure 3-17 Enabling modules

### 3.3.1.6 PC user administration

You can specify the views of the plant components and the user access rights via the user administration.

The user administration is divided into two areas:

- Tab 1: Users
- Tab 2: User settings

---

**Note**

The access rights cannot be adapted on the workplace PC.

---

### Setting up users

In the "Users" tab, a password and a user group can be assigned to each of the three default users.

Each user name is firmly assigned to a user group.

| User Name | User group |
|-----------|------------|
| ADMIN     | ADMIN      |
| ADVANCED  | USER       |
| BASE      | INFO       |

---

**Note**

The settings in the fields "User group", "Language" and "Start area" are reserved and have no effect.

---

The user name and the password are required as login for the workplace PCs.

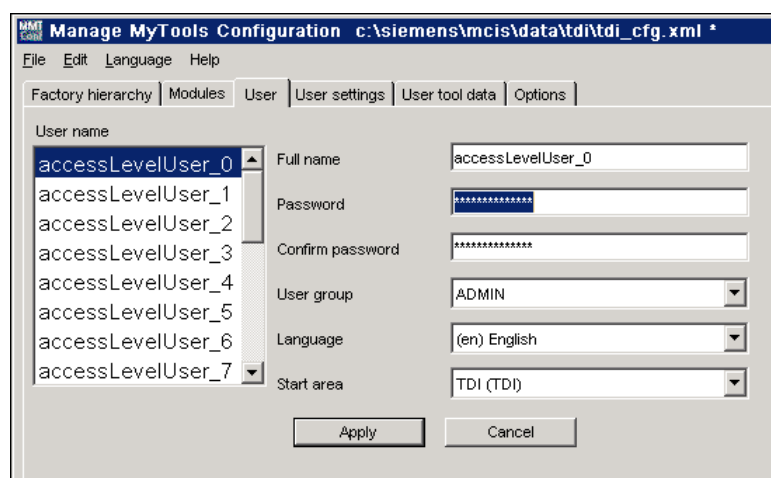


Figure 3-18 Setting up users, PC

### Assigning functions to user groups

In the "User settings" tab, access rights and default settings for individual functions can be assigned to the user groups (ADMIN, INFO, USER). You can assign the access rights to perform the various functions to each user group.

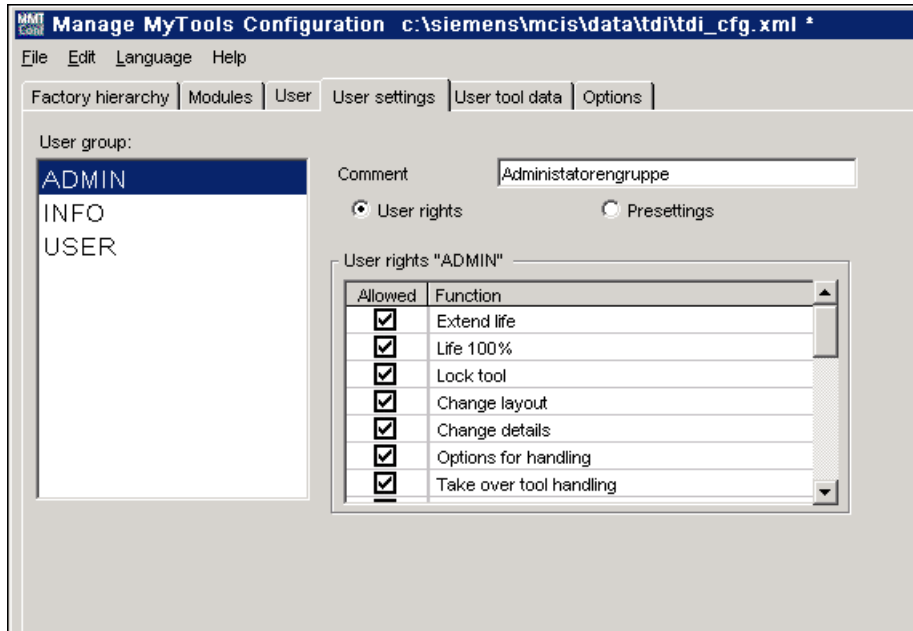


Figure 3-19 Assigning default settings to user groups, PC

The functions that are not enabled are blocked on the user interface for the logged-on user.

For a precise description and effects, refer to the following sections:

See Overview (Page 80)

see Tool handling (Page 98)

see Master data (Page 210)

### Default settings

In the default settings, you can specify various views for the Explorer display for each user group and for the individual levels (area, group, unit).

- Show tool cabinet in the Explorer
- Show buffers in the Explorer (only in conjunction with standard tool management)
- Show external magazines in the Explorer

If you activate the appropriate selection, these magazines will also be displayed in the Explorer on the user interface. Otherwise they are not visible and consequently cannot be selected.

The buffers are an exception to this rule. Even if the buffers are not visible in the Explorer tree on the user interface, the tools they contain are displayed.

- "Direct tool motion between machines"  
This option allows tools to be moved directly between machine magazines that are managed by SINUMERIK. If this option is not activated, tools can only be moved indirectly via an external magazine.
- "Remote control of the handling"  
This option allows tools to be moved between machine magazines also from an external operator station (external PC). If this option is not activated, tools can be moved only from an operator station on one of the controls involved in the movement.

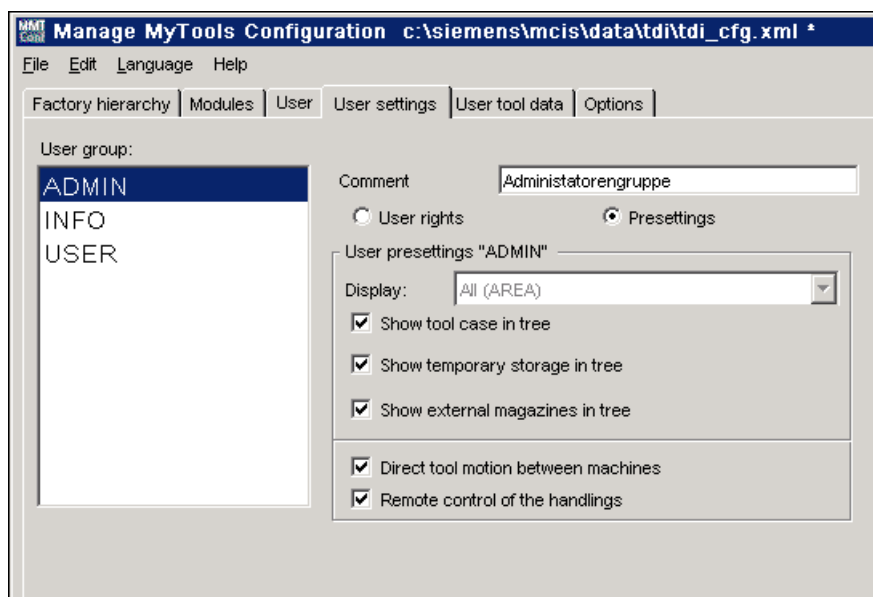


Figure 3-20 Default settings of the user groups, PC

### 3.3.2 Moving magazines and units (PC/PCU)

Within a configuration, units and magazines can be moved using "drag and drop".

The following rules apply:

- If you move a magazine to another magazine, it is inserted in front of the target magazine.
- If you move a magazine to a unit, it is inserted as the last magazine of the target unit.
- If you move a unit to a magazine, the unit is added to the unit belonging to the target magazine.
- If you move a unit to a unit, the unit is added to the target unit.
- If you move a unit to a unit with the "Shift" key pressed, the unit is inserted in front of the target unit.

Not all units and magazines can be used as targets when moving. The cursor icon changes if it is moved over an invalid target.

**Note**

The functionality may cause reactions in the common plant topology if used in combination with other SINUMERIK Integrate products and is therefore not permitted if several SINUMERIK Integrate products are installed.

### 3.3.3 Importing existing plant components (PC/PCU)

The import of existing plant components is used to create an overall configuration of the plant on the server.

**Procedure**

1. Select the "Plant hierarchy" tab.
2. Place the cursor on the highest level of the Explorer.
3. Select the menu command "Edit > Import plant hierarchy..".

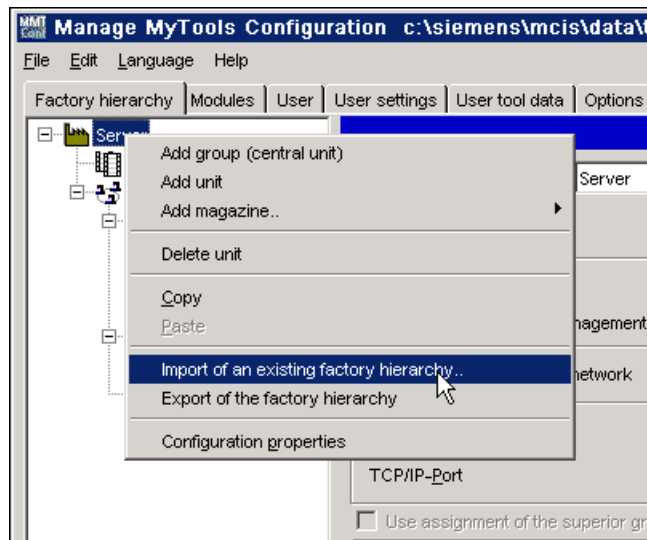


Figure 3-21 Importing the plant hierarchy



The import is performed in several steps.

## 1. Select the plant components

All machines that can be accessed via the network and that are operated with Manage MyTools are displayed in the "Selection of the Plant Components" window.

|            | Meaning  |
|------------|--|
| Host       | Host name of the address found   |
| IP address | IP address of the machine found  |
| Port       | Port number of the machine. The specified port number is required for the communication between the server and the machine, and must be enabled at a possible intermediate firewall. |
| CRC32      | Internal identification stamp of the configuration found   |
| Unit       | Name of the unit of the configuration found  |
| Selection  | Column for the selection of the units to be imported. As soon as the first unit has been selected, the "Next" button is activated.   |

Values that appear both in the configuration on the server and in the configuration on the machine are highlighted in yellow. This marking helps you to identify components that are already available.

The imported machines are added to the configuration, or the existing entries are updated.

If a field with a gray background is displayed in the "Selection" column, this machine cannot be selected or added.

The following operations can be performed in the window:

1. In the drop-down list "Accept from:", select whether the IP addresses or the host names of the machines found are accepted in the configuration.
2. Click "OK" or "Cancel" to return to the "Selection of the Plant Components" window.
3. Click "Next>>" to go to the next step, "Check names".  
- OR -  
Click "Cancel" to abort the import.

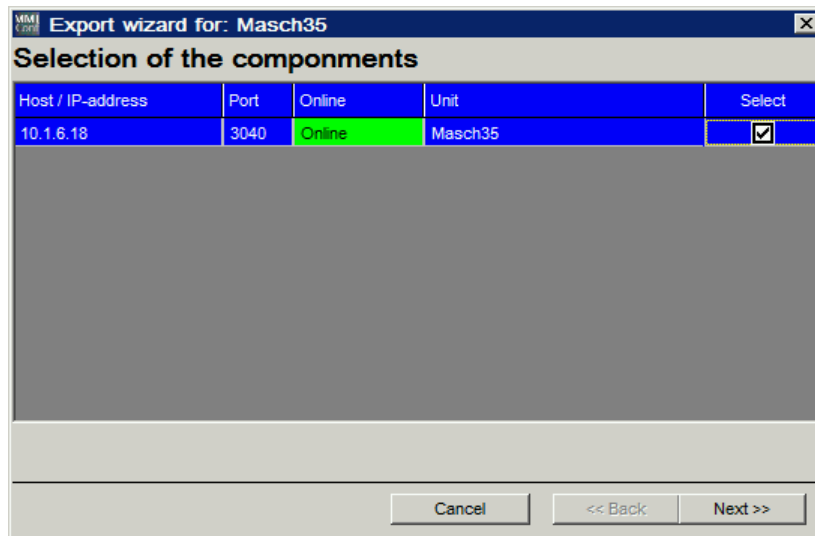


Figure 3-22 Selecting the plant components

## 2. Check names

You can change the name of the unit to be imported in the "Check Names" window in order to facilitate its identification. This facilitates the identification. Each name must be unique. A proposed unique name that is derived from the original name ("Unit" column) is proposed in the "New name" column.

The functions of the other columns are the same as in the previous window.

1. Click "<<Back" to return to the previous drop-down list. All previously made entries are then lost.
2. Click "Next>>" to go to the next step, "Import of the plant hierarchy".

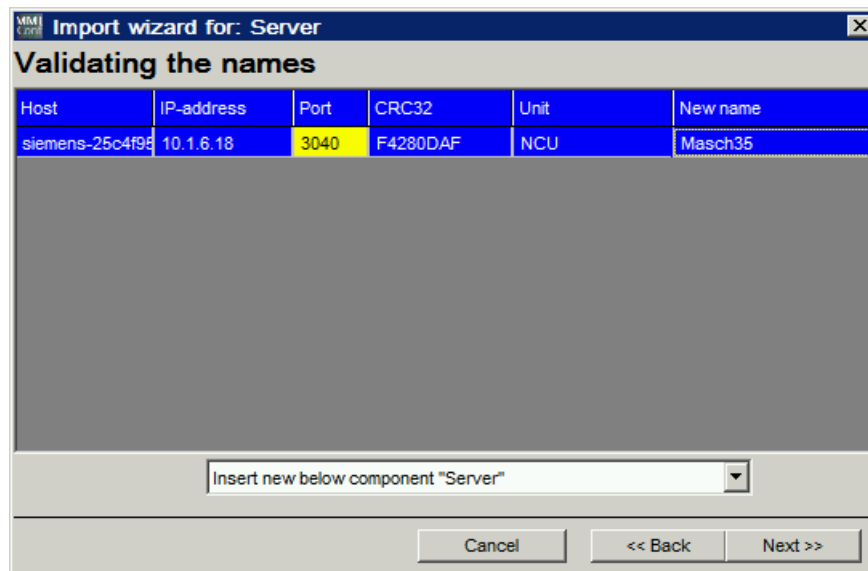


Figure 3-23 Checking the names

### 3. Import plant hierarchy:

The machines to be imported are displayed in the "Import of the Plant Hierarchy" window.

1. Click "Import" to start the import. The current status of the action is shown in the "Status" column.

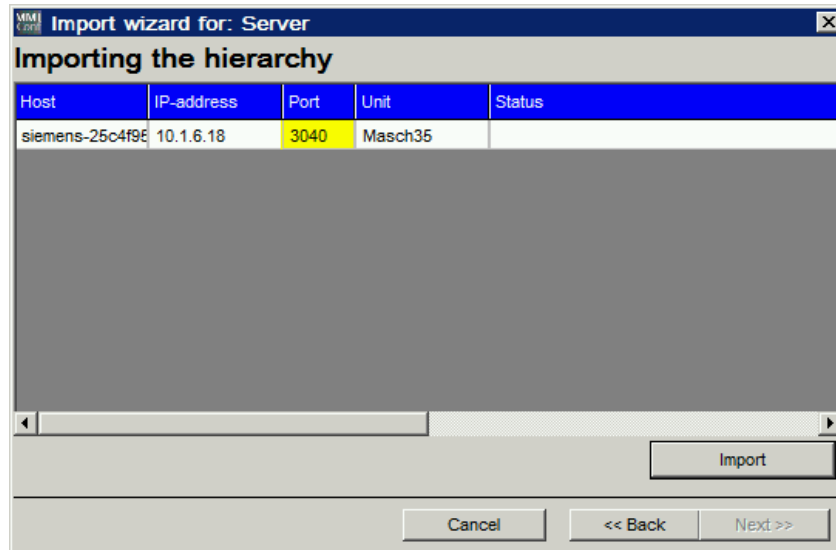


Figure 3-24 Importing the plant hierarchy

2. After the import, the "Resulting Plant Hierarchy" window is displayed. You receive a preview of the future plant hierarchy in the Explorer. It is no longer possible to switch back to the previous window with "<<Back".
3. If the resulting configuration is correct, click "Finish". The plant hierarchy result is accepted.  
- OR -  
Click "Cancel" to reject the result.

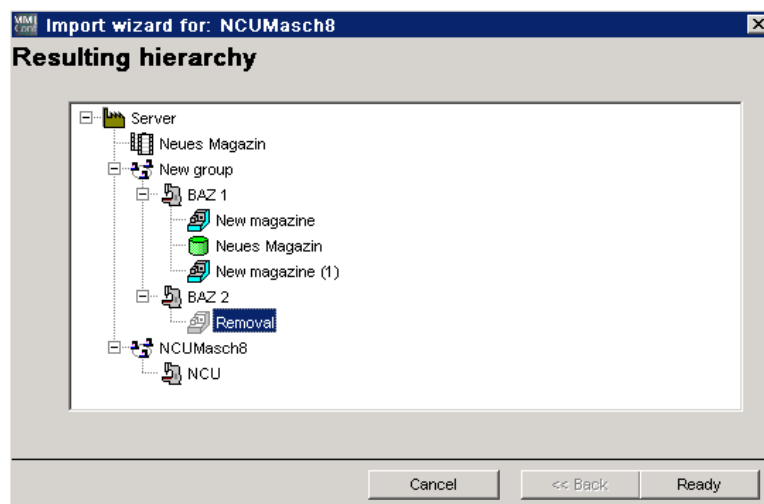


Figure 3-25 Resulting plant hierarchy

### 3.3.4 Exporting the configuration (PC/PCU)

Once a plant hierarchy has been completed (via import or manual configuration), it can be distributed to all of the components involved (machines and server) using the "Export of the plant hierarchy" function. In this way, you achieve that the same plant configuration can be called on all the connected machines.

#### Requirement

The configuration must have first been saved for this action.

#### Procedure

1. Place the cursor on the highest level of the Explorer.
2. Select the menu command "Edit > Export of the plant component".

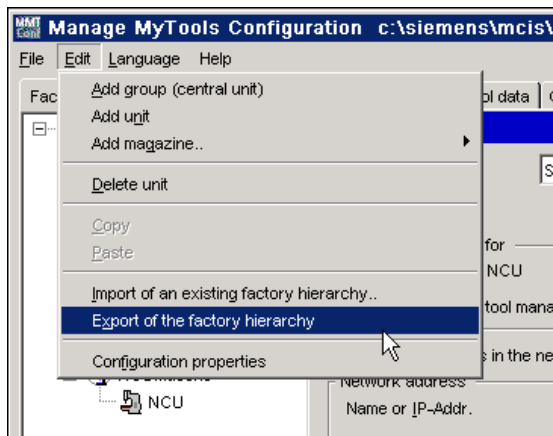


Figure 3-26 Exporting the plant component

As with the import, the export is also divided into a number of steps:

#### 1. Select the plant components

The target components or machines to which the overall configuration is to be exported are displayed in the "Selection of the Plant Components" window.

|            | Meaning  |
|------------|--|
| Host       | Host name of the address found   |
| IP address | IP address of the machine found  |
| Port       | Port number of the machine. The specified port number is required for the communication between the server and the machine, and must be enabled at a possible intermediate firewall. |
| Unit       | Name of the unit in the configuration  |
| Online     | Status indicating whether the machine can be addressed ("online") or not ("offline")   |
| Selection  | Column for the selection of the machines to which the configuration is to be exported.   |

**Note**

In the configuration on the respective PCUs, do not enter 'localhost' at the network address, but instead the computer name or the IP address.

Otherwise the parameters for the transfer of the configuration to the machine may not be able to be determined correctly on PCUs with several network cards.

1. Select the target components or machines to which the overall configuration is to be exported in the "Selection" column.  
If there is no feedback from the machine, i.e. when the machine is not "online", the machine in the "Selection" column cannot be selected.
2. Click the "Reload" button to start a new search for machines available in the network.
3. Click "Next>>" to go to the next step, "Export of the plant hierarchy".

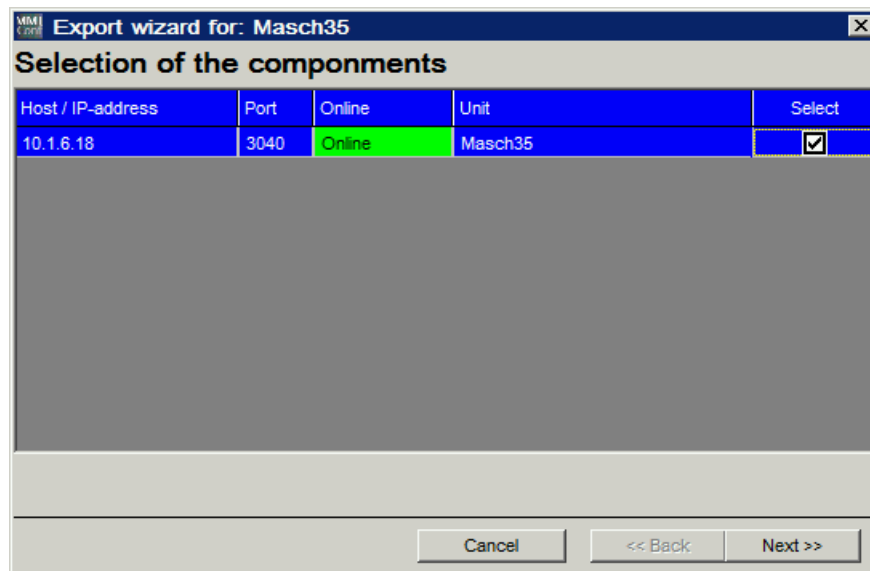


Figure 3-27 Selecting the plant components

## 2. Start export

The machines to be exported are displayed in the "Export of the Plant Hierarchy" window.

1. Click "Export" to start the export. The current status of the action is shown in the "Status" column.
2. After the export, click "Finish" to exit the export.

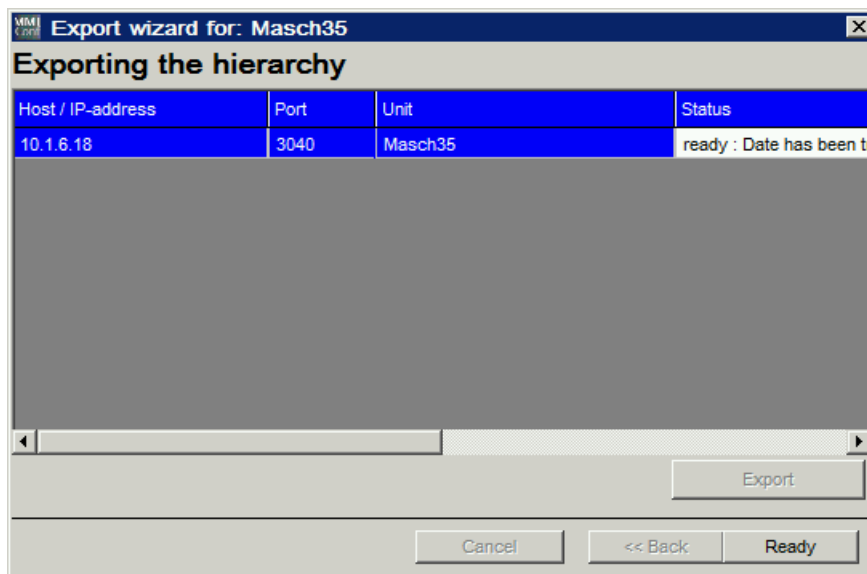


Figure 3-28 Exporting the plant hierarchy

---

### Note

Any changes made to a configuration and distributed using the "Export of the plant hierarchy" function take effect immediately on the machines and on the server.

The PC user interfaces have to be restarted after changes in the plant configuration.

---

### Note

After exporting a configuration with a changed port number, the service must be stopped and restarted on the server.

---

### 3.3.5 Configuring components on the PCU/NCU

If the configuration is performed directly on a unit, only the components relevant for the unit, the plant and the configuration will be available.

- The default unit can be used as a starting point and other components added for this unit via the "Edit" button or by selecting "Unit" and right-clicking.
- For units with standard tool management it is possible to perform automatic magazine detection by activating the "Automatic magazine detection for machine magazines of an NCU with TOOLMAN" function.

---

#### Note

If automatic magazine detection has been selected, once the configuration is complete, the magazines available on the NCU will be added to the configuration the next time MMT is started on the machine. The magazines detected can then be modified as required on the machine via Manage MyTools Configuration.

If, when configuring the standard tool management, a name was not assigned to the magazine, then instead of the general magazine names, the magazine numbers are inserted.

---

### Adding a magazine

You insert a new tool magazine here. The position of the magazine within the Explorer hierarchy is determined by the position of the cursor when the magazine is inserted. The position of the component within the hierarchy can be modified subsequently by drag and drop.

The following options are available:

- Tool magazine with standard tool management, see Section: Creating a tool magazine with standard tool management (PCU/NCU) (Page 57)
- Tool cabinet with standard tool management, see Section: Creating a tool cabinet with standard tool management (PCU/NCU) (Page 59)
- Tool magazine with PLC-based tool management (e.g. in Transline HMI Pro with DBxx or machine-manufacturer-specific tool management), see Section: Creating a tool magazine with PLC-based tool management (PCU/NCU) (Page 60)

- External magazine/database  
e.g. for machine-manufacturer-specific tool management,  
see Section: Creating an external magazine/database (PCU/NCU) (Page 63)
- RPC container

**Note**

If an external tool magazine does not have dedicated management, MMT will assume the tool management role.

On a unit with standard tool management, unlike automatic and complete detection of all configured tool magazines, this function can be used to display specific individual magazines.

**Note**

If magazines have been configured for units on a PC, once the configuration is complete it must be exported to the units concerned.

See Section: Importing existing plant components (PC/PCU) (Page 48)

See Section: Exporting the configuration (PC/PCU) (Page 52)

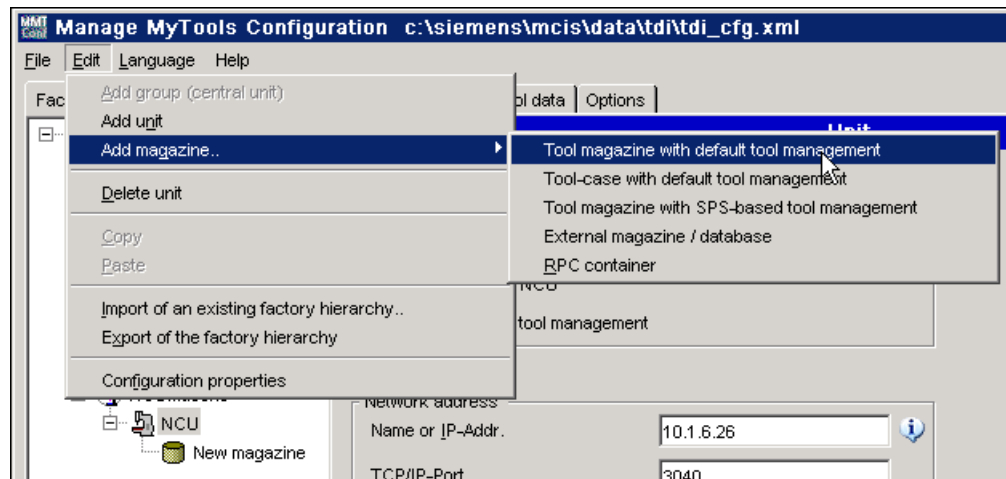


Figure 3-29 Inserting a magazine, PCU

**Assigning loading and unloading magazines**

If you want to assign loading and unloading magazines to a unit, this can be performed with the table in the lower part of the window.

| Columns            | Meaning   |
|--------------------|---|
| Loading magazine   | Marks the magazine as loading magazine.   |
| Unloading magazine | Specifies the use as unloading magazine. Change the entry via a drop-down list. |
| Component          | Name of the component on which the magazine is located.                         |
| Magazine           | Name of the magazine.   |



- From all of the higher-level external magazines, up to ten can be specified as loading magazines and up to two as unloading magazines.
- With the unloading magazines, it is also possible to specify the type of tools to be unloaded into this magazine:
  - Either one for all tools ("Unloading magazine (all tools)")
  - OR -
  - One each for worn ("Only worn tools") and for partly worn tools ("Only partly worn tools").

The settings for all of the groups and units can be adopted for the next level in the hierarchy via the "Adopt setting from predecessor" checkbox. When this option is set, you can no longer change the settings.

### 3.3.5.1 Creating a tool magazine with standard tool management (PCU/NCU)

The following entries are required if you want to create a magazine with standard tool management.

#### Functions

|  | Meaning  |
|--|--|
| Magazine   | Assignment of the magazine name<br>Note:<br>May be identical to the name of the relevant magazine in the standard tool management, also refer to the "to_ini.ini" file of the NC-active data \$ TC _ MAP2 [< Mag.No.>]=<Mag-Name>.   |
| Magazine number                                  | Assignment of the magazine number<br>Note:<br>The number must be identical to the number of the corresponding magazine in standard tool management, see the "to_ini.ini" file of the NC-active data on the unit \$ TC _ MAPX [< Mag.No.>].   |
| NCDDE machine name                               | Assignment of the NCDDE machine name<br>Note:<br>The name must be identical to the entry in the "mmc.ini" file of the unit.  |
| TO area  | Definition of the TO area<br>Note:<br>TO area in which the magazine is valid.  |
| Permit data transfer without PLC acknowledgement | If you add complete tool containers (e.g. tool cartridges) to the machine or insert single tools directly in magazine locations, you can use this function to deactivate scanning of PLC acknowledgements. This means that the tool data is entered directly in the magazine list. For further details, see Section: Tool handling (Page 98) |
| Available location types                         | When automatic magazine detection is active, the magazine location types are detected for the standard tool management and entered in the table for the relevant magazine. The table cannot be modified.   |

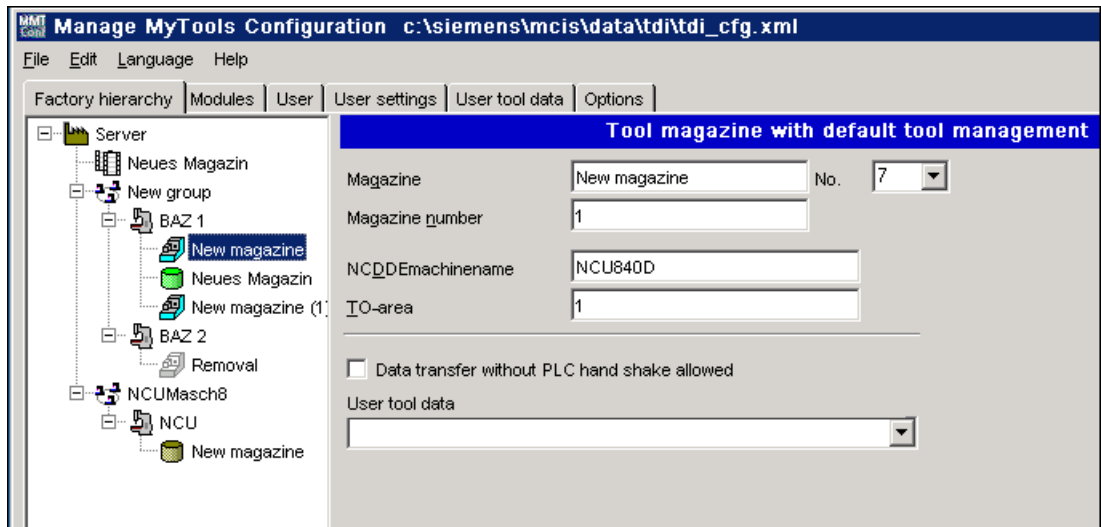


Figure 3-30 Tool magazine with standard tool management, PCU

### Location type

The location type defines the kind of location in the magazine. With the allocation of location types to magazine locations, the magazine is subdivided into different areas when the standard tool management system of the SINUMERIK is configured.

The name and size of the location type are read from the MS ACCESS file "wzaccess.mdb" of the standard tool management. If this information is not available, blanks are output.

### Function

It is only possible to load a tool to a location of the appropriate type. It is therefore possible to assign various types of special tools, e.g. "large", "heavy" to specific locations. There is no need to apply fixed location coding for this purpose.

When loading the tool, make sure that the type of the magazine location (\$TC\_MPP2) matches the magazine location type. Enter the magazine location type in the tool-specific data (\$TC\_TP7) of the tool setting station.

The machine manufacturer assigns location types when configuring/commissioning the machines. In this context, ambiguities may arise between individual machines and manufacturers in relation to the following definitions:

- Name of location type
- Type of magazine location (\$TC\_MPP2)
- Size and form of location in magazine.

The operator must check to ensure that all location types are clearly defined on all machines in the plant.

### Example illustrating ambiguities in location type definition

|           | Location type name | Magazine location type<br>\$TC_MPP2 | Size<br>Width / total height |
|-----------|--------------------|-------------------------------------|------------------------------|
| Machine 1 | Normal             | 1                                   | 2/2                          |
|           | Large              | 2                                   | 4/4                          |
|           | Heavy              | 3                                   | 2/2                          |
| Machine 2 | Normal             | 1                                   | 2/2                          |
|           | Large              | 2                                   | 2/2                          |
|           | Heavy              | 4                                   | 2/2                          |

The example above illustrates the following problems:

- Different tool sizes are defined for the "large" location type. I.e., if a tool is set with tool-specific data \$TC\_DP7=2 for machine 1 and then loaded to machine 2, there is a risk of collision as the tool management in machine 2 is programmed to reserve only one magazine location for magazine location type \$TC\_MPP2=2.
- Different magazine location types \$TC\_MPP2 are defined for the "heavy" location type. I.e., if a tool is set with tool-specific data \$TC\_DP7=3 for machine 1 and then loaded to machine 2, it is not possible because magazine location type 3 is not defined for the tool management in machine 2.

#### 3.3.5.2 Creating a tool cabinet with standard tool management (PCU/NCU)

The following entries are required when you create the tool cabinet of the standard tool management as magazine.

|   | Meaning   |
|---|---|
| Magazine                                | Assignment of the magazine name, freely selectable.   |
| Number                                  | Assignment of the magazine number<br>Note: If unique numbering is needed, we recommend that the default numbers are used.   |
| Use tool cabinet of the tool management | If this setting is active, MMT uses the data of the standard tool management.   |
| Use other database                      | If the tool data is being managed in another part of the database, other than that used by the standard tool management, you can enter the database path for the tool magazine created here.<br>Example: Managing a tool cabinet on a PC:<br>Provider=Microsoft.Jet.4.0;Data Source=c:\OwnFiles\wzaccess.mdb<br>Note:<br>The supply of the provider is not necessary for MS Access! |

**Procedure**

1. Click "Check" to check the plausibility of the entered data.
2. After a successful check, click "Accept".  
The entries are transferred to the configuration file.

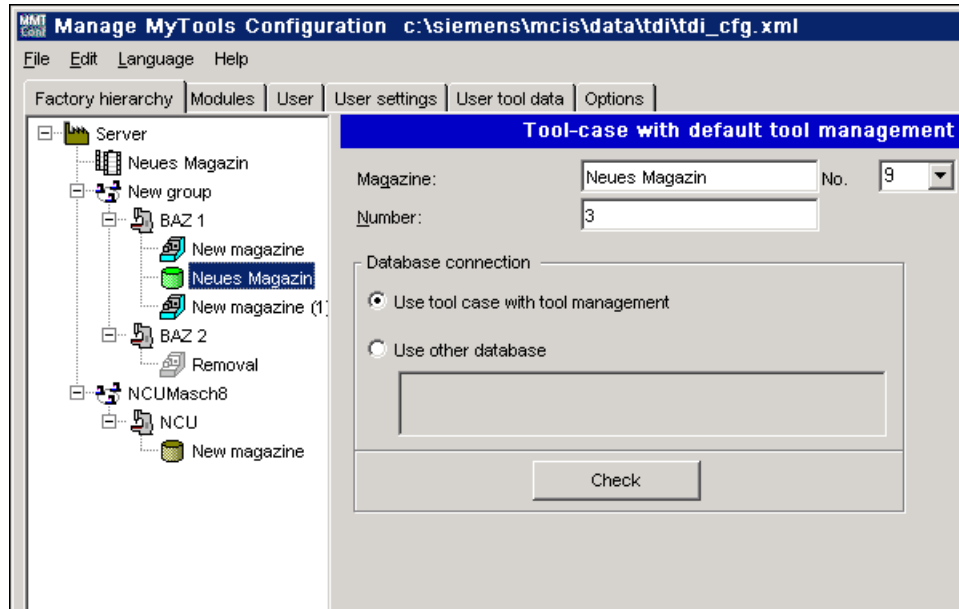


Figure 3-31 Tool cabinet with standard tool management, PCU

**3.3.5.3 Creating a tool magazine with PLC-based tool management (PCU/NCU)**

The following entries are required when you create a tool magazine of a PLC-based tool management.

**Topic**

|       | Meaning   |
|-------|---|
| Topic | Information required for setting up OPC communication to a specific NC or SIMATIC S7. A separate topic must be specified for each unit. |

- Enter a protocol ID in the "Topic" entry field for each station and assign a unique, protocol-specific connection name for the OPC server. This connection name is specified during the station configuration.  
Syntax example: S7:[S7-Connection-1]

More detailed information about the protocol ID and the connection name can be found in the respective product documentation.

**References**

// SIMATIC NET – CD: Industrial Communication with PG/PC,  
Section: OPC process variables for SIMATIC NET → S7 communication

## Selecting a data block

|                     | Meaning   |
|---------------------|---|
| DB no.              | By default, DB59 is used with a maximum of 96 tools. The tool data is stored starting at data word 3148 (if there are 48 tools, tool data is saved as of data word 1908). |
| Number of tools     |   |
| First DBD tool data |   |

### Note

The following DBDs are used (= managed tool data in the DB) in the DB for each tool:

- DBD1 = actual value (actual value of tool life for Transline)
- DBD2 = prewarning limit (pre-alarm for Transline)
- DBD3 = extended alarm
- DBD4 = setpoint (alarm limit for Transline)

This assignment also applies for the other DBs.

## Offset bit

The offset bit is set whenever changes are made to tool offsets / monitoring data under "Details" in the overview window of the actual tool data. The default setting for the address of DB59 is:

DB no. = 59  
 Byte = 633  
 Bit = 1

You can change this byte address, but it must comply with the DB59 structure.

## Counting method

There are a number of options for the tool life counting method in MMT:

|        | Meaning   |
|--------|---|
| NCU    | The actual value is counted down from 100% (= setpoint) to 0.                 |
| TL2000 | The actual value is counted up from 0 to 100% (= setpoint or extended alarm). |

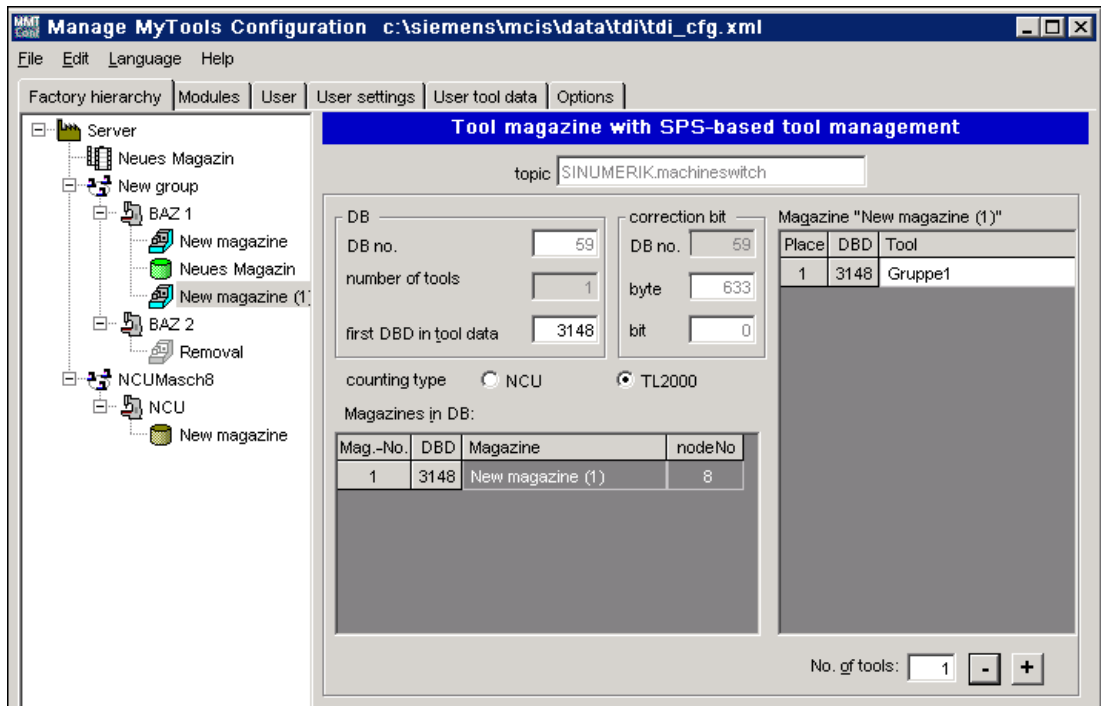


Figure 3-32 Creating a magazine with PLC-based tool management, PCU

### Assigning tool identifiers to the machine magazines

The tools contained in the magazine must be entered in the "Tool" column in the "New magazine" list box in the "Magazine" list for each magazine with the tool identifier and on a location-specific basis.

### Defining tools for magazine locations

The number of magazine locations required is defined in the "Number of tools" entry field. The plausibility of the number of tools specified for each magazine is checked.

### Creating additional magazines

If additional magazines are to be created in DB59 within the selected unit, this is done by selecting the unit in the Explorer structure and "Add magazine".

The new magazine is added to the "Magazine in the DB" list box:

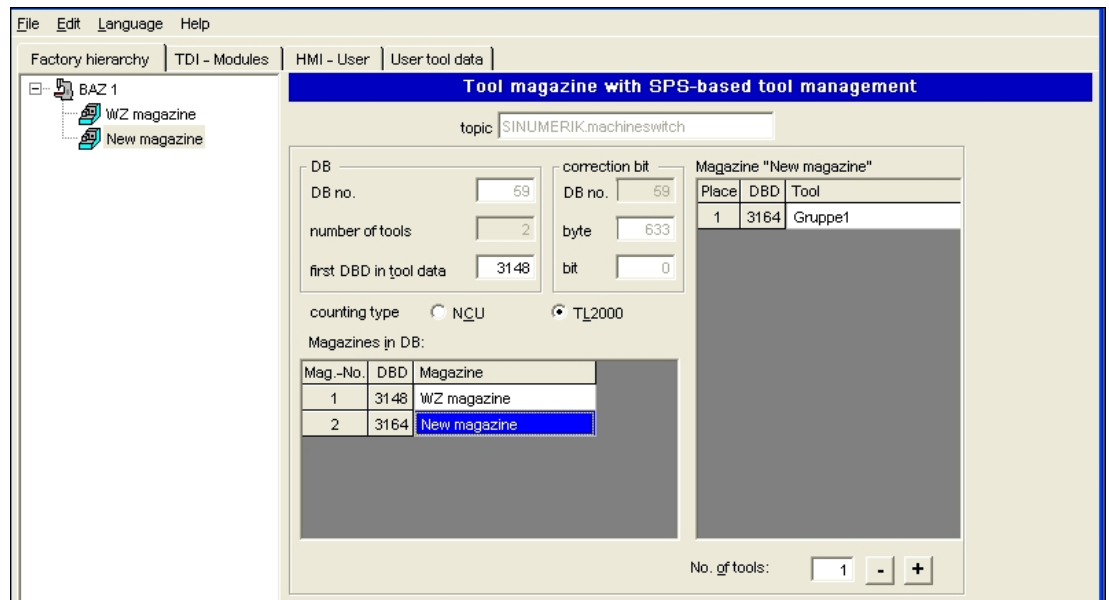


Figure 3-33 Creating additional magazines, PCU

#### 3.3.5.4 Creating an external magazine/database (PCU/NCU)

You must make the following settings if you wish to use an external tool cabinet or database (e.g. MSDE, MS Access) to store tool data.

|                    | Meaning  |
|--------------------|--|
| Magazine           | Assignment of the magazine name, freely selectable.  |
| Magazine number    | Assignment of the magazine number.<br>Note:<br>If unique numbering is required, retain the magazine numbers proposed by the MMT configuration. |
| Magazine locations |  |
| Unlimited          | The number of locations is not limited.  |
| Number             | Limits the number of locations to the specified number.  |

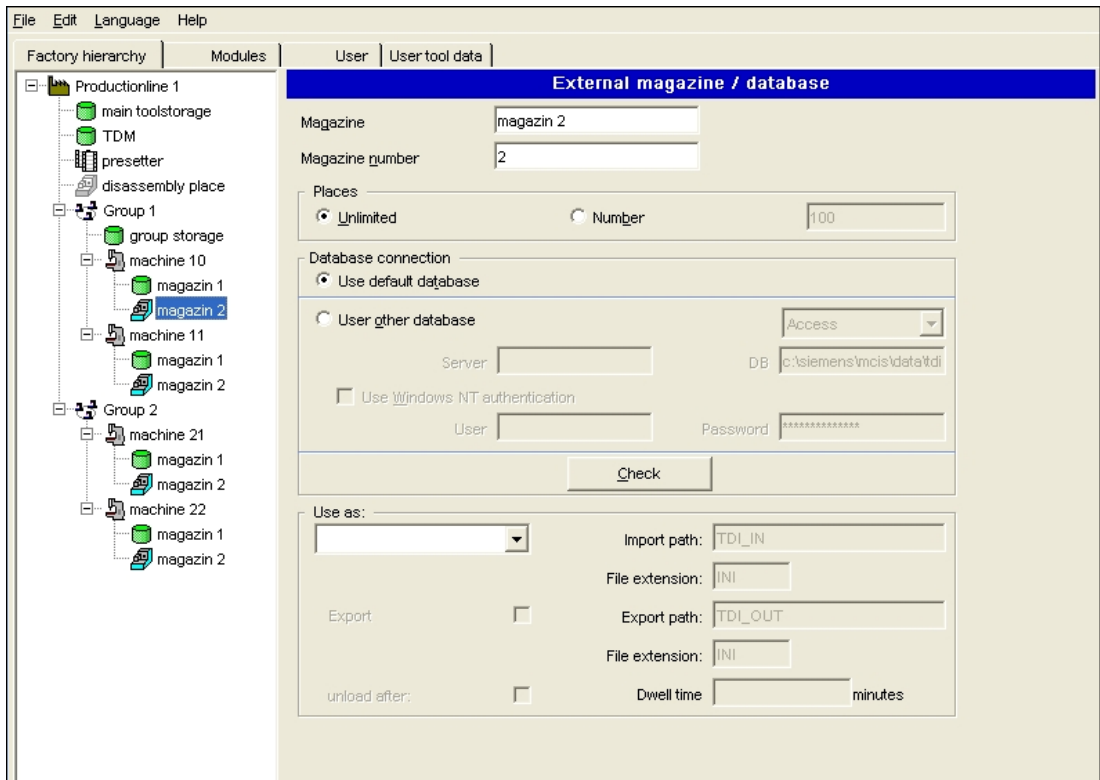


Figure 3-34 External magazine / database, PCU

Database access, default database

|                      | Meaning   |
|----------------------|---|
| Use default database | When you select this option, the existing Microsoft Access database "areadb.mdb" in subdirectory "Data" in the installation directory on the target computer is used. |

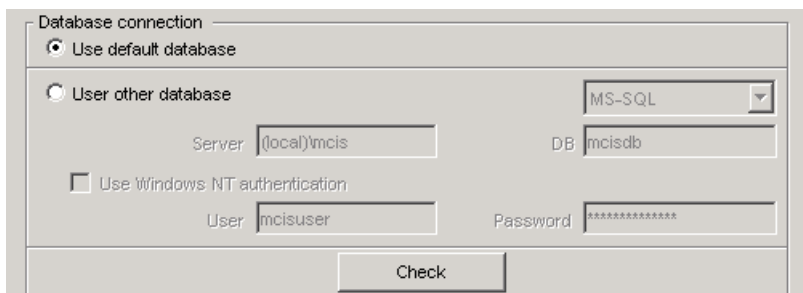


Figure 3-35 Using the default database, PCU



**Use other database**

**SQL/MSDE**

|                     | <b>Meaning</b>  |
|---------------------|---|
| Server              | Server name or IP address of the SQL server.  |
| DB                  | Complete path incl. file name.<br>Note:<br>Always in relation to the local path on the target computer of the configuration.                                |
| Use safe connection | The database logon is performed on the basis of the MS Windows NT security mechanisms.<br>This means that the "User" and "Password" fields are deactivated. |
| User                | Database user name<br>Note:<br>Required only if you are not working with integrated security.   |
| Password            | Password for the database user name<br>Note:<br>Required only if you are not working with integrated security.  |

**MS Access**

|                     | <b>Meaning</b>  |
|---------------------|---|
| Server              | Server name or IP address of the SQL server.  |
| DB                  | Complete path incl. file name.<br>Note:<br>Always in relation to the local path on the target computer of the configuration.                                |
| Use safe connection | The database logon is performed on the basis of the MS Windows NT security mechanisms.<br>This means that the "User" and "Password" fields are deactivated. |
| User                | Database user name<br>Note:<br>Required only if you are not working with integrated security.   |
| Password            | Password for the database user name.<br>Note:<br>Required only if you are not working with integrated security.   |

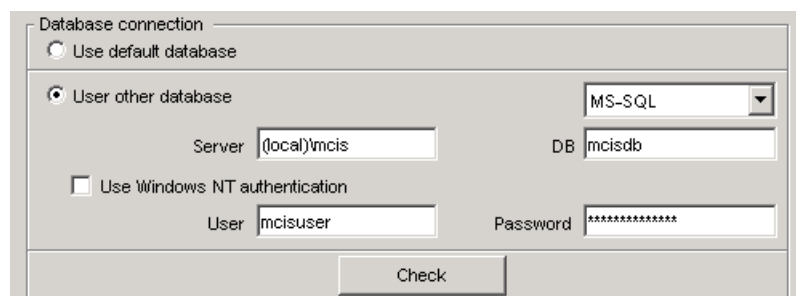


Figure 3-36 Connecting the Access database, PCU

**Creating a setting magazine**

If MMT is to accept tool data from an external source (e.g. a tool setting station, higher-level tool management system), then an external magazine / database must be defined as a setting magazine.

|   | Meaning  |
|---|--|
| Import path                                 | Directory in which the tool data files from the tool setting station are saved. The default entry "MMT_IN" is relative to the installation directory of MMT.<br>Alternatively, you can specify a complete path (see also "Connection of tool setting stations").   |
| File extension                              | Specification of the file extension.   |
| Take into account tool master data from MMT | When importing a tool data file, a check is performed as to whether tool master data already exists for this tool. The data to be imported is then compared to the existing master data. If this data does not match, an import is not performed.<br>If this option is not selected, the tool data is imported, irrespective of whether and which tool master data exists for this tool. |
| Use internal user data of the import file   | The internal user data is not taken from the MMT tool master data, but from the TO file of the tool setting station.<br>The internal user data is the "tool and cutting-edge-related user data".   |
| Tool-related user data                      | \$TC_TPCx (1 => x => max. 10)  |
| Cutting-edge-related user data              | TC_DPCx (1=> x => max. 10)   |

**Note**

If no setting magazine is configured when configuring a unit, the "Balance calculation" tool planning function is not available.

The tool and cutting-edge-related user data is not set by default in the tool management. This data is enabled and configured by the machine tool manufacturer.

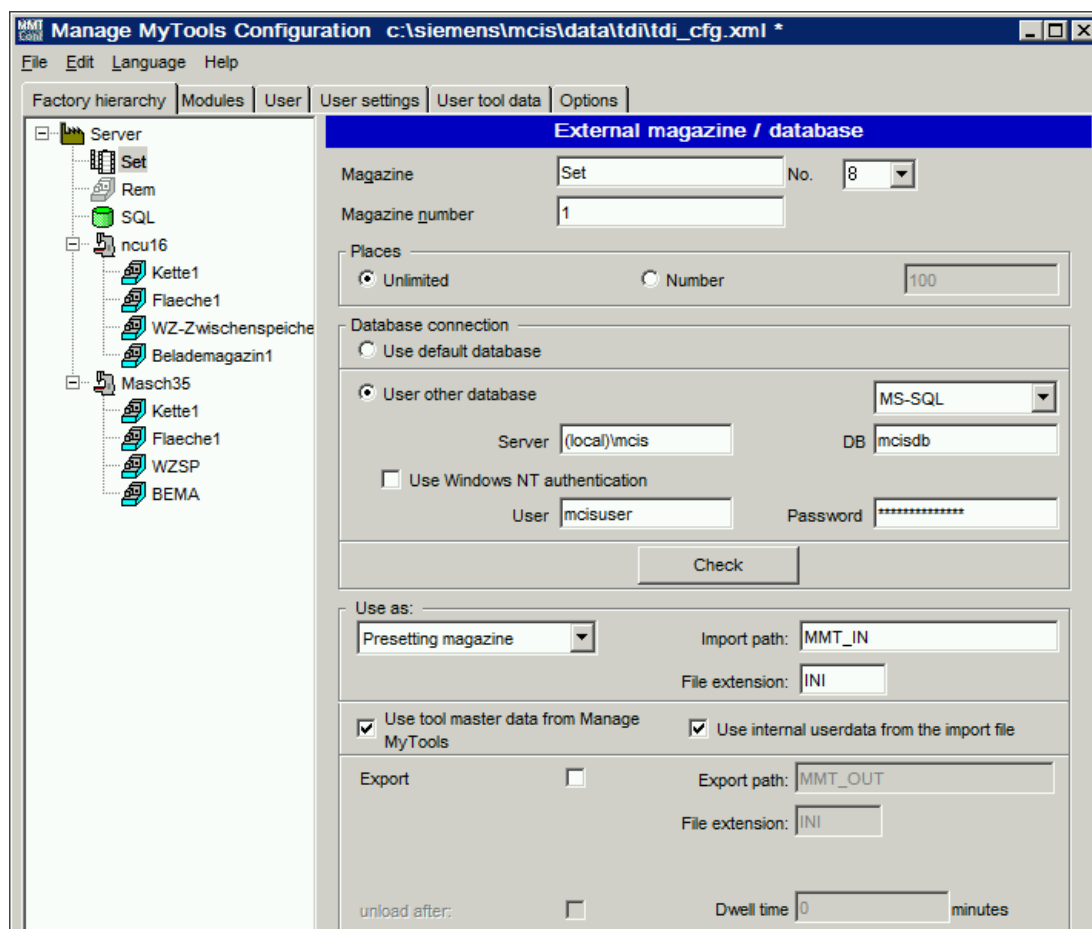


Figure 3-37 Using a setting magazine, PCU

### Creating a removal magazine

In the "Transfer" operating area of Manage MyTools, you can transfer worn tools to a removal magazine. You must set up an external magazine / database for this functionality and define it as removal magazine.

With removal magazines, the user can unload tools from the magazine after a defined time. Activate the option via the "Unload after" checkbox. A time period in minutes can be defined in the "Dwell time" entry field, see Section: Balance deallocation (Page 179).

|             | Meaning  |
|-------------|--|
| Export path | Directory in which MMT saves the tool data files of the removal magazine. Make this setting to store a tool data file. The default entry "MMT_OUT" is relative to the installation directory of MMT. Alternatively, you can specify a full arbitrary path. |
| Dwell time  | Time period (in minutes) after which a tool unloaded to the tool removal magazine is deleted automatically from this magazine (depending on setting) or stored as a tool data file in the export path.   |

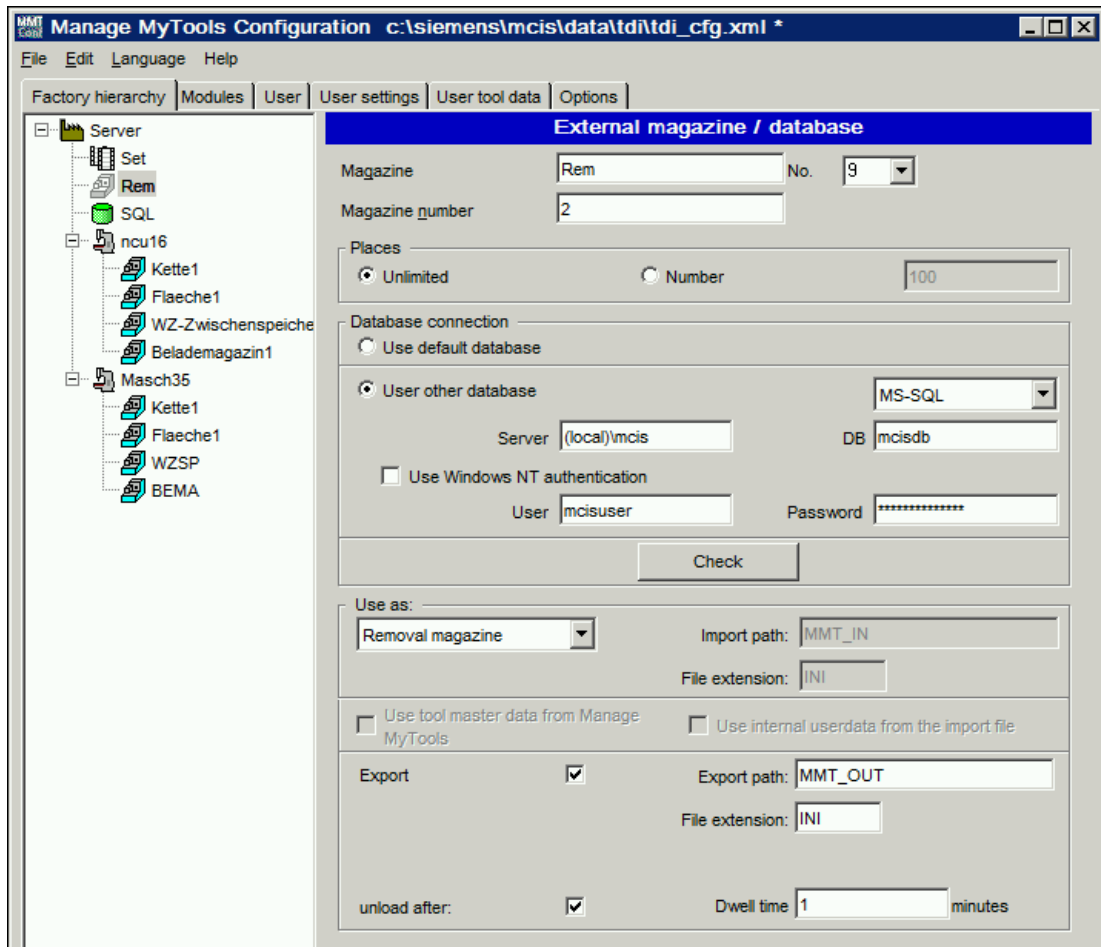


Figure 3-38 Using a removal magazine, PCU

### Creating an RPC SINUMERIK tool magazine

The following entries are required if you want to create a tool magazine of a master-computer-supported tool management.

|          | Meaning   |
|----------|---|
| Magazine | Assignment of the magazine name, freely selectable.   |
| Number   | Assignment of the magazine number.<br>Note:<br>If unique numbering is required, retain the default numbers. |



Figure 3-39 RPC SINUMERIK magazine, PCU

---

#### Note

RPC SINUMERIK is not contained in the scope of delivery of Manage MyTools and must be ordered separately.

For a detailed description, see:

RPC SINUMERIK Computer Link, Description of Functions

---

### 3.3.5.5 Enabling modules on the PCU

It is possible to distinguish between two types of control when enabling modules on the control:

- Solution line
- Not solution line

A different licensing procedure applies depending on the type of control.

### 3.3.5.6 HMI user administration on the PCU

You can assign access rights to predefined users within the HMI users area. You can specify the default settings for each component.

#### Access rights

The protection levels define the access to functions on the control. There are eight protection levels (0 to 7). The lowest four (4 to 7) are set using the key switches on the machine.

The lower the number of the protection level, the more access rights the user has.

The following protection levels are defined:

| Protection level | Protected by | Area                  |
|------------------|--------------|-----------------------|
| 0                | Password     | System                |
| 1                | Password     | Machine manufacturer  |
| 2                | Password     | Service               |
| 3                | Password     | End user              |
| 4                | Key switch 3 | Programmers           |
| 5                | Key switch 2 | Qualified operator    |
| 6                | Key switch 1 | Trained operator      |
| 7                | Key switch 0 | Semi-skilled operator |

### Assigning functions to user groups

You can assign the access right to perform the following functions to each user:

- Extend tool life
- Set tool life to 100%
- Block tool
- Change layout
- Change details
- Enable handling options
- Accept/enable tool movement

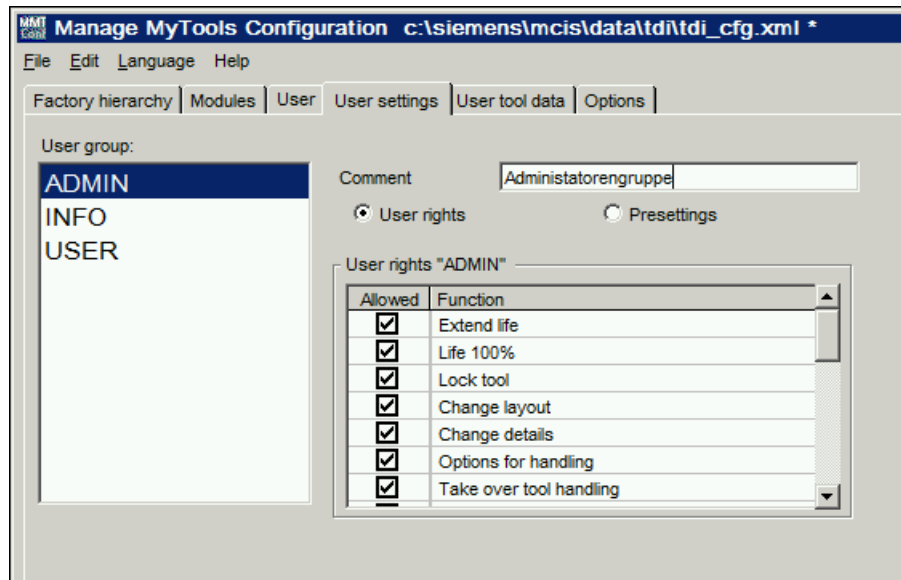


Figure 3-40 Setting up access rights, PCU

The functions that are not enabled are blocked in the user interface and a corresponding message is displayed.

For a precise description on the effects:

See Section: Overview (Page 80)

See Section: Tool handling (Page 98)

## Defining default settings

In the default settings, you can specify various views for the Explorer display for each user group and for the individual levels (area, group, unit).

- Show tool cabinet in the Explorer
- Show buffers in the Explorer
- Show external magazines in the Explorer

If the appropriate selection has been made, the magazines are displayed in the user interface. Otherwise they are not visible and consequently cannot be selected.

The buffers are an exception to this rule. Even if the buffers are not visible in the Explorer tree on the user interface, the tools they contain are displayed in the tool list.

- "Direct tool movement between machines"  
This option allows tools to be moved directly between machine magazines that are managed by SINUMERIK, from different machines. If this option is not activated, tools can only be moved indirectly via an external magazine.
- "Remote control of the handling"  
This option allows tools to be moved between machine magazines also from an external operator station (external PC). If this option is not activated, tools can be moved only from an operator station on one of the controls involved in the movement.

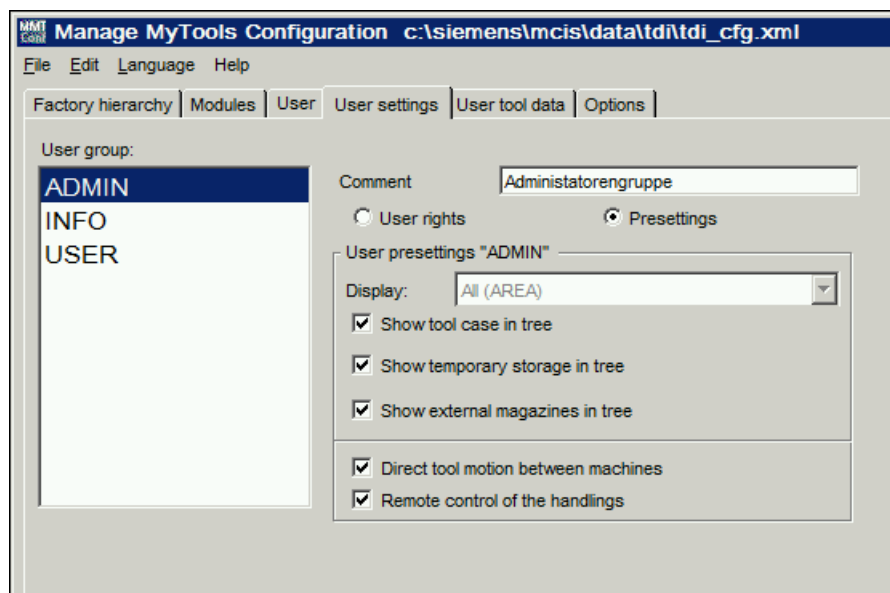


Figure 3-41 Assigning default settings to user groups, PCU

### 3.3.6 Configuration of user data

#### Overview

The user interface for managing user data can be found in the "User data" tab.

All the adaptations for tool user data, cutting edge user data and cutting edge monitoring data can be made in this area.

The user data area is divided into two groups:

- Tool user data
- Cutting edge user data

Display of the text and units in the table is language-dependent. If there is no text or there are no units in the language selected stored on the system, it will use the first language that is present instead.

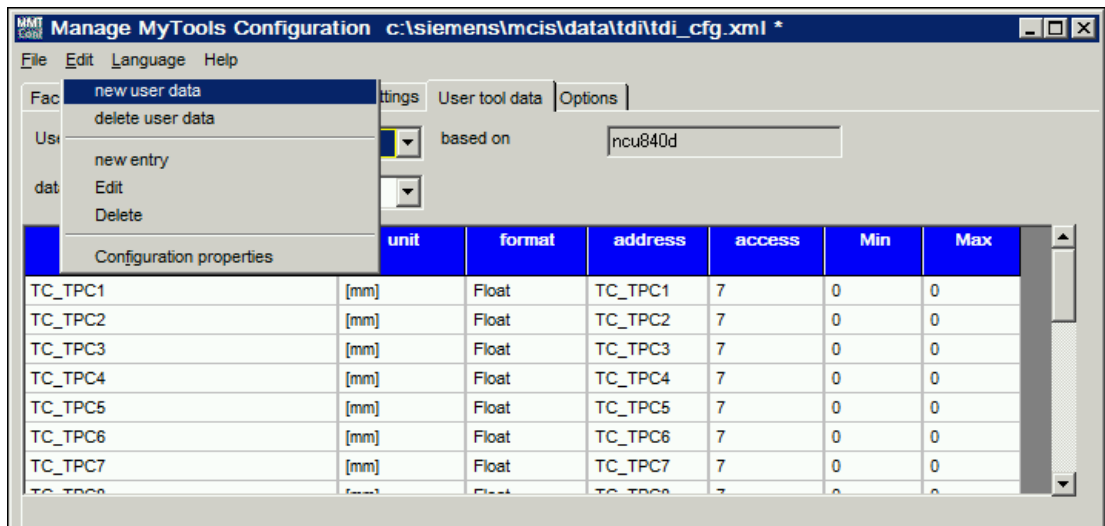


Figure 3-42 User data

#### Creating a user data record

Create a new user data record via the context menu or via the pull-down menu.

1. Select the "User data" tab.
2. Enter a unique and informative name in the "Name" text field.



3. Select an existing data structure on which you want to base the new user data record from the "Data structure" drop-down list.
4. Click "OK".  
The conditions are checked and the record is only created if the feedback is possible.

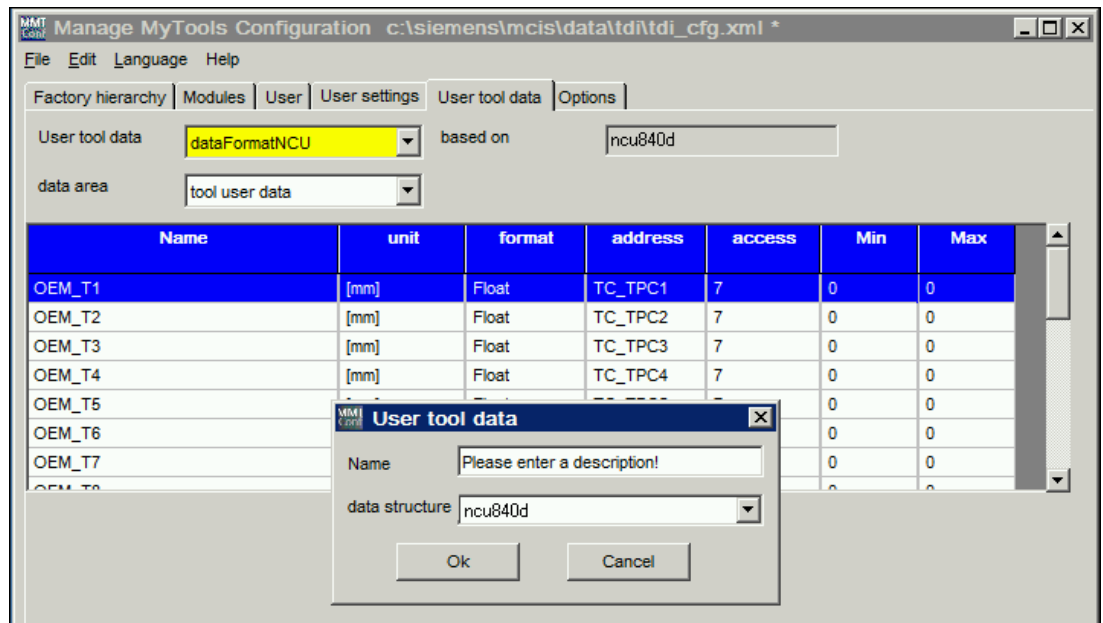


Figure 3-43 Creating a user data record

### Defining user data

The window for entering a new user data record is equivalent to the edit window.

|                   | Meaning  |
|-------------------|--|
| Address           | Selection of free addresses. Each address may only be present once for each user data record.  |
| Format            | Selection of the following predefined types: <ul style="list-style-type: none"> <li>• Float</li> <li>• Integer</li> <li>• Bit</li> <li>• BitArray</li> </ul> |
| Minimum / maximum |  |
| Access            | Selection of the protection levels from 0 to 7   |

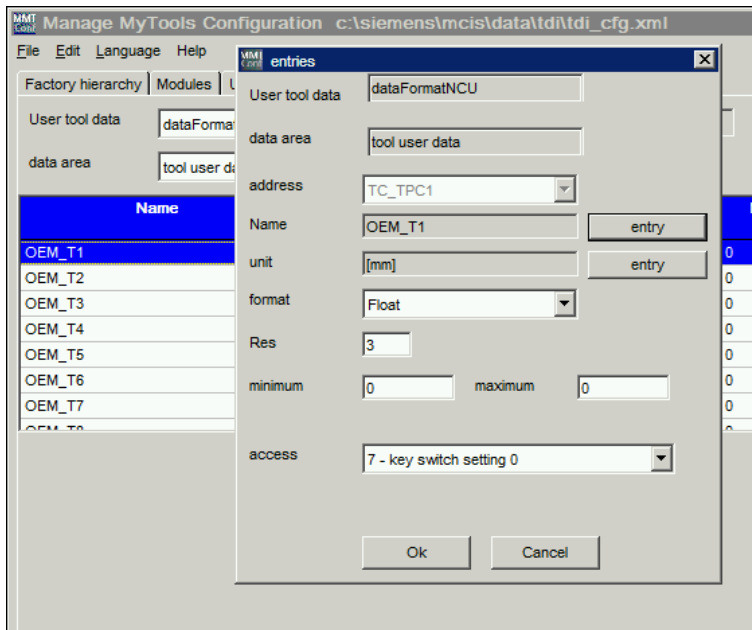


Figure 3-44 Definition of user data

### Entering language-dependent texts

1. The cursor is in the "Name" or "Unit" field.
2. Click the "Enter" button.  
The "Entries" window opens and displays a list of all the languages that are supported.

#### Note

It is not necessary to enter text and units for every language. Store at least one text and one unit in a user data record for each entry.

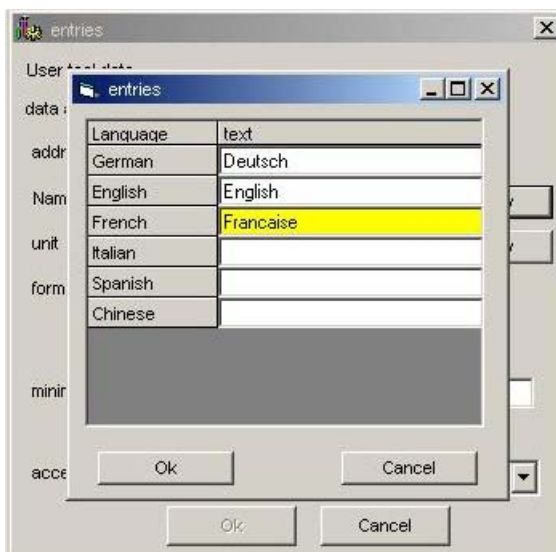


Figure 3-45 Input of language-dependent texts

### 3.3.7 Configuration of general options

The user interface for managing options can be found on the "Options" tab in the Manage MyTools Configuration.

#### Overview

You can make changes to the following subareas/modules in the option user interface:



- Server
- Tool identification
- Planning
- Tool plan generation
- Statistics
- ToolCatalog
- Tool plan

For options that can be changed globally, group-specifically and per unit, the following definition/order applies in which the options are effective:

Unit → first higher-level group → nth higher-level group → global (root)

Global or group-specifically defined options are inherited by the subordinate components in the plant hierarchy.

As some of the modules/subareas contain extensive options, they can be shown and hidden.

-  Use this button to show the subareas of the modules.  
Already opened areas are not closed.
-  Use this button to hide the subareas of the modules again.

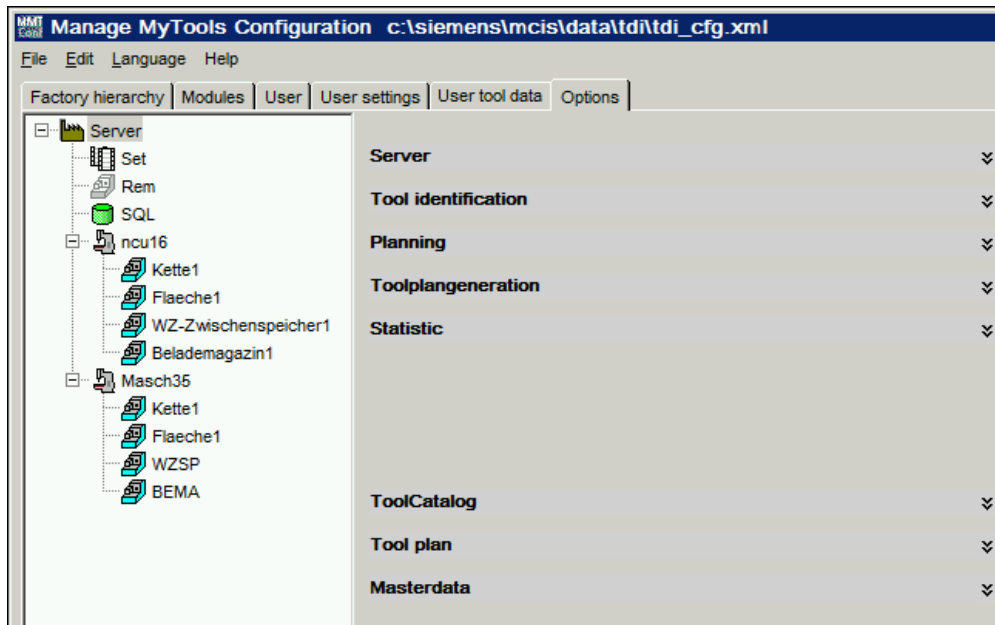


Figure 3-46 Options

**Example: Showing statistics options**

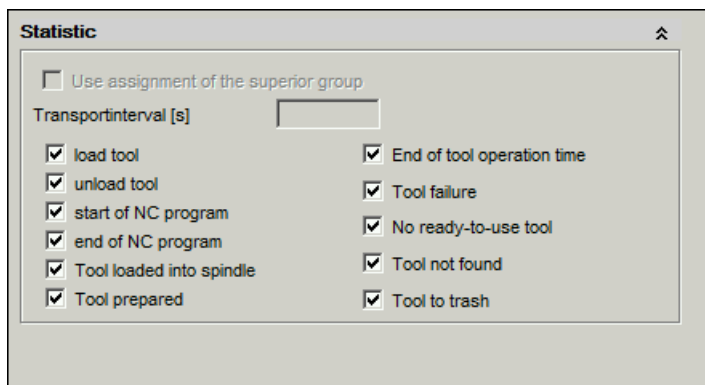


Figure 3-47 Option handling functions

**3.3.7.1 Server**

The settings for the servers are defined globally.

**Settings**

|                          | Meaning  |
|--------------------------|--|
| Manage MyTools server IP | If redundant servers are used for the plant configuration, the IP addresses of the servers must be configured for the coexistence check. |

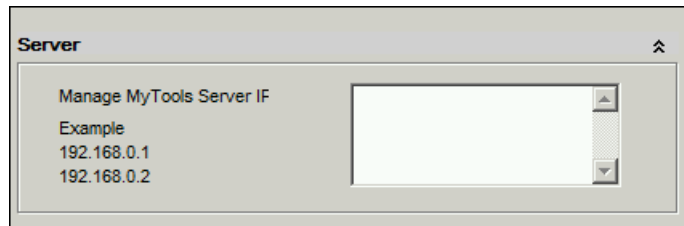


Figure 3-48 Server options

### 3.3.7.2 Planning

The settings for automatic balancing can be defined globally, group-specifically and per configured unit.

#### Settings

|               | Meaning  |
|---------------|--|
| CycleTime     | Min. time in hours between two balance calculations of a machine<br>Default setting: Four hours  |
| ToolTypeLimit | Max. number of tools of each type<br>No default value  |
| TimeLimit     | Balance calculation period in hours<br>No default value  |
| ToolLimit     | Maximum count<br>No default value  |
| Full balance  | A difference list is created when the option is deselected.  |
| WorkMix       | Machining sequences are executed sequentially when the option is deselected.<br>Machining sequences are executed simultaneously when the option is selected. |

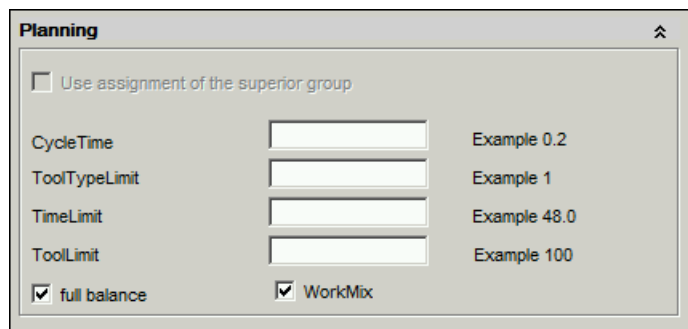


Figure 3-49 Planning options

3.3.7.3 Tool plan generation

The settings for the tool plan generation can be defined globally, group-specifically and per configured unit.

Settings

|                            | Meaning  |
|----------------------------|--|
| M function                 | An M function must be reserved for each NC channel to guarantee the functional capability of tool plan generation. The M function may not have more than three numbers (M999) and may not be used elsewhere. |
| Tool plan generation mode: | Reaction of the tool plan generation when the determined tool operating times are zero:  |
|                            | 0   All tools are displayed, even those with operating times = zero  |
|                            | 1   Only tools with operating times > zero are displayed   |
|                            | 2   Project-specific solution  |
|                            | 3   Reserved   |

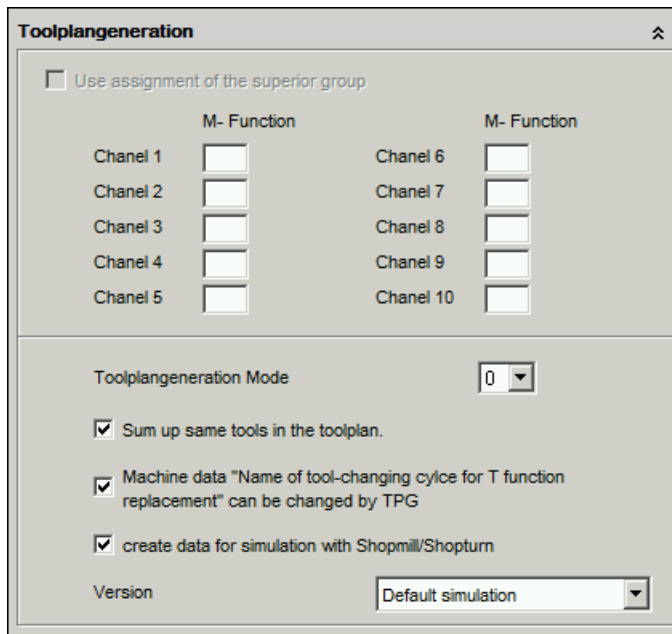


Figure 3-50 Tool plan generation options

### 3.3.7.4 Statistics

The events for statistics can be defined globally, group-specifically and per configured unit. The transport interval can be defined per configured unit.

#### Settings

|                    | Meaning  |
|--------------------|--|
| Transport interval | The transport interval describes the time on a unit (in seconds) between the sending of statistic events to the master computer.   |
| Event filter       | Event filters of the statistics table are set by activating the appropriate checkboxes. Selected events are displayed, events that are not selected are deactivated.<br><br>If no checkbox is activated, no filtering is performed and all events are displayed. |

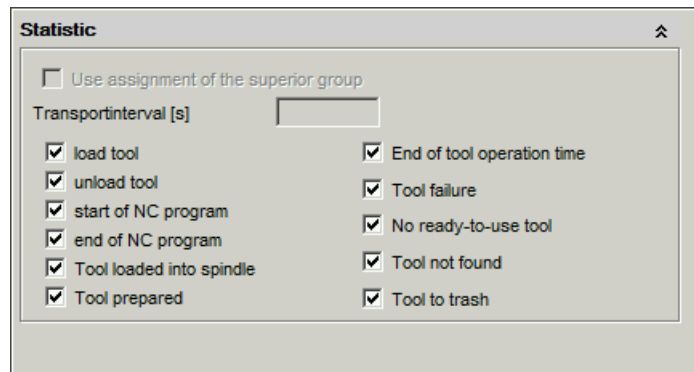


Figure 3-51 Statistics options

### 3.4 Overview

#### Overview

The overview area is used to acquire and clearly display the actual tool data of the connected machines and tool magazines/stores. Navigation is performed in an Explorer structure showing all connected plant components. The current tool data is displayed according to the selected components and the user-friendly filters.

In addition to this, various basic functions that can be used to edit the tool data are available.

The overview area is available in interconnected operation with a Manage MyTools server and also on individual machines.

The overview area is integrated in the HMI Pro for Transline 2000.

#### 3.4.1 Actual tool data - overview

##### "Actual Tool Data" window

The "Actual Tool Data" window is opened via the "Actual tool data" softkey. All the actual data of the connected tool storage locations is displayed here, and the tool magazines and the external tool cabinets are listed.

- The plant components appear in a tree structure (Explorer view) on the left-hand side of the window.
- The tool data for the selected plant components appears in a table on the right-hand side.

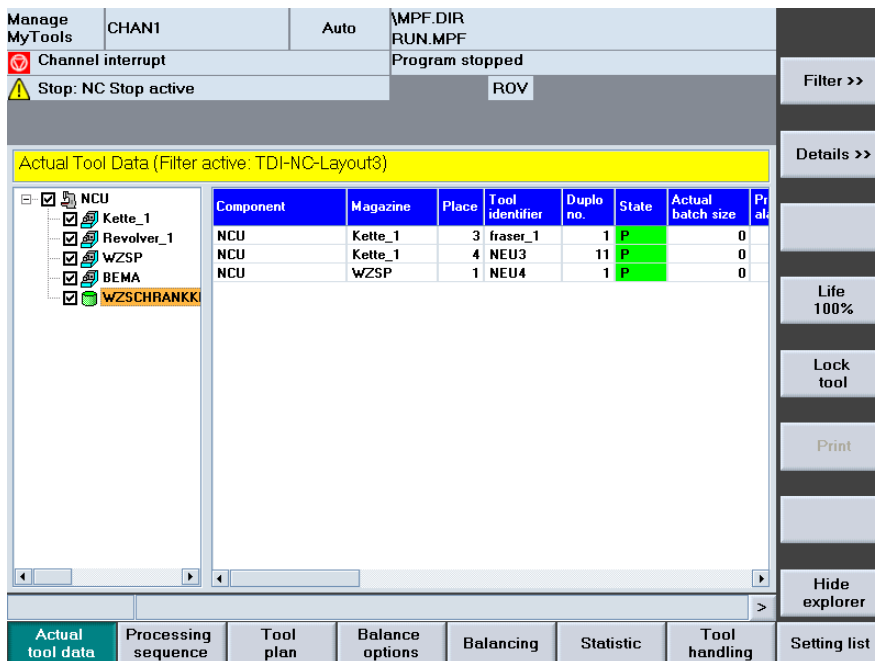























Figure 3-52 Overview of the actual tool data



### Icons in the plant overview

The following component states are displayed as icons in the plant overview.

| Component                   | State  |  |  |
|-----------------------------|--|--|--|
|                             | Normal   | Fault  | Synchronization running  |
| Plant                       |   |   |   |
| Group                       |   |   |   |
| Unit/machine                |   |   |   |
| Container/magazine          |   |   |   |
| External container/magazine |   |   |   |
| Removal container/magazine  |   |   |   |
| Setting container           |  |  |  |

#### State description

|                         |   |
|-------------------------|---|
| Normal                  | The communication with this plant component is "online" and the actual tool data can be displayed and edited. |
| Fault                   | The communication with this plant component is faulted. No data can be displayed and edited.                  |
| Synchronization running | All tool data of the respective storage location is read once when the system boots.                          |

#### Tool state: Meaning of abbreviation

The bit-coded tool state is represented by a letter and a color code in the "State" column.

| Color  | Meaning                  | Letter for the display |
|--------|--------------------------|------------------------|
| Green  | Enabled                  | E                      |
| Red    | Disabled                 | D                      |
| Yellow | Prewarning limit reached | P                      |

### Description of softkeys

The following functions are provided via the vertical softkeys:

| Softkey         | Meaning   |
|-----------------|---|
| Filter >>       | Open window, for defining selection filters and for selecting the columns displayed in the list.  |
| Details ...     | Display details of the selected tool. A distinction is made between NC data and PLC data. Some of the data displayed can be edited.   |
| Tool life 100%  | Reset the tool life to 100% after replacing tools of the same type.<br>Actual tool life / actual unit quantity of the selected tool is set as follows: <ul style="list-style-type: none"> <li>• For NCU counting method: To the appropriate target tool life / target unit quantity</li> <li>• For TL2000 counting method: To zero</li> </ul> |
| Block tool      | Block selected tool for further use.  |
| Explorer on/off | Display and hide the tree representation of the plant components.   |









The "Details", "Tool life 100%" and "Block tool" buttons refer to the tool selected in the list and are only active when a tool has been selected.

#### Note

You can protect the "Tool life 100%" and "Block tool" functions via access levels / rights administration.

The following keys are available for operation of the control and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|    | Use the TAB key to switch between the Explorer view and table format.  |
|   | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.   |
|   | Use the up/down arrow keys to move the cursor up and down within the Explorer.   |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection. |
|   | Within the actual tool data list, use the arrow keys to move the cursor up or down.  |



Displays the defined columns.

The list of the available columns can however be larger than that of the selected columns.

Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area.



Use the <P> key to make the Explorer window and the table columns wider.



Use the <M> key to make the Explorer window and the table columns narrower.

## 3.4.2 Actual tool data - filter

### Overview

This window is divided into three areas:

- Standard
- View
- Layout

Use horizontal softkeys or tabs to select the areas. All of the settings are assigned to the filter displayed in the selection box.

You can add or delete filters from any of the areas.

### Procedure for creating a filter

1. Select an area.
2. Press the "New filter" softkey.  
The "Table Format" window opens.
3. Enter a filter name and observe the following:
  - Only letters, numbers and underscore (\_) may be used.
  - The name can be no longer than 40 characters.
  - All names must be unique.
4. Press the "OK" softkey.  
The data is accepted and a new filter is created.  
If the window cannot be closed, check the filter name.
  - OR -
  - Press the "Cancel" softkey.  
A new filter is not created, all entries are rejected and the "Actual Tool Data / Filter" window is opened again.

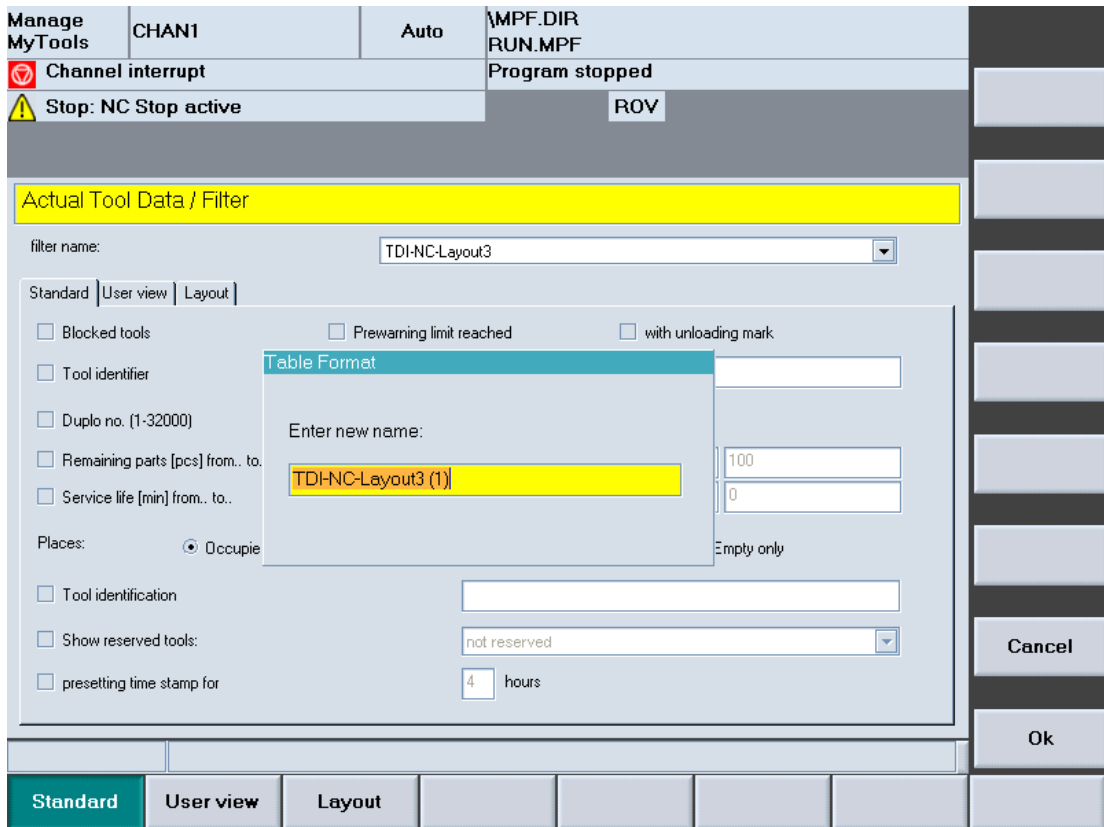


Figure 3-53 New filter

**Note**

If the maximum number of filters has been reached, a new filter can only be created by overwriting an existing one. If this is the case, a list of the existing filters is also displayed in addition to the input box for the name.

### Procedure for deleting a filter

1. Select the table format.
2. Press the "Delete filter" softkey.  
A prompt will be displayed.
3. Press the "OK" softkey to irrevocably delete the filter.  
- OR -  
Press the "Cancel" softkey to not delete the filter.

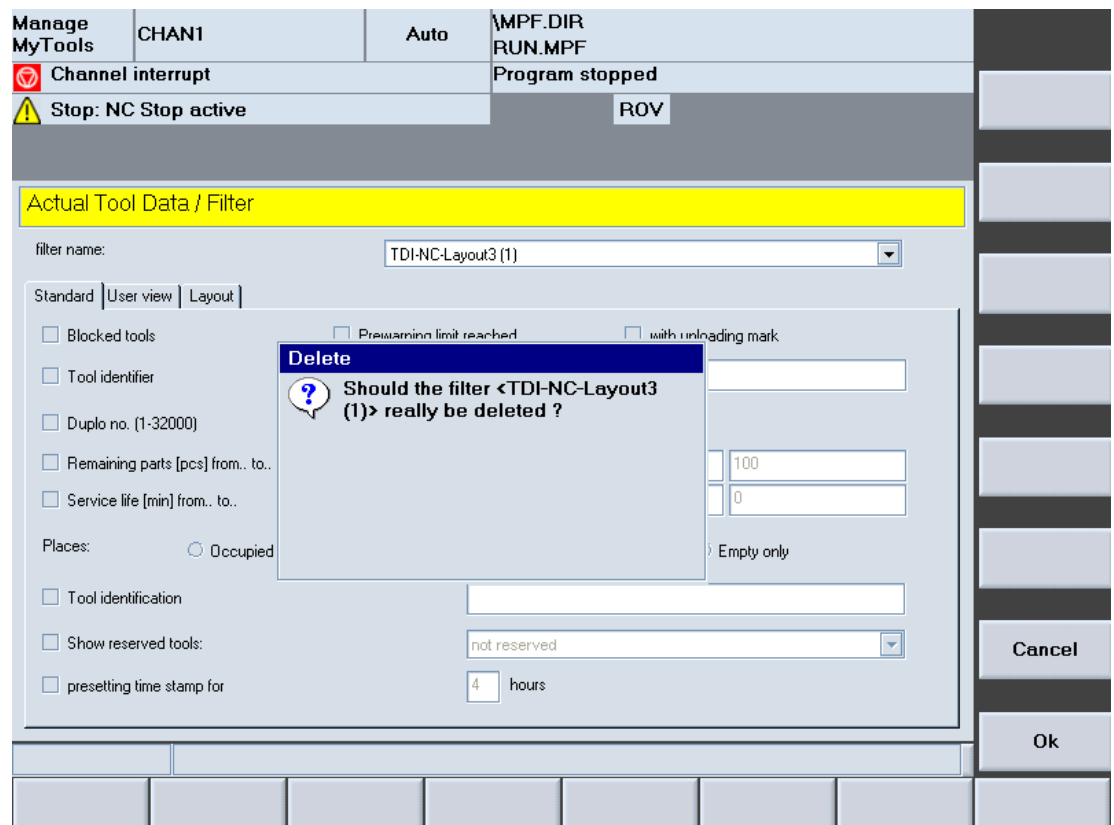


Figure 3-54 Delete filter

#### 3.4.2.1 Standard filter area

### Overview

The filter settings for the actual tool data to be displayed are defined in the "Standard" area. Apart from one exception (see below), all filter criteria are ANDed. The more criteria you define, the more refined searches for specific tools will be.

**Filter settings**

|   | <b>Meaning</b>   |
|---|--|
| Blocked tools   | Show broken, worn out or blocked tools.  |
| Prewarning limit reached  | Show all tools that reach the prewarning limit.  |
| Tool identifier   | The identifier is entered manually.<br>An asterisk (*) can be used as a wildcard. For example, enter "Drill*" for all tools whose identifier starts with "Drill", e.g. Drill 10 mm, Drill 14 mm, etc.<br>The tool identifier filter is case-sensitive. |
| Duplo no. (1-32000)   | Show all tools with the specified duplo number.  |
| Residual unit quantity (count) from.. to..  | Show all tools with a residual unit quantity within the specified range.   |
| Residual tool life (min.) from.. to..   | Show all tools with a residual tool life within the specified range.   |
| Locations <ul style="list-style-type: none"> <li>• Occupied</li> <li>• All (default)</li> <li>• Only empty</li> </ul> |  |
| Show reserved tools   | Show tools that have been reserved for the machine specified in the drop-down list.  |
| "Setting time since ... hours   | Show only tools that have been set within the specified period.  |

**Note**

If you activate the following filters in parallel, only those tools are shown that satisfy the one or the other criterion:

- Blocked tools
- Prewarning limit
- Residual unit quantity (count) from.. to..
- Residual tool life (min.) from.. to..

**Example: Search with an asterisk (wildcard)**

The wildcard is used as a placeholder for any number of characters in the character string, e.g. for tool identifiers:

All tools that contain the fragment "01" in the tool identifier are displayed in the overview of the actual tool data. The following tool identifiers are available:

| Available tools | Input of the search term (tool identifier) | Filtered display |
|-----------------|--|------------------|
| 0103007         | *01*                                       | 0103007          |
| 0106009         |  | 0106009          |
| 0302002         |  | 0201002          |
| 0201002         |  | TK01234          |
| TK01234         |  |                  |

**Example: Search with question mark (?)**

The question mark is used as a placeholder for exactly one character in the character string, e.g. for tool identifiers:

The actual tool data of all tools that contain the fragment "01" at the 2nd and 3rd position in the tool identifier are to be displayed.

| Available tools | Input of the search term (tool identifier) | Filtered display |
|-----------------|--|------------------|
| 0103007         | ??01???                                    | 0201002          |
| 0106009         |  | TK01234          |
| 0302002         |  |                  |
| 0201002         |  |                  |
| TK01234         |  |                  |

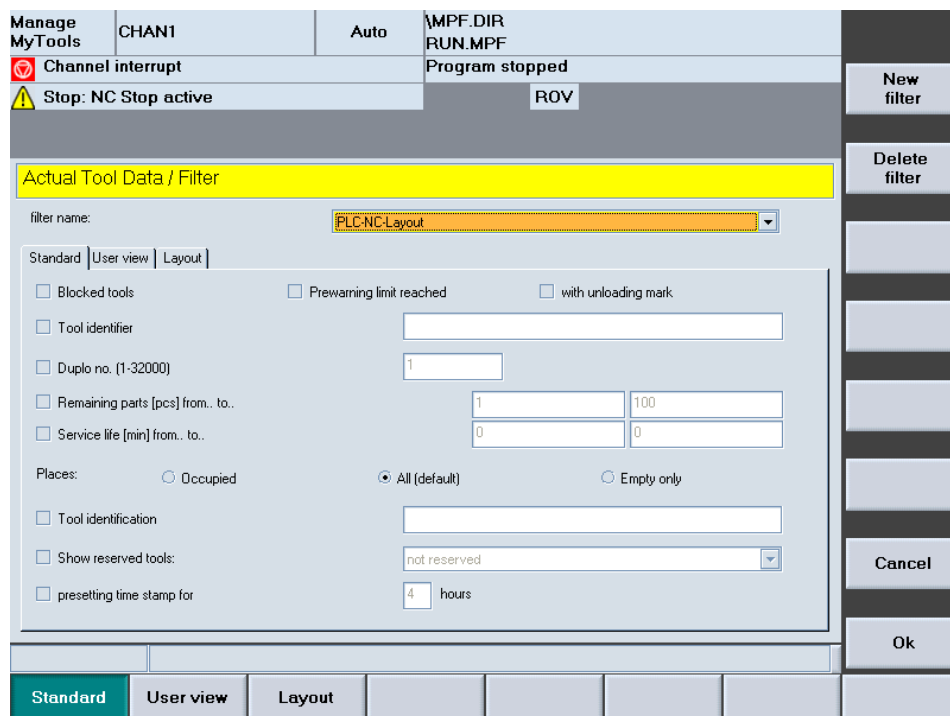


Figure 3-55 Standard filter area

3.4.2.2 View filter area

Overview

You adapt the plant view in the "View" area.

Plant views

|  |        | Meaning   |
|--|--------|---|
| Plant view                             |        | Three plant views are available for selection:  |
|  | AREA   | Display without restrictions.   |
|  | H-UNIT | The machine and all higher-level containers assigned to the machine are displayed.  |
|  | UNIT   | Only the machine you are working on is displayed.   |
| Permissible plant view                 |        | Restrict plant view for the respective user group depending on the rights assigned (configuration).                       |
|  | AREA   | No restrictions, all views permitted.   |
|  | H-UNIT | H-UNIT and UNIT views permitted.  |
|  | UNIT   | Only UNIT view permitted.   |
| Restore drop-down list in the Explorer |        | Still select plant components that have been selected in the Explorer list, if these are still available in the new view. |

Note

If a view that is not permitted is selected, this selection is ignored and reset when the window is exited.

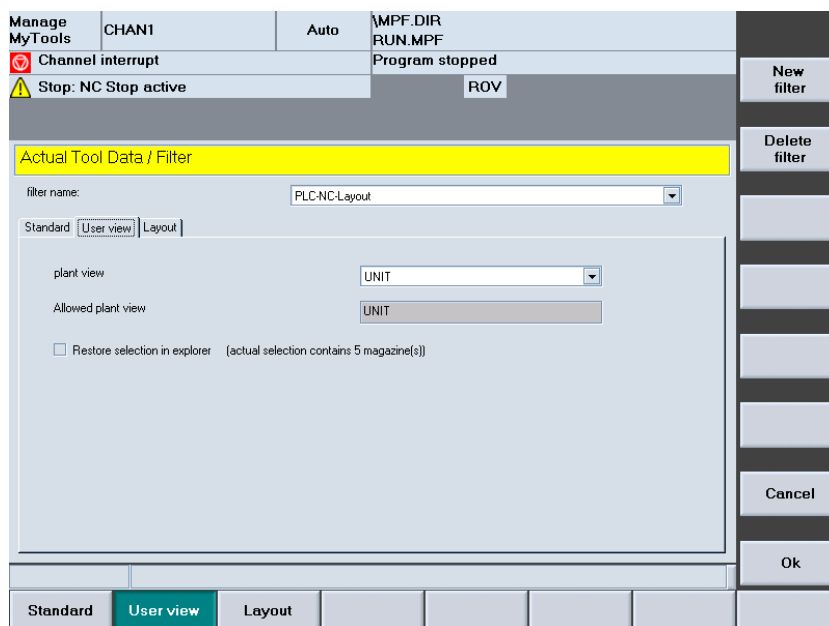


Figure 3-56 View filter area



### 3.4.2.3 Layout filter area

#### Overview

You define the layout of the table in the "Layout" area.

#### Settings

|                   | Meaning   |
|-------------------|---|
| Available columns | The list box shows all tool data that has not been selected.                            |
| Visible columns   | The list box shows the values displayed for each tool in the actual tool data overview. |

#### Procedure

1. Move all columns that are displayed in the table to the "Visible columns" list box. The arrow symbol between the two list boxes indicates in which direction the tool data selected in the list can be moved.
2. Press the "Up one column" or "Down one column" softkey to define the sequence. The top item in the list corresponds to the first left-hand column in the table.

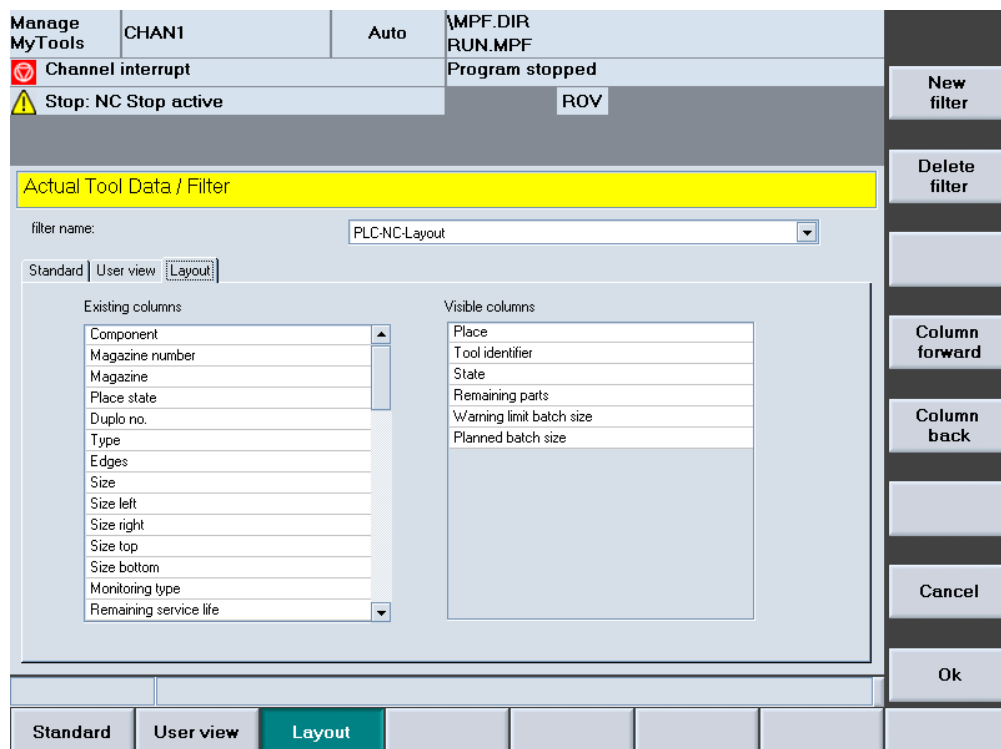


Figure 3-57 Layout filter area

**List display: Possible columns**

Various table views are predefined to simplify this task.

The following displays can be selected:

1. For operation with a CNC and standard tool management:
  - MMT NC layout 1 = display of the residual unit quantity
  - MMT NC layout 2 = display of the residual tool life
2. For operation with a PLC-based tool management (if you are using HMI PRO):
  - PLC TL layout = determination of the actual unit quantity corresponds to the Transline counting method.
  - PLC NC layout = determination of the actual unit quantity corresponds to the CNC counting method.
3. For mixed operation of CNC with standard tool management and PLC-based tool management.
  - MMT NC layout 3

**Predefined columns for Transline**

| No. | Overview of programmed | Transline PLC, counting method as TL2000 (PLC TL layout) | Transline PLC, counting method as NC (PLC NC layout) |
|-----|------------------------|--|--|
| 1   | Component              | Predefined   | Predefined   |
| 19  | C no.                  | Location (5)   | Location (5)   |
| 3   | Container              | Tool identifier (6)                                      | Tool identifier (6)                                  |
| 5   | Location               | State (8)  | State (8)  |
| 6   | Tool identifier        | Actual unit quantity (28)                                | Residual unit quantity (16)                          |
| 7   | Duplo no.              | Pre-alarm (29)   | Warning limit for unit quantity (30)                 |
| 14  | Cutting edges          | Target unit quantity (27)                                | Target unit quantity (27)                            |
| 10  | Monitoring             | Extended alarm (32)                                      |  |
| 16  | Residual unit quantity | Residual unit quantity (16)                              |  |
| 15  | Residual tool life     |  |  |
| 12  | NC prog.               |  |  |
| 13  | Access                 |  |  |
| 17  | Target                 | Residual columns   | Residual columns                                     |
| 18  | Provision              | Component (1)  | Component (1)  |
| 8   | State                  | C no. (19)   | C no. (19)   |
| 25  | Location state         | Container (3)  | Container (3)  |
| 24  | B                      |  |  |
| 21  | L                      |  |  |
| 22  | R                      |  |  |
| 23  | T                      |  |  |

| No. | Overview of programmed          | Transline PLC, counting method as TL2000 (PLC TL layout) | Transline PLC, counting method as NC (PLC NC layout) |
|-----|---------------------------------|--|--|
| 26  | Target tool life                |  |  |
| 27  | Target unit quantity            |  |  |
| 28  | Actual unit quantity            |  |  |
| 29  | Pre-alarm                       |  |  |
| 30  | Warning limit for unit quantity |  |  |
| 31  | Warning limit for tool life     |  |  |
| 32  | Extended alarm                  |  |  |
| 9   | Type                            |  |  |

### Predefined columns for unit quantity, tool life and mixed operation

| No. | Overview of programmed | MMT unit quantity (MMT NC layout 1)  | MMT tool life (MMT NC layout 2)  | NC/PLC mixed operation (MMT NC layout 3) |
|-----|------------------------|--------------------------------------|----------------------------------|--|
| 1   | Component              | Predefined                           | Predefined                       | Predefined                               |
| 19  | C no.                  | C no. (19)                           | C no. (19)                       | Component (1)                            |
| 3   | Container              | Location (5)                         | Location (5)                     | Container (3)                            |
| 5   | Location               | Tool identifier (6)                  | Tool identifier (6)              | Location (5)                             |
| 6   | Tool identifier        | Duplo no. (7)                        | Duplo no. (7)                    | Tool identifier (6)                      |
| 7   | Duplo no.              | Type (9)                             | Type (9)                         | Duplo no. (7)                            |
| 14  | Cutting edges          | State (8)                            | State (8)                        | State (8)                                |
| 10  | Monitoring             | Residual unit quantity (16)          | Residual tool life (15)          |  |
| 16  | Residual unit quantity | Warning limit for unit quantity (30) | Warning limit for tool life (31) |  |
| 15  | Residual tool life     | Target unit quantity (27)            | Target tool life (26)            |  |
| 12  | NC prog.               |                                      |                                  |  |
| 13  | Access                 |                                      |                                  |  |
| 17  | Target                 | Residual columns                     | Residual columns                 | Residual columns                         |
| 18  | Provision              | Component (1)                        | Component (1)                    | C no. (19)                               |
| 8   | State                  |                                      |                                  | Cutting edges (14)                       |
| 25  | Location state         | Container (3)                        | Container (3)                    | Monitoring (10)                          |
| 24  | B                      | Cutting edges (14)                   | Cutting edges (14)               | Residual unit quantity (16)              |
| 21  | L                      | Monitoring (10)                      | Monitoring (10)                  | Residual tool life (15)                  |
| 22  | R                      | NC prog. (12)                        | NC prog. (12)                    | NC prog. (12)                            |
| 23  | T                      | Residual tool life (15)              | Residual unit quantity (16)      | Access (13)                              |

3.4 Overview

| No. | Overview of programmed          | MMT unit quantity (MMT NC layout 1) | MMT tool life (MMT NC layout 2)      | NC/PLC mixed operation (MMT NC layout 3) |
|-----|---------------------------------|-------------------------------------|--------------------------------------|--|
| 26  | Target tool life                | Access (13)                         | Access (13)                          | Location state (25)                      |
| 27  | Target unit quantity            | Location state (25)                 | Location state (25)                  | B (24)                                   |
| 28  | Actual unit quantity            | B (24)                              | B (24)                               | L (21)                                   |
| 29  | Pre-alarm                       | L (21)                              | L (21)                               | R (22)                                   |
| 30  | Warning limit for unit quantity | R (22)                              | R (22)                               | T (23)                                   |
| 31  | Warning limit for tool life     | T (23)                              | T (23)                               | Target tool life (26)                    |
| 32  | Extended alarm                  | Target tool life (26)               | Target unit quantity (27)            | Target unit quantity (27)                |
| 9   | Type                            | Warning limit for tool life (31)    | Warning limit for unit quantity (30) | Actual unit quantity (28)                |
|     |                                 |                                     |                                      | Pre-alarm (29)                           |
|     |                                 |                                     |                                      | Warning limit for unit quantity (30)     |
|     |                                 |                                     |                                      | Warning limit for tool life (31)         |
|     |                                 |                                     |                                      | Extended alarm (32)                      |
|     |                                 |                                     |                                      | Type (9)                                 |








Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey         | Meaning  |
|-----------------|--|
| New filter      | Displays an input window where you can enter the name of a new filter.   |
| Delete filter   | Deletes the current filter after a prompt.   |
| Up one column   | Moves the line selected in the "Visible columns" list up one position.<br>In the table view, this moves the associated column one position to the left.    |
| Down one column | Moves the line selected in the "Visible columns" list down one position.<br>In the table view, this moves the associated column one position to the right. |
| Cancel          | Discard previously entered data and display the previous window with the overview.   |
| OK              | Save the settings and display the previous window with the overview.   |

The following keys are available for operation of the controller and the machine tool.

## Keys and functions

| Key   | Function  |
|---|---|
|    | Use the <TAB> key to jump from one field to the next.   |
|   | Use the arrow keys to move the cursor from input field to input field. In the "Available columns" and "Visible columns" list, move the tool data from the active to the inactive table. |
|   |   |
|    | Use the <SELECT> key to make a selection or deselection   |
|   | Use the <INPUT> key to complete the inputs in the fields. Text fields whose associated checkboxes have not been activated, cannot be accessed.  |

### 3.4.3 Actual tool data - details

#### Overview

Select a tool in the tool list and press the "Details>>" softkey to access geometry and technology data.

A scroll bar may appear depending on the number of data items.

The window is divided into a number of sections each separated with a yellow divider bar.

#### General tool data

|                    | Meaning   |
|--------------------|---|
| Location           | Only display, no selection possible.  |
| Tool identifier    | Only display, no selection possible.  |
| Duplo no.          | Only display, no selection possible.  |
| Tool location type | The tool location type defines the kind of location in the magazine. The selected tool can only be loaded (changed) to a location of the appropriate type. For additional details, refer to the description of the standard tool management of SINUMERIK. |
| <Graphics>         | When a SINUMERIK with standard tool management is used, a tool graphic of the selected tool is displayed depending on the tool type.  |

|       | Meaning/selection   |
|-------|---|
| State | <p>Changing the state of a tool.</p> <p>After selecting the "Change data" softkey and the state field, a window to select the state is opened when the Return key is pressed.</p> <p>See the following figure "Changing the tool state".</p>  |
|       | <p>You can select the following states:</p> <ul style="list-style-type: none"> <li>• Active tool (A)</li> <li>• Enabled (E) *</li> <li>• Disabled (D) *</li> <li>• Measure (M) *</li> <li>• Prewarning limit reached (P)</li> <li>• Tool being changed (C)</li> <li>• Fixed-location-coded (F)</li> <li>• Tool has been used (E)</li> <li>• To be unloaded (U) *</li> <li>• To be loaded (L) *</li> <li>• Master tool</li> </ul> <p>Multiple states can be selected. The states marked with *) are represented by the letter (abbreviation) in the display field.</p> |

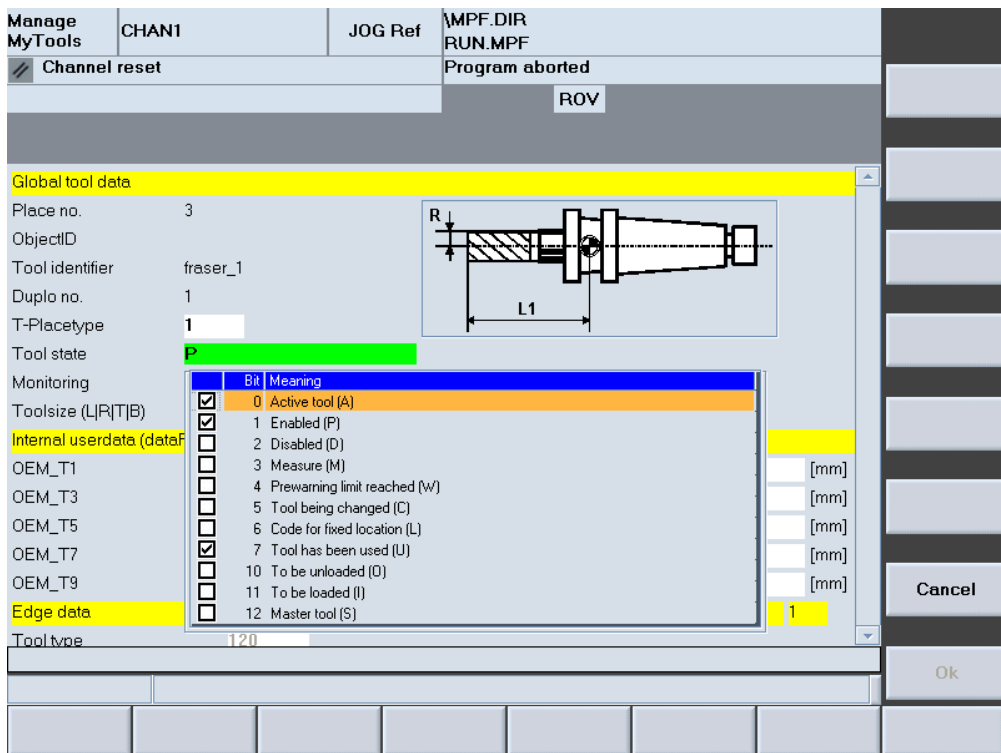


Figure 3-58 Changing the tool state

For a description of the individual states, refer to the following literature:

## References

Function Manual, Tool Management

|                     | Meaning/selection   |
|---------------------|---|
| Monitoring          | You can select from the following monitoring settings: <ul style="list-style-type: none"> <li>• No monitoring</li> <li>• Tool life</li> <li>• Quantity</li> </ul> |
| Tool size (L R T B) |   |
| Internal user data  | The type and quantity of the data displayed here depends on the OEM data on the target machine.   |

|                                  | Meaning/selection  |
|----------------------------------|--|
| Cutting edge data                | <p>Display and partly change the following data for each cutting edge:</p> <ul style="list-style-type: none"> <li>• Tool type</li> <li>• Tool length compensation <ul style="list-style-type: none"> <li>– Geometry (this data cannot be modified)</li> <li>– Wear</li> <li>– Base (this data cannot be modified)</li> <li>– Unit (this data cannot be modified)</li> </ul> </li> <li>• Tool radius correction: <ul style="list-style-type: none"> <li>– Geometry</li> <li>– Wear</li> </ul> </li> <li>• Monitoring data (unit quantity / tool life) <ul style="list-style-type: none"> <li>– Residual value</li> <li>– Setpoint</li> <li>– Prewarning limit</li> </ul> </li> </ul> <p>Depending on the number of cutting edges or the tool type, additional data may be available. If this is the case, a scroll bar appears.</p> <p>A sand clock will be displayed while the tool data is being loaded. An error message will be issued if an error occurs during the loading.</p> |
| External tool supplementary data | <p>Details for the following data:</p> <ul style="list-style-type: none"> <li>• Tool description</li> <li>• Comments about the tool</li> </ul>   |
| Check limit values               | The input fields can have limit values. These values are displayed in the status line. If you violate the input limit, the status line will indicate this. You can exit the input field only when the value is correct.  |

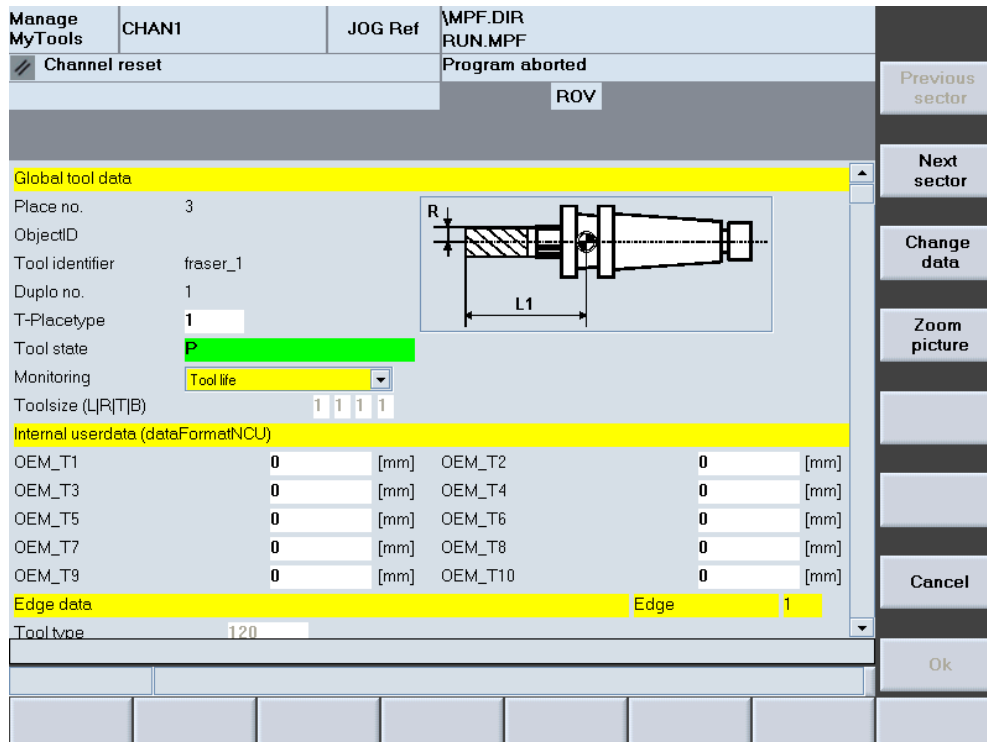


Figure 3-59 NC details

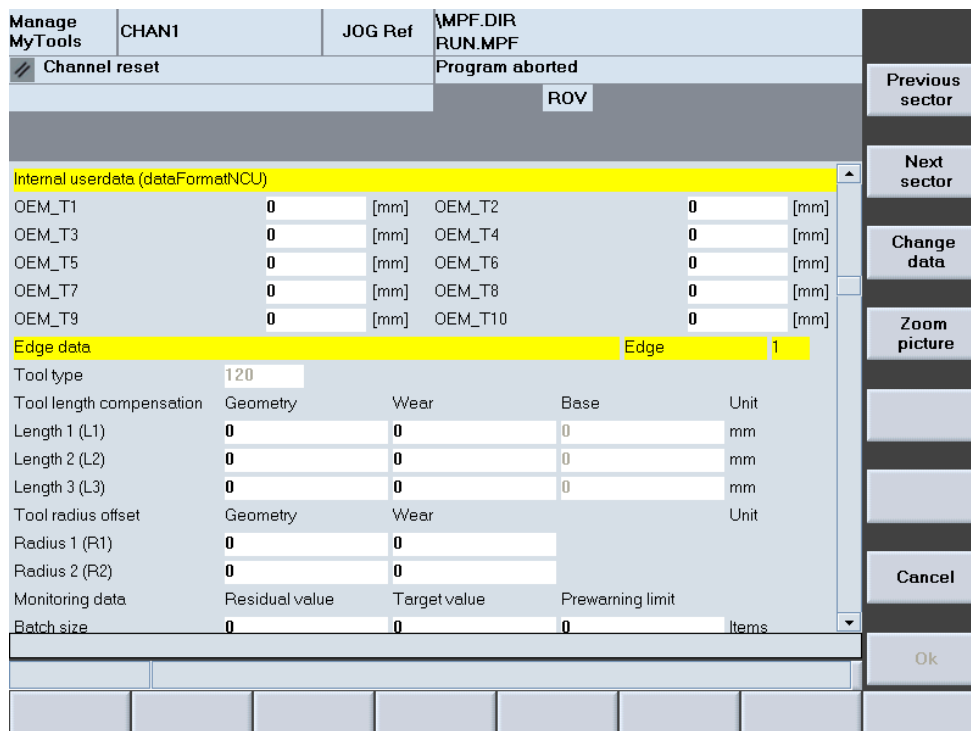


Figure 3-60 NC details








## Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey          | Meaning   |
|------------------|---|
| Previous section | To view further tool data, scroll the screen view down one section.                   |
| Next section     | Scroll screen view up one section.  |
| Change data      | Allows data to be changed.<br>Prerequisite:<br>The appropriate access rights are set. |
| Zoom screen      | Increase or decrease the size of the tool icon screen.                                |
| Cancel           | Discard previously entered data and display the previous window with the overview.    |
| OK               | Save the settings and display the previous window with the overview.                  |

The following keys are available for operation of the controller and the machine tool.

## Keys and functions

| Key   | Function   |
|---|--|
|   | Use the arrow keys to move the cursor from input field to input field.<br>In the "Available columns" and "Visible columns" list, move the tool data from the active to the inactive table. |
|   |  |
|    | Use the <INPUT> key to complete the inputs in the fields. Text fields whose associated checkboxes have not been activated, cannot be accessed.   |

## 3.5 Tool handling

### Overview

The tool handling area can be used to display all tool handling operations within a plant.

Loading/unloading and changeovers are performed on the machine or a tool store, and the tool data taken over from a tool setting station.

Any containers within a plant can be involved in the processes.

The tool handling area is available in interconnected operation with a Manage MyTools server and also on individual machines, e.g. for tool data transfer from a tool setting station.

### 3.5.1 Tool handling - selection

#### Overview

The "Tool Handling / Selection" window is opened via the "Tool handling" softkey.

The "Tool Handling / Selection" window is divided into two sections.

- The top window section displays an Explorer view of all the tool magazines positioned above the local component (operating / installation location) within the plant hierarchy.
- The local plant component is displayed in the lower window section.

It is also possible to display all of the components in the plant tree by changing between different views.

---

#### Note

##### Lower window section

In the CNC version, the view of the local component (unit) is always displayed.

In the PC version, the view of the overall plant is displayed, corresponding to the configuration setting.

---

Figure 3-61 Tool handling - selection

Depending on the type of movement (loading or unloading), the top or bottom half of the display can be either the source or target of the movement.

You select the tools to be moved in the table (by activating the checkbox).

The tools selected in the table are added to the transfer list with the "Accept" softkey.

You can select either one or more tools, e.g. cartridge, tool carriage, loading magazine with more than one location, for the transfer list.

If you select only one tool (source), you can specify a particular target location by activating the appropriate box in the table. This is only possible if you have selected a single tool.

The source and target of the current movement combination are explicitly shown in the information line.

- Location
- Container

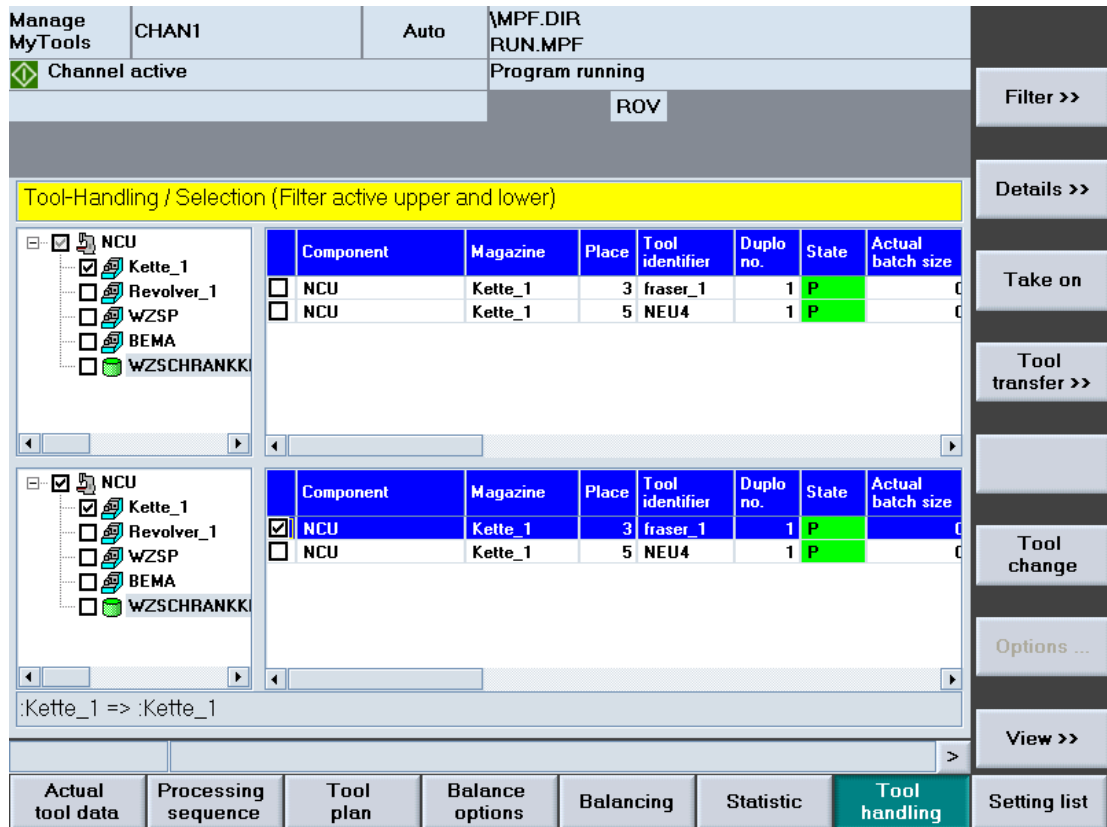


Figure 3-62 Tool handling with information line

**Note**

- You may only specify one machine as the target for tool movements.
- When tools are taken into the transfer list with "Accept", they can no longer be selected. The check marks are grayed out. You can only make changes in the "Organize Movements" window.
- If the choice of container to be displayed is changed in the Explorer, the tool selection for the deselected container is cancelled. A tool selection can be cancelled as long as you have not yet added the tools to the transfer list.
- The check marks for the selected tools which you have added to the transfer list remain set until handling has been completed.
- You can add to the transfer list at any time using the "Accept" softkey.
- One possible handling target is the removal container. Tools that are transferred to the removal container remain in the container list for only a limited period. This list can be made available to a higher-level tool management system for tool removal functions.

The actual tool data is displayed on the right-hand side of the window in the same format used for the actual tool data overview display.













See Section: Overview (Page 80)

## Description of softkeys

| Softkey          | Meaning  |
|------------------|--|
| Filter >>        | Window for defining selection filters and for selecting the columns displayed in the list.<br>The filter settings you make here are applicable only to the area of the window on which the cursor is positioned. |
| Details ...      | Display details of the selected tool. A distinction is made between NC data and PLC data. Some of the data displayed can be changed.   |
| Accept           | Add selected tool movements to the tool transfer list.   |
| Tool transfer >> | Open the list of all the current tool movements.   |
| Options..        | Window for the specification of various sequences for the tool movement.   |

The following keys are available for operation of the control and the machine tool.

## Keys and functions

| Key   | Function  |
|---|---|
|   | Use the TAB key to switch between the Explorer view and table format.   |
|   | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.  |
|   | Use the up/down arrow keys to move the cursor up and down within the Explorer.  |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection.  |
|   | Within the actual tool data list, use the arrow keys to move the cursor up or down.   |
|   | Displays the defined columns.<br>The list of the available columns can however be larger than that of the selected columns.<br>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area. |
|    | Use the <P> key to make the Explorer window and the table columns wider.  |
|    | Use the <M> key to make the Explorer window and the table columns narrower.   |

## 3.5.2 Tool handling - filter

### Overview

This window is divided into three areas:

- Standard
- View
- Layout

Use horizontal softkeys or tabs to select the areas. All of the settings are assigned to the filter displayed in the selection box.

Filters can be added or deleted from any of the areas.

### Procedure for creating a filter

1. Select an area.
2. Press the "New filter" softkey.  
The "Table Format" window opens.
3. Enter a filter name and observe the following:
  - Only letters, numbers and underscore ( \_ ) may be used.
  - The name can be no longer than 40 characters.
  - All names must be unique.
4. Press the "OK" softkey.  
The data is accepted and a new filter is created.  
If the window cannot be closed, check the filter name.
  - OR -
  - Press the "Cancel" softkey.  
A new filter is not created, all entries are rejected and the "Actual Tool Data / Filter" window is opened again.

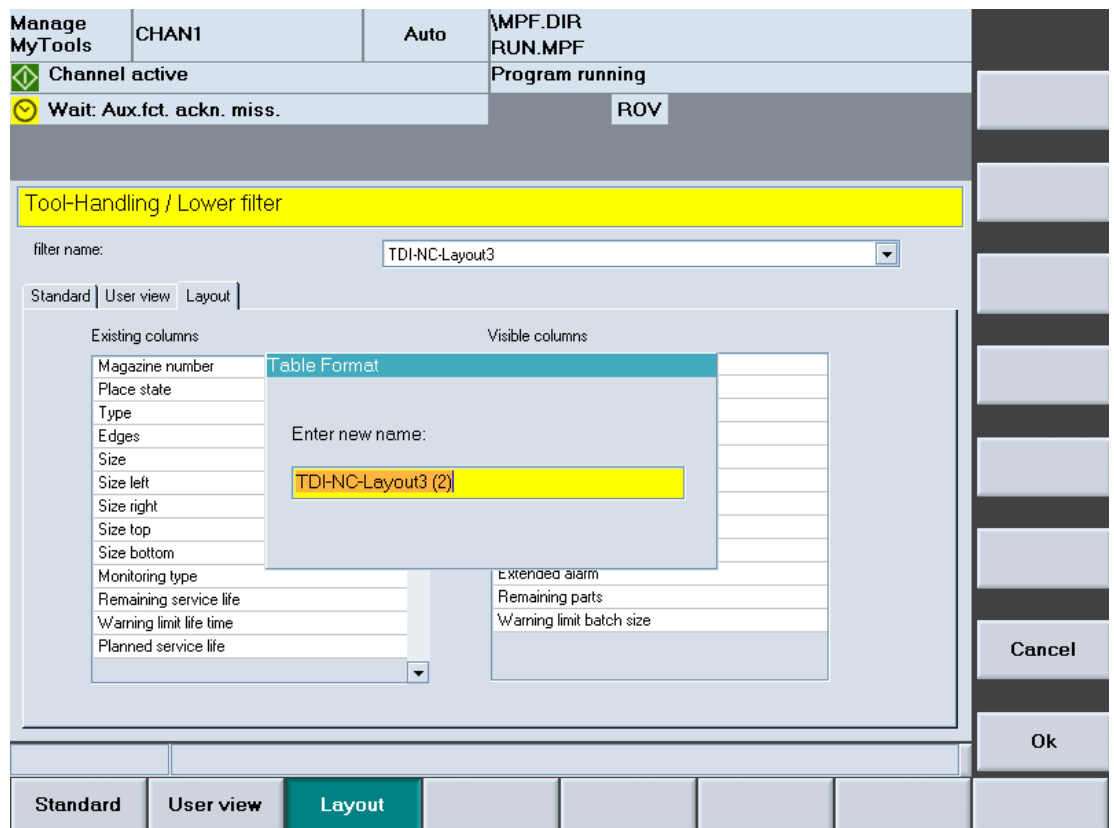


Figure 3-63 New filter

**Note**

If the maximum number of filters has been reached, a new filter can only be created by overwriting an existing one. If this is the case, a list of the existing filters is also displayed in addition to the input box for the name.

**Procedure for deleting a filter**

- 1. Select the table format.
- 2. Press the "Delete filter" softkey.  
A prompt will be displayed.
- 3. Press the "OK" softkey to irrevocably delete the filter.  
- OR -  
Press the "Cancel" softkey to not delete the filter.

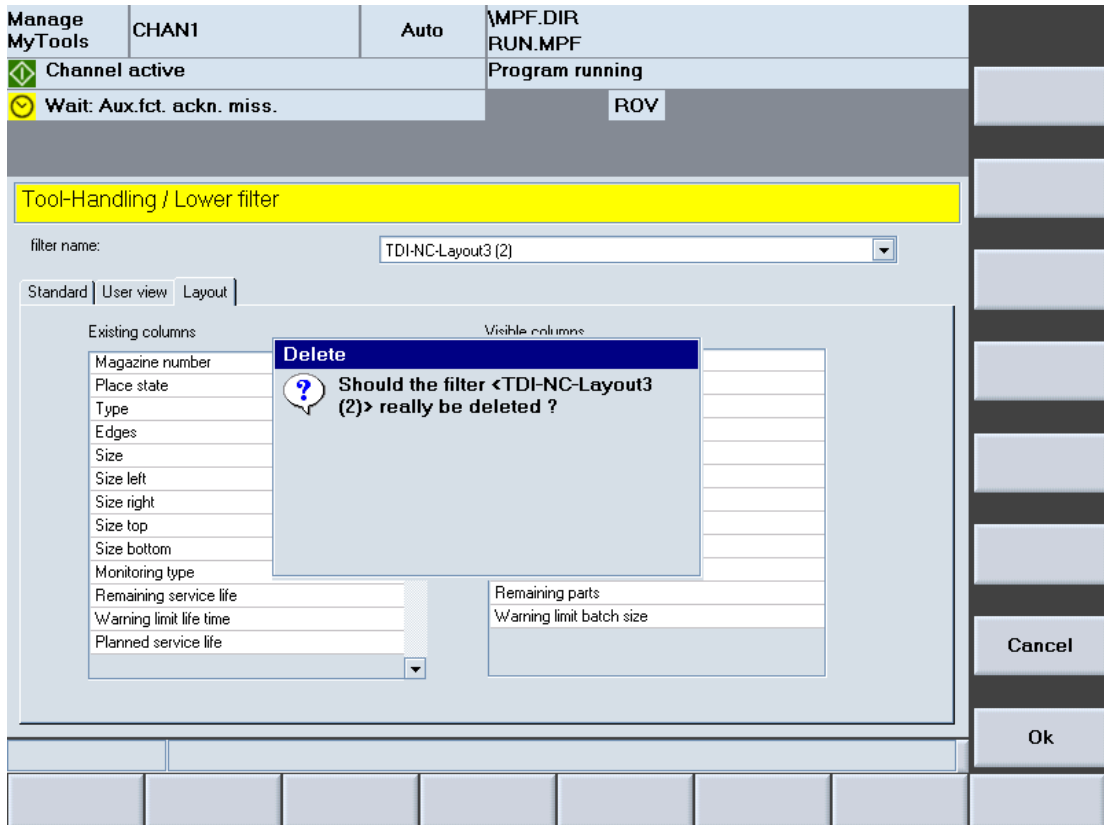


Figure 3-64 Delete filter

**3.5.2.1 Standard filter area**

**Overview**

The filter settings for the tool handling data to be displayed are defined in the "Standard" area. Apart from one exception (see below), all filter criteria are ANDed. The more criteria you define, the more refined searches for specific tools will be.



## Filter settings

|   | Meaning   |
|---|---|
| Blocked tools   | Show broken, worn out or blocked tools.   |
| Prewarning limit reached  | Show all tools that reach the prewarning limit.   |
| Tool identifier   | The identifier is entered manually.<br>An asterisk (*) can be used as a wildcard. For example, enter "Drill* " for all tools whose identifier starts with "Drill", e.g. Drill 10 mm, Drill 14 mm, etc.<br>The tool identifier filter is case-sensitive. |
| Duplo no. (1-32000)   | Show all tools with the specified duplo number.   |
| Residual unit quantity (count) from.. to..  | Show all tools with a residual unit quantity within the specified range.  |
| Residual tool life (min.) from.. to..   | Show all tools with a residual tool life within the specified range.  |
| Locations <ul style="list-style-type: none"> <li>• Occupied</li> <li>• All (default)</li> <li>• Only empty</li> </ul> |   |
| Show reserved tools   | Show tools that have been reserved for the machine specified in the drop-down list box.   |

### Note

If you activate the following filters in parallel, only those tools are shown that satisfy the one or the other criterion:

- Blocked tools
- Prewarning limit
- Residual unit quantity (count) from.. to..
- Residual tool life (min.) from.. to..

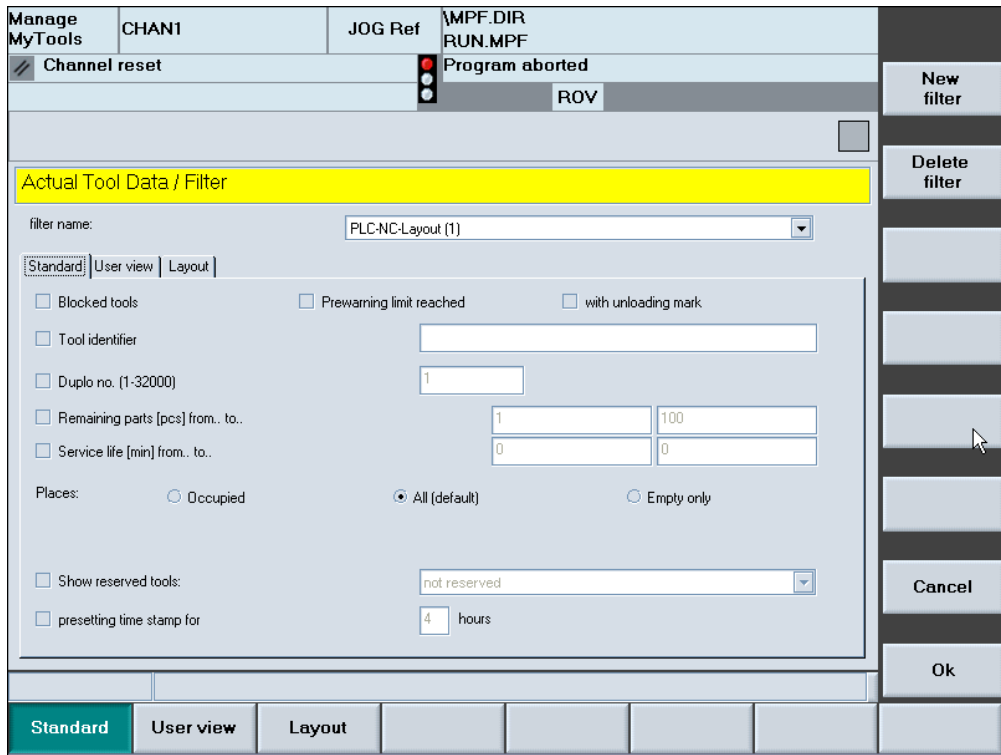


Figure 3-65 Standard filter area

### 3.5.2.2 View filter area

#### Overview

You adapt the plant view in the "View" area.

#### Plant views

|  |        | Meaning   |
|--|--------|---|
| Plant view                             |        | Three plant views are available for selection:  |
|  | AREA   | Display without restrictions.   |
|  | H-UNIT | The machine and all higher-level containers assigned to the machine are displayed.  |
|  | UNIT   | Only the machine you are working on is displayed.   |
| Permissible plant view                 |        | The plant view for the respective user group may be restricted depending on the rights assigned (MMT configuration).      |
|  | AREA   | No restrictions, all views permitted.   |
|  | H-UNIT | H-UNIT and UNIT views permitted.  |
|  | UNIT   | Only UNIT view permitted.   |
| Restore drop-down list in the Explorer |        | Still select plant components that have been selected in the Explorer list, if these are still available in the new view. |

**Note**

If a view that is not permitted is selected, this selection is ignored and reset when the window is exited.

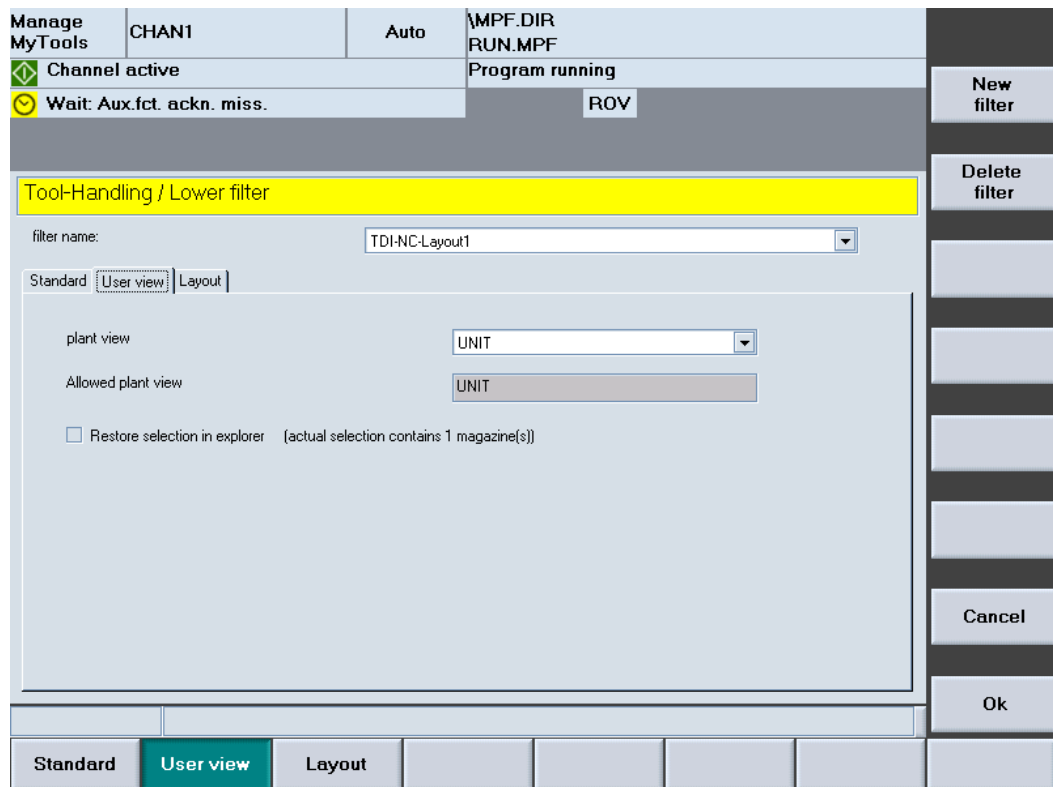


Figure 3-66 View filter area

**3.5.2.3 Layout filter area**

**Overview**

You define the layout of the table in the "Layout" area.

**Possible settings**

|                   | Meaning   |
|-------------------|---|
| Available columns | The list box shows all tool data that has not been selected.                |
| Visible columns   | The list box shows the values displayed for each tool in the tool handling. |

**Procedure**

1. Move all columns that are displayed in the table to the "Visible columns" list box. The arrow symbol between the two list boxes indicates in which direction the tool data selected in the list can be moved.
2. Press the "Up one column" or "Down one column" softkey to define the sequence. The top item in the list corresponds to the first left-hand column in the table.

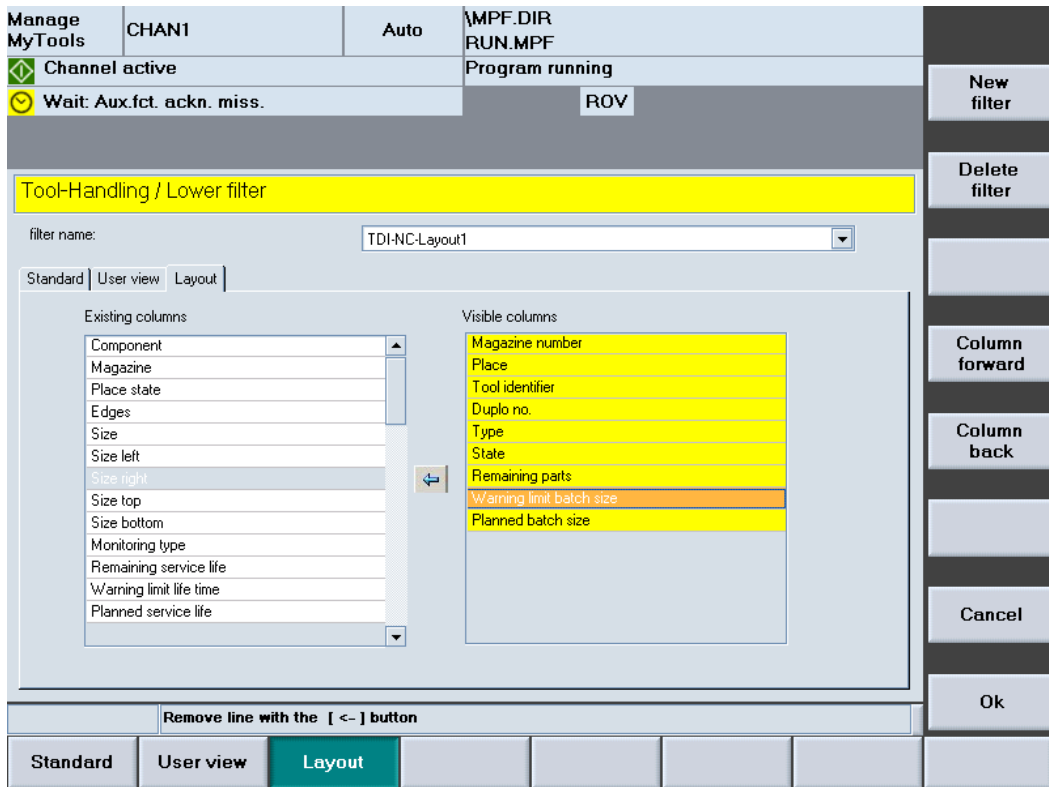


Figure 3-67 Layout filter area

**List display: Possible columns**

Various table views are predefined to simplify this task.

The following displays can be selected:

1. For operation with a CNC and standard tool management:
  - MMT NC layout 1 = display of the residual unit quantity
  - MMT NC layout 2 = display of the residual tool life
2. For operation with a PLC-based tool management (if you are using HMI PRO):
  - PLC TL layout = determination of the actual unit quantity corresponds to the Transline counting method.
  - PLC NC layout = determination of the actual unit quantity corresponds to the CNC counting method.

3. For mixed operation of CNC with standard tool management and PLC-based tool management.
- MMT NC layout 3

### Predefined columns for Transline

| No. | Overview of programmed          | Transline PLC, counting method as TL2000 (PLC TL layout) | Transline PLC, counting method as NC (PLC NC layout) |
|-----|---------------------------------|--|--|
| 1   | Component                       | Predefined   | Predefined   |
| 19  | C no.                           | Location (5)   | Location (5)   |
| 3   | Container                       | Tool identifier (6)                                      | Tool identifier (6)                                  |
| 5   | Location                        | State (8)  | State (8)  |
| 6   | Tool identifier                 | Actual unit quantity (28)                                | Residual unit quantity (16)                          |
| 7   | Duplo no.                       | Pre-alarm (29)   | Warning limit for unit quantity (30)                 |
| 14  | Cutting edges                   | Target unit quantity (27)                                | Target unit quantity (27)                            |
| 10  | Monitoring                      | Extended alarm (32)                                      |  |
| 16  | Residual unit quantity          | Residual unit quantity (16)                              |  |
| 15  | Residual tool life              |  |  |
| 12  | NC prog.                        |  |  |
| 13  | Access                          |  |  |
| 17  | Target                          | Residual columns   | Residual columns                                     |
| 18  | Provision                       | Component (1)  | Component (1)  |
| 8   | State                           | C no. (19)   | C no. (19)   |
| 25  | Location state                  | Container (3)  | Container (3)  |
| 24  | B                               |  |  |
| 21  | L                               |  |  |
| 22  | R                               |  |  |
| 23  | T                               |  |  |
| 26  | Target tool life                |  |  |
| 27  | Target unit quantity            |  |  |
| 28  | Actual unit quantity            |  |  |
| 29  | Pre-alarm                       |  |  |
| 30  | Warning limit for unit quantity |  |  |
| 31  | Warning limit for tool life     |  |  |
| 32  | Extended alarm                  |  |  |
| 9   | Type                            |  |  |

**Predefined columns for unit quantity, tool life and mixed operation**

| No. | Overview of programmed          | MMT unit quantity (MMT NC layout 1)  | MMT tool life (MMT NC layout 2)      | NC/PLC mixed operation (MMT NC layout 3) |
|-----|---------------------------------|--------------------------------------|--------------------------------------|--|
| 1   | Component                       | Predefined                           | Predefined                           | Predefined                               |
| 19  | C no.                           | C no. (19)                           | C no. (19)                           | Component (1)                            |
| 3   | Container                       | Location (5)                         | Location (5)                         | Container (3)                            |
| 5   | Location                        | Tool identifier (6)                  | Tool identifier (6)                  | Location (5)                             |
| 6   | Tool identifier                 | Duplo no. (7)                        | Duplo no. (7)                        | Tool identifier (6)                      |
| 7   | Duplo no.                       | Type (9)                             | Type (9)                             | Duplo no. (7)                            |
| 14  | Cutting edges                   | State (8)                            | State (8)                            | State (8)                                |
| 10  | Monitoring                      | Residual unit quantity (16)          | Residual tool life (15)              |  |
| 16  | Residual unit quantity          | Warning limit for unit quantity (30) | Warning limit for tool life (31)     |  |
| 15  | Residual tool life              | Target unit quantity (27)            | Target tool life (26)                |  |
| 12  | NC prog.                        |                                      |                                      |  |
| 13  | Access                          |                                      |                                      |  |
| 17  | Target                          | Residual columns                     | Residual columns                     | Residual columns                         |
| 18  | Provision                       | Component (1)                        | Component (1)                        | C no. (19)                               |
| 8   | State                           |                                      |                                      | Cutting edges (14)                       |
| 25  | Location state                  | Container (3)                        | Container (3)                        | Monitoring (10)                          |
| 24  | B                               | Cutting edges (14)                   | Cutting edges (14)                   | Residual unit quantity (16)              |
| 21  | L                               | Monitoring (10)                      | Monitoring (10)                      | Residual tool life (15)                  |
| 22  | R                               | NC prog. (12)                        | NC prog. (12)                        | NC prog. (12)                            |
| 23  | T                               | Residual tool life (15)              | Residual unit quantity (16)          | Access (13)                              |
| 26  | Target tool life                | Access (13)                          | Access (13)                          | Location state (25)                      |
| 27  | Target unit quantity            | Location state (25)                  | Location state (25)                  | B (24)                                   |
| 28  | Actual unit quantity            | B (24)                               | B (24)                               | L (21)                                   |
| 29  | Pre-alarm                       | L (21)                               | L (21)                               | R (22)                                   |
| 30  | Warning limit for unit quantity | R (22)                               | R (22)                               | T (23)                                   |
| 31  | Warning limit for tool life     | T (23)                               | T (23)                               | Target tool life (26)                    |
| 32  | Extended alarm                  | Target tool life (26)                | Target unit quantity (27)            | Target unit quantity (27)                |
| 9   | Type                            | Warning limit for tool life (31)     | Warning limit for unit quantity (30) | Actual unit quantity (28)                |
|     |                                 |                                      |                                      | Pre-alarm (29)                           |

| No. | Overview of programmed | MMT unit quantity (MMT NC layout 1) | MMT tool life (MMT NC layout 2) | NC/PLC mixed operation (MMT NC layout 3) |
|-----|------------------------|-------------------------------------|---------------------------------|--|
|     |                        |                                     |                                 | Warning limit for unit quantity (30)     |
|     |                        |                                     |                                 | Warning limit for tool life (31)         |
|     |                        |                                     |                                 | Extended alarm (32)                      |
|     |                        |                                     |                                 | Type (9)                                 |








### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey         | Meaning  |
|-----------------|--|
| New filter      | Displays an input window where you can enter the name of a new filter.   |
| Delete filter   | Deletes the current filter after a prompt.   |
| Up one column   | Moves the line selected in the "Visible columns" list up one position.<br>In the table view, this moves the associated column one position to the left.    |
| Down one column | Moves the line selected in the "Visible columns" list down one position.<br>In the table view, this moves the associated column one position to the right. |
| Cancel          | Discard previously entered data and display the previous window with the overview.   |
| OK              | Save the settings and display the previous window with the overview.   |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|    | Use the <TAB> key to jump from one field to the next.  |
|   | Use the arrow keys to move the cursor from input field to input field.<br>In the "Available columns" and "Visible columns" list, move the tool data from the active to the inactive table. |
|   |  |
|    | Use the <SELECT> key to make a selection or deselection  |
|    | Use the <INPUT> key to complete the inputs in the fields. Text fields whose associated checkboxes have not been activated, cannot be accessed.   |

### 3.5.3 Tool handling - details

#### Overview

Select a tool in the tool list and press the "Details>>" softkey to access geometry and technology data.

A scroll bar may appear depending on the number of data items.

The window is divided into a number of sections each separated with a yellow divider bar.

#### General tool data

|                    | Meaning  |
|--------------------|--|
| Location           | Only display, no selection possible.   |
| Tool identifier    | Only display, no selection possible.   |
| Duplo no.          | Only display, no selection possible.   |
| Tool location type | The tool location type defines the kind of location in the magazine. The selected tool can only be loaded (changed) to a location of the appropriate type.<br>For additional details, refer to the description of the standard tool management of SINUMERIK. |
| <Graphics>         | When a SINUMERIK with standard tool management is used, a tool graphic of the selected tool is displayed depending on the tool type.   |

|       | Meaning/selection   |
|-------|---|
| State | Changing the state of a tool.<br>After selecting the "Change data" softkey and the state field, a window to select the state is opened when the Return key is pressed.<br>See the following figure "Changing the tool state".   |
|       | You can select the following states: <ul style="list-style-type: none"> <li>• Active tool (A)</li> <li>• Enabled (E) *</li> <li>• Disabled (D) *</li> <li>• Measure (M) *</li> <li>• Prewarning limit reached (P)</li> <li>• Tool being changed (C)</li> <li>• Fixed-location-coded (F)</li> <li>• Tool has been used (E)</li> <li>• To be unloaded (U) *</li> <li>• To be loaded (L) *</li> <li>• Master tool</li> </ul> Multiple states can be selected. The states marked with *) are represented by the letter (abbreviation) in the display field. |



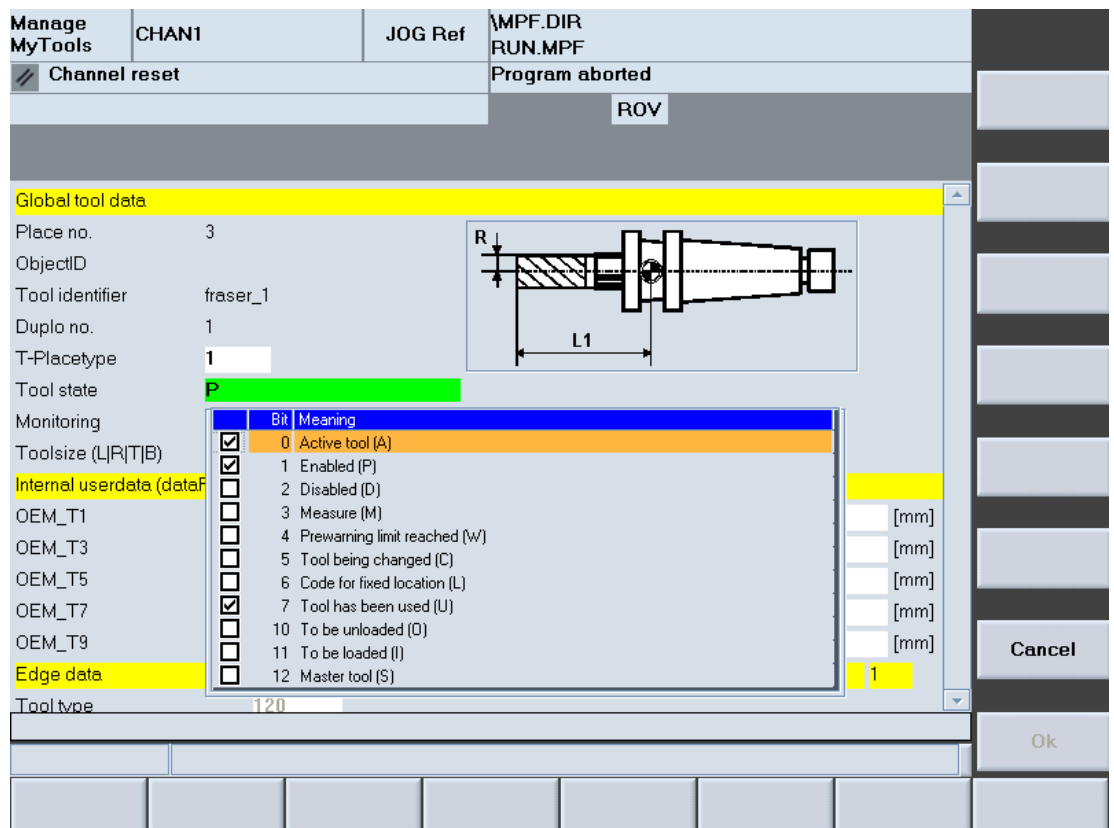


Figure 3-68 Changing the tool state

For a description of the individual states, refer to the following literature:

## References

Function Manual, Tool Management

|                     | Meaning/selection   |
|---------------------|---|
| Monitoring          | You can select from the following monitoring settings: <ul style="list-style-type: none"> <li>No monitoring</li> <li>Tool life</li> <li>Quantity</li> </ul> |
| Tool size (L R T B) |   |
| Internal user data  | The type and quantity of the data displayed here depends on the OEM data on the target machine.   |

|                                  | Meaning/selection  |
|----------------------------------|--|
| Cutting edge data                | <p>Display and partly change the following data for each cutting edge:</p> <ul style="list-style-type: none"> <li>• Tool type</li> <li>• Tool length compensation                             <ul style="list-style-type: none"> <li>– Geometry (this data cannot be modified)</li> <li>– Wear</li> <li>– Base (this data cannot be modified)</li> <li>– Unit (this data cannot be modified)</li> </ul> </li> <li>• Tool radius correction:                             <ul style="list-style-type: none"> <li>– Geometry</li> <li>– Wear</li> </ul> </li> <li>• Monitoring data (unit quantity / tool life)                             <ul style="list-style-type: none"> <li>– Residual value</li> <li>– Setpoint</li> <li>– Prewarning limit</li> </ul> </li> </ul> <p>Depending on the number of cutting edges or the tool type, additional data may be available. If this is the case, a scroll bar appears.</p> <p>A sand clock will be displayed while the tool data is being loaded. An error message will be issued if an error occurs during the loading.</p> |
| External tool supplementary data | <p>Details for the following data:</p> <ul style="list-style-type: none"> <li>• Tool description</li> <li>• Comments about the tool</li> </ul>   |
| Check limit values               | <p>The input fields can have limit values. These values are displayed in the status line. If you violate the input limit, the status line will indicate this. You can exit the input field only when the value is correct.</p>   |

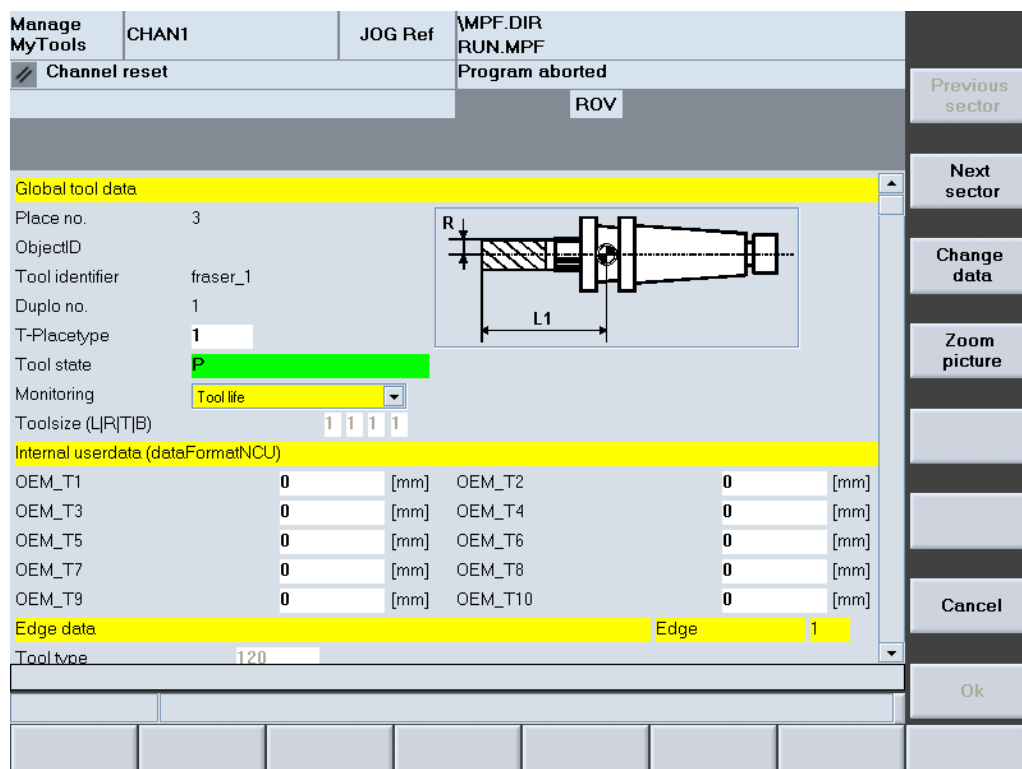


Figure 3-69 NC details

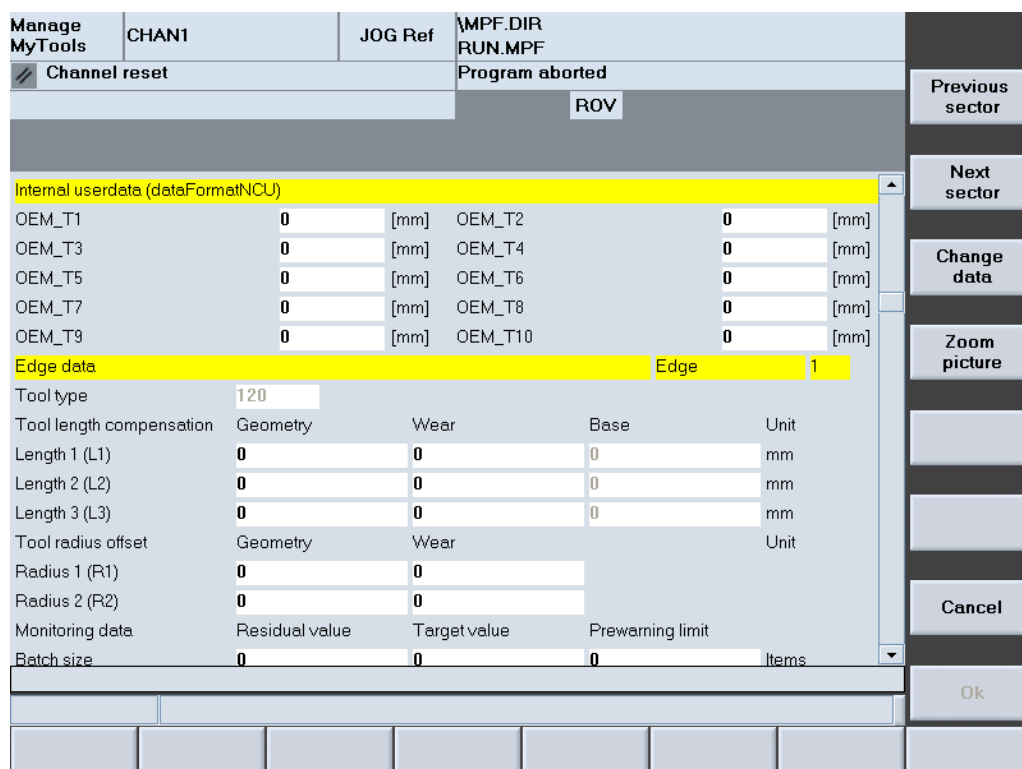


Figure 3-70 NC details






### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey          | Meaning   |
|------------------|---|
| Previous section | To view further tool data, scroll the screen view down one section.                   |
| Next section     | Scroll screen view up one section.  |
| Change data      | Allows data to be changed.<br>Prerequisite:<br>The appropriate access rights are set. |
| Zoom screen      | Increase or decrease the size of the tool icon screen.                                |
| Cancel           | Discard previously entered data and display the previous window with the overview.    |
| OK               | Save the settings and display the previous window with the overview.                  |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|   | Use the arrow keys to move the cursor from input field to input field.<br>In the "Available columns" and "Visible columns" list, move the tool data from the active to the inactive table. |
|   |  |
|    | Use the <INPUT> key to complete the inputs in the fields. Text fields whose associated checkboxes have not been activated, cannot be accessed.   |

### 3.5.4 Tool handling options

You can make global settings for all movements in the "Options" window.

Open the "Options" window in the "Tool Handling / Selection" window via the "Options..." softkey.

## Possible settings

|                                    | Meaning  |   |
|------------------------------------|--|---|
| Data transfer to the magazine list | The movement is in a real magazine.<br>See Section: Data transfer to the magazine list option (Page 131)<br>Further options are available for this movement: |   |
|                                    | Accept source location as target location  | To facilitate the handling of transport magazines (changing magazines), the location in the transport magazine can be accepted as the target location in the machine. You can accept the location unchanged or apply an offset (transport magazine locations 1 - 20 => with offset 100: Target magazine locations 101 - 120).   |
|                                    | Data transfer without PLC acknowledgement  | If you add complete tool containers, e.g. tool cartridges, to the machine or insert single tools directly in magazine locations, you can use this function to deactivate scanning of PLC acknowledgements. This means that the tool data is entered directly into the magazine list. This option is visible only if the configuration contains at least one machine magazine with activated option "Permit data transfer without PLC acknowledgement".                                  |
|                                    | Use reservation of empty locations   | This option is activated by default. I.e. MMT automatically reserves empty locations using a virtual tool "MMT_Reservation" in the magazine. This option prevents problems caused by several stations attempting to load a tool to the same location simultaneously. This option is stored for each tool movement. If the reservation option is deactivated, the softkeys for empty location searches and the setting options for empty locations are not displayed for safety reasons. |

|  | Meaning   |   |
|--|---|---|
| Data transfer into the tool list                                   | <p>For tool loading via the tool list, e.g. loading/unloading via OP 030, of the standard tool management system, the tool data is written to the list without actually moving the tool. Depending on the selected movement, the load or unload identifier is set for the relevant tool in the standard tool management system.</p> <p>Note</p> <p>This option is visible only if at least one machine magazine with activated option "Permit data transfer without PLC acknowledgement" is activated in the configuration.</p> |   |
| Prompt before automatically deleting completed jobs                | <p>Normally all completed jobs are automatically deleted, i.e. no longer displayed, each time you open and close the "Transfer List" window (but only then!).</p> <p>If the option "Prompt before automatically deleting completed jobs" is activated, completed jobs are not automatically deleted when the window is displayed. This means, all completed jobs are displayed. When you close the window, a prompt appears asking whether you wish all completed jobs to be deleted.</p>                                       |   |
| Automatic duplo number assignment                                  | <p>Activate automatic assignment of the duplo number for duplo number conflicts in the target magazine. The next higher duplo number is assigned based on the existing duplo numbers in the SINUMERIK tool management.</p>  |   |
| Automatically add tools for loading/unloading to the transfer list | <p>Worn tools on the machine are automatically taken into the transfer list for unloading.</p> <p>Tools that have recently been put into the tool cabinet and that are allocated to a specific machine, are automatically taken into the transfer list for loading to that machine.</p> <p>See Section: Loading and unloading lists (Page 127)</p> <p>Loading/unloading to the transfer list option (Page 130)</p>  |   |
|  | Unload tools within prewarning limit as worn  | <p>Tools in the machine that are within the prewarning limit are automatically taken into the transfer list for unloading. This option is only active when the higher-level option has also been activated.</p>   |
|  | Delayed unloading identifier  | <p>During a balance calculation, unused tools are only marked for unloading after the specified time has elapsed, at the earliest. The time is specified in hours. This option can be used to prevent tools that are only used occasionally being unloaded unnecessarily.</p> |

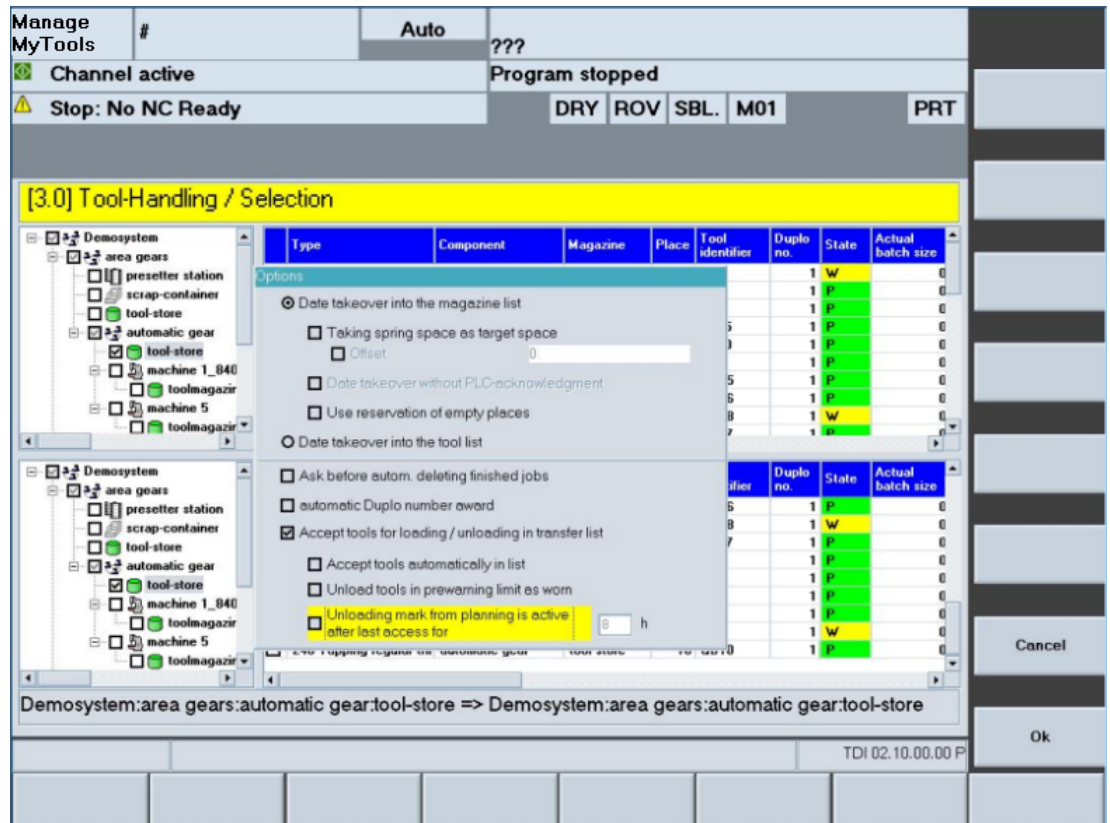


Figure 3-71 Tool handling - options



### 3.5.5 Tool movement

#### Overview


The "Tool Handling / Tool Transfer" window contains the list of all current tool movements.

The tool movement list can be started or cancelled and the movements can be organized individually.

#### Detailed information

| Display | Meaning   |           |
|---------|---|-----------|
| Symbols | Symbols that represent the various movements:                                       |           |
|         |  | Loading   |
|         |  | Unloading |

3.5 Tool handling

| Display                   | Meaning   |  |
|---------------------------|---|--|
|                           |  | Relocating   |
| Tool identifier duplo no. | Tool identifier and duplo number.   |  |
| Source                    | Which tool is being moved.  |  |
| Source location           | Current source location of the tool.  |  |
| Target                    | Target magazine of the tool.  |  |
| Target location           | Target location of the tool.  |  |
|                           | <Target location>   | A specific single location has been specified.   |
|                           | AUTO  | An empty location search is performed automatically.   |
| Status                    | Status of the movement.   |  |
|                           | <empty>   | The movement has not been started yet.   |
|                           | Initialization  | The movement is being initialized.   |
|                           | Set the options   | The options for the movement are being set.  |
|                           | Running   | The movement has been started.   |
|                           | Unloading active  | The tool is being unloaded.  |
|                           | Loading active  | The tool is being loaded.  |
|                           | Completed   | The movement has been completed.   |
|                           | Cancel (<code>)   | The movement has been cancelled.<br>The reason why it was cancelled is displayed in the status line. |



**Note**

If the movement is cancelled with "error" due to a duplo number conflict, you must either assign a new duplo number in the "Tool identifier / duplo" column 2nd line, or activate the automatic setting in the "Automatic Duplo Number Assignment" window. In both cases, the altered duplo number changes color for easier identification.

If the TSS does not specify a duplo number (0), MMT automatically assigns a free number when the tool is moved.

Finished jobs are no longer displayed when the window is displayed again. Exception: An error occurred during processing.

If the source or target is a machine magazine, then you must specify the loading/unloading points in the "Options" window if there is more than one.

If the target is a magazine without location management, e.g. an external tool magazine, an empty location search is not possible. An empty location search returns an error message.

Tools cannot be moved directly from machine to machine, but only via a temporary storage location in a tool cabinet. This restriction can be disabled when user rights are configured.

You can only define the tool movement on the user interface of a machine which is involved in the movement. This restriction can be disabled via the access rights.

The following applies if the source and target of a movement are machine magazines in the same tool area (TO area):

- If at least one of the magazines involved has activated PLC acknowledgement, the tool movements are not performed via the loading points. The tool is relocated between the magazines.
- You cannot assign a new duplo number. Any attempt to change the duplo number will be rejected and an error message displayed.

Check the movements after a power failure.

Press the "Start transfer" softkey to continue the transfer.





**Description of softkeys**

| Softkey              | Meaning  |
|----------------------|--|
| Organize transfer >> | Function for organizing the movement, e.g. change sequence, delete movement, specify target location.  |
| Details >>           | The details of the selected tool are displayed. A distinction is made between NC data and PLC data. Some of the data displayed can be edited.  |
| New list             | This softkey is only active if the option "Automatically add tools for loading/unloading to the transfer list" has previously been set in the options. The existing transfer list is deleted and a new transfer list is created automatically. |
| Start transfer       | The processing of the transfer list is started.  |
| Cancel transfer      | The processing of the transfer list is aborted as soon as the current movement has been completed.   |

| Softkey     | Meaning   |
|-------------|---|
| Options ... | Opens the window in which you can specify different sequences for the selected tool movement. |
| <<          | Return to the tool handling window.   |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|   | Use the arrow keys to move the cursor from input field to input field. |
|   | .  |

### 3.5.6 Organizing the movement

#### Overview

You can edit the transfer list before the actual transfer.

The following functions are available:

- Changing the machining sequence by moving entries up and down in the list.
- Deletion of entries in the transfer list. Only applies for movements that have not been started.
- Option to change the duplo number and target location using "Change data", e.g. in error situations.
- Empty location search in the target magazine for the selected tool. Depending on the magazine and the assigned loading point, the first free location is entered as target location.

---

#### Note

If several magazines are assigned to one loading point and the automatic empty location search is activated, the system searches for an empty location in the other magazines if no free location can be found in the specified target magazine.

---

**Procedure**

1. Press the "Organize transfer >>" softkey  
A new vertical softkey bar appears.

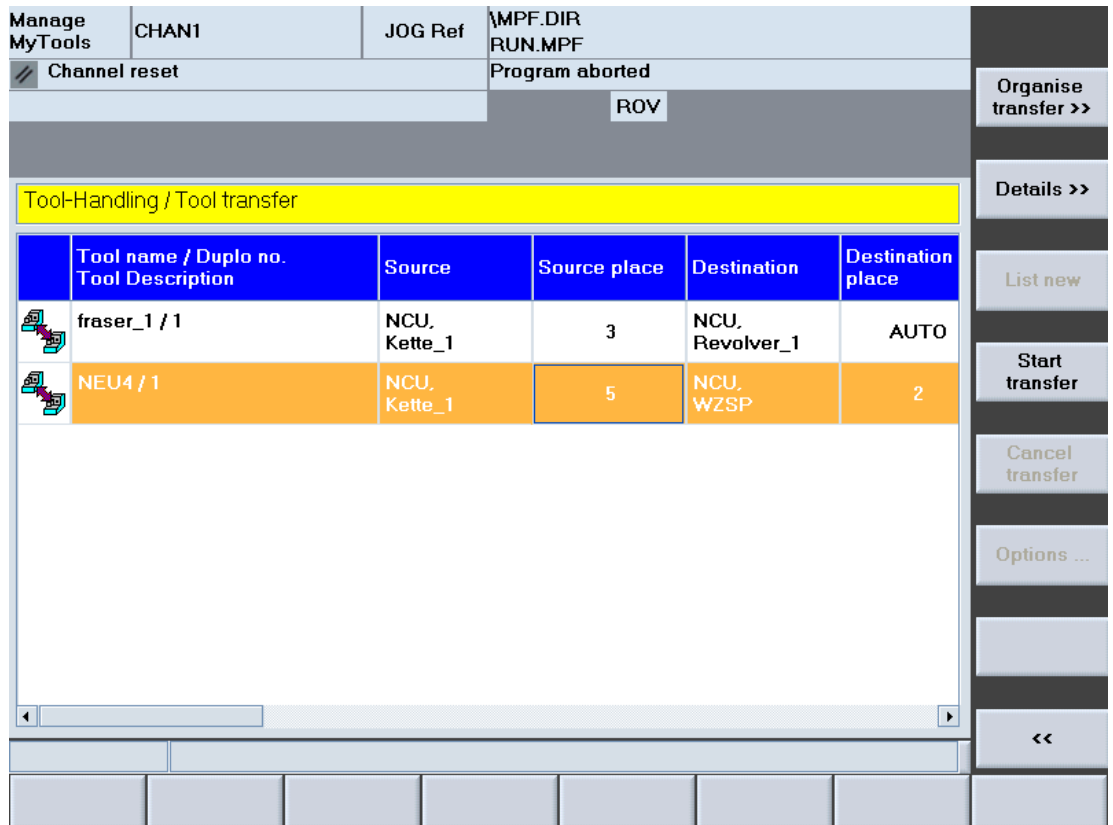


Figure 3-72 Organizing the tool movement

2. Press the "Change data..." softkey if you want to change the "Duplo no." and the "Target location".  
A "Tool Handling Data" window appears.
3. Enter the new number in the "Duplo no." field and select the target location in the selection box.









Figure 3-73 Changing the duplo number and target location

### Description of softkeys

| Softkey             | Meaning  |
|---------------------|--|
| Delete              | Delete the selected movement in the transfer list.                         |
| Advance             | Move the selected movement up one place in the transfer list.              |
| Back                | Move the selected movement down one place in the transfer list.            |
| Find empty location | Find an empty location for the selected movement in the target magazine.   |
| Change data...      | Change the duplo number and the target location for the selected movement. |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|     | Use the arrow keys to move the cursor from input field to input field. |
|   |  |
|    | Use the <SELECT> key to make a selection or deselection                |
|    | Use the <INPUT> key to complete the inputs in the fields.              |

### 3.5.7 Tool replacement

#### Overview

The "Tool replacement 1:1" function facilitates the replacement of tools.

If a tool on the machine has either the "Prewarning limit" or "Blocked" status, it can be replaced by a new tool of the same type from the tool cabinet with the "Tool replacement 1:1" function. The tool must first be unloaded and then loaded.

Manage MyTools | CHAN1 | JOG Ref | \MPF.DIR RUN.MPF

Channel reset | Program aborted

ROV

Filter >>

Details >>

Take on

Tool transfer >>

Tool change

Options ...

View >>

Setting list

| Component                    | Magazine | Place | Tool identifier | Duplo no. | State | Actual batch size |
|------------------------------|----------|-------|-----------------|-----------|-------|-------------------|
| <input type="checkbox"/> NCU | Kette_1  | 4     | NEU4            | 1         | D     | 0                 |
| <input type="checkbox"/> NCU | Kette_1  | 5     | NEU3            | 11        | P     | 0                 |

| M No.                                 | Place | Tool identifier | Duplo no. | Type         | State | Remaining parts |
|---------------------------------------|-------|-----------------|-----------|--------------|-------|-----------------|
| <input checked="" type="checkbox"/> 3 | 1     | NEU4            | 22        | 120 End mill | P     | 0               |
| <input type="checkbox"/> 3            | 2     |                 |           |              |       |                 |
| <input type="checkbox"/> 3            | 3     |                 |           |              |       |                 |
| <input type="checkbox"/> 3            | 4     |                 |           |              |       |                 |
| <input type="checkbox"/> 3            | 5     |                 |           |              |       |                 |
| <input type="checkbox"/> 3            | 6     |                 |           |              |       |                 |
| <input type="checkbox"/> 3            | 7     |                 |           |              |       |                 |

:WZSCHRANKKHB => :Kette\_1

Figure 3-74 Tool replacement 1:1

### Example of an application

Tool 5598700 on the machine with duplo no. is 2 and must be replaced by a new tool. A tool with the same identifier 5598700 and with duplo no. 66 is available in the tool cabinet. (Is already reserved for the relevant machine by the function "Predict tool change", see "Target" column in Fig. Tool replacement 1:1 handling list.)

#### Procedure:

1. Activate the checkbox at the new tool to be set from the tool cabinet.
2. Press the "Tool replacement" softkey.  
The tool replacement is started. MMT switches to the "Transfer list" and you can view the active handling operations.
  - First the tool is unloaded from the machine.
  - Next the tool from the tool cabinet is loaded into the machine.

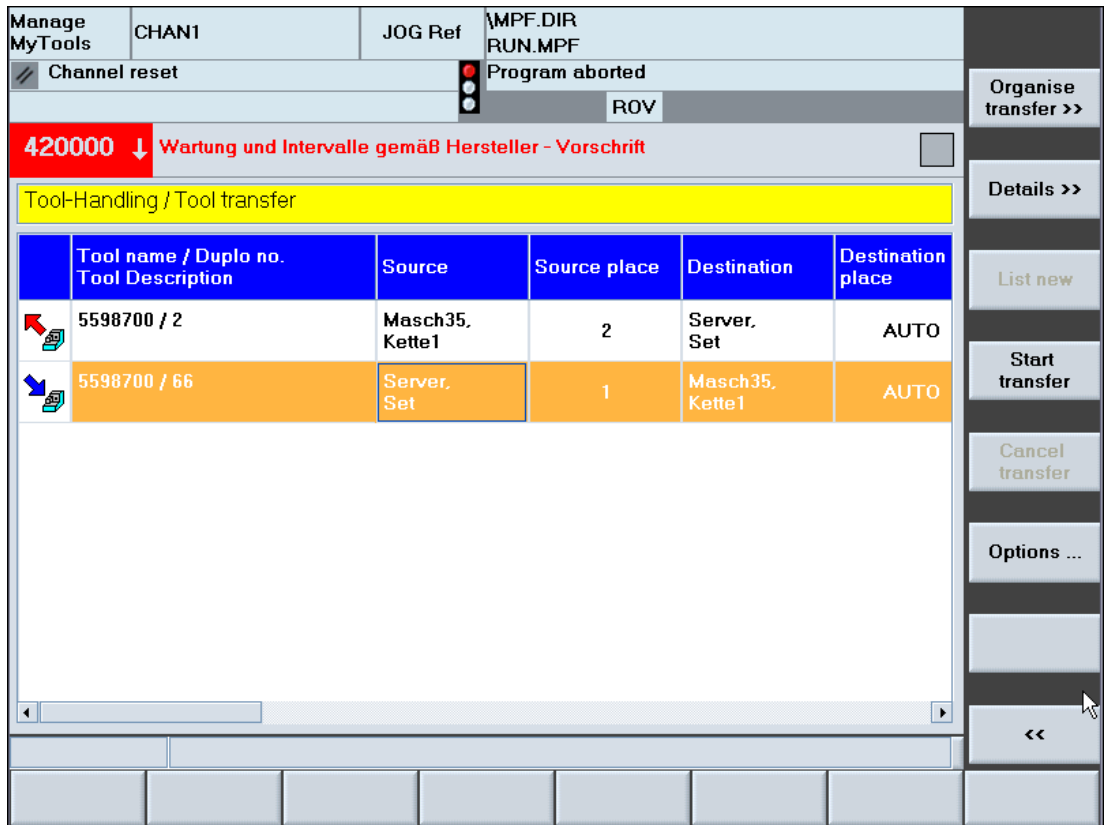


Figure 3-75 Tool replacement 1:1 handling list

- When the tool replacement has been completed successfully, the transfer jobs are deleted automatically.
- The "Tool replacement 1:1 completed" message appears in the status bar at the bottom of the window.

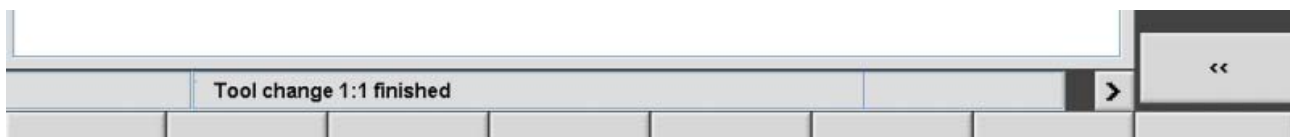


Figure 3-76 Tool replacement 1:1 completion message

**Search priority**

The search function first searches for tools which are "Blocked", then for tools with the status "Prewarning limit reached".

### 3.5.7.1 Loading and unloading lists

#### Overview

You can take both tools with unloading identifier and tools with loading identifier into the tool transfer list.

This can either be performed automatically in the background or in response to an operator command.

- This saves the operator the job of having to identify which tools need to be loaded/unloaded and adding them to the tool transfer list manually.
- The configuration tool is used to assign which magazine is to be used for loading and where unloaded tools are to be deposited.

#### Requirement

The "Add tools for loading/unloading to the transfer list" option has been selected.

#### Procedure

Using the Manage MyTools Configuration application, you can assign the loading/unloading magazines at the server, group or unit level.

Setting it to root or group level is inherited by the subordinate machines.

1. The "Loading magazine" column is used to select the magazine where the tools from the tool setting station or the tool master data are set. Multiple selection is also possible.
2. The "Unloading magazine" column is used to select the magazine into which the tools are unloaded. A distinction can be made between various application cases here, but only one unloading magazine can be configured:
  - "Unloading magazine (all tools)": All tools to be unloaded are transferred to this magazine (one unloading magazine).
  - "Only worn tools": Tools that are blocked/worn are unloaded to this magazine (half magazine).
  - "Only partly worn tools": Tools with a residual tool life are unloaded to this magazine (half magazine).

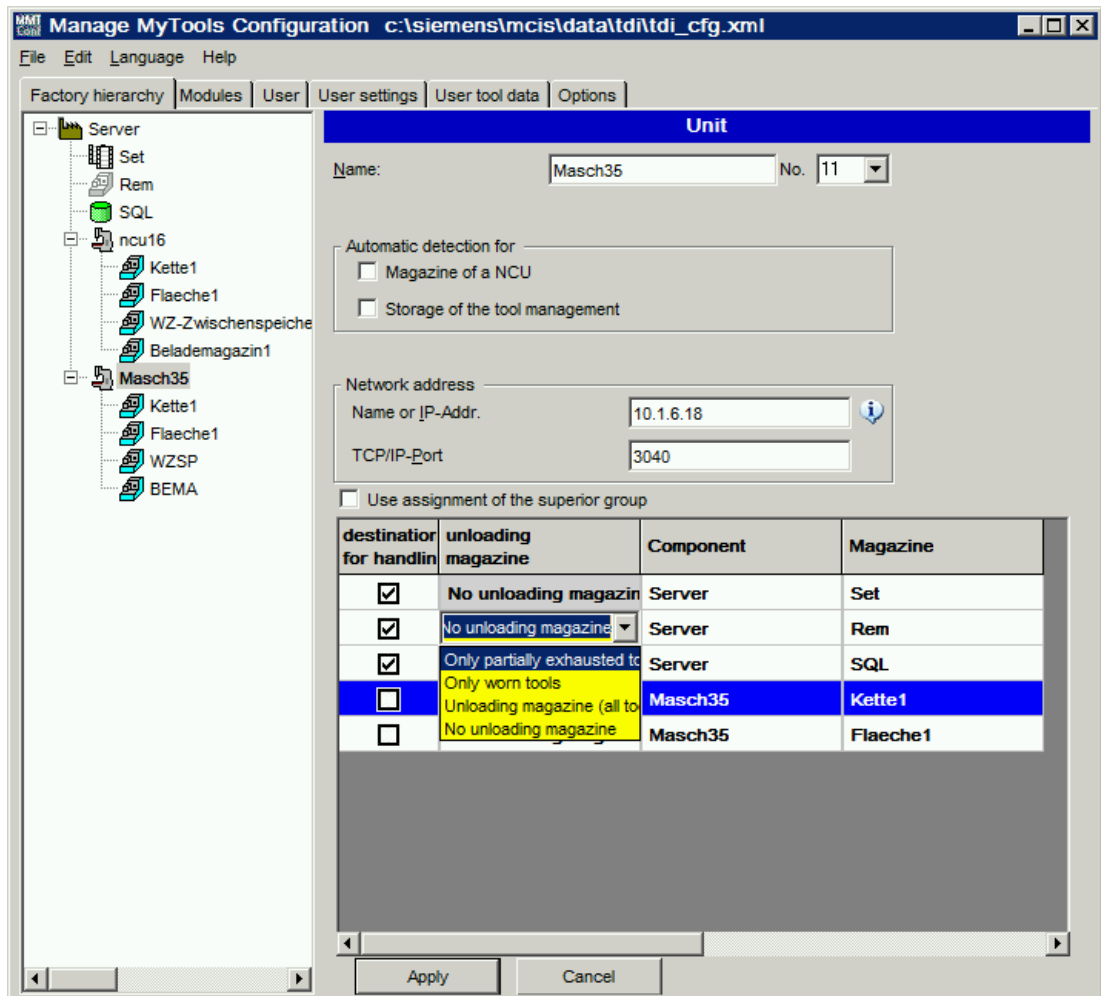


Figure 3-77 Configuration of loading and unloading lists

3. Deselect the setting "Adopt setting from predecessor" to create a machine-wide assignment for a group and a different assignment for a subordinate machine.
4. The handling option "Add tools for loading/unloading to the transfer list" can be used to activate or deactivate this function.
5. Select the handling option "Automatically add tools to the list" to automate the loading/unloading of tools into the transfer list.
6. Select "Unload tools within prewarning limit as worn" to unload tools that are within the prewarning limit to the unloading magazine for tools with a residual tool life. If you do not select this option, the tools are unloaded to the unloading magazine for tools with a residual tool life.

The "Tools for unloading" bit from the tool status is used to generate the unloading list. This bit is set by the "Predict tool change" function for tools that are no longer in the tool plans. Tools whose status is "Blocked" or (if selected) "Prewarning limit reached" are also added to the unloading list.

The loading list is generated using the reservation identifiers provided by the "Predict tool change" function for the relevant machine (e.g. AFO 020/1/002).



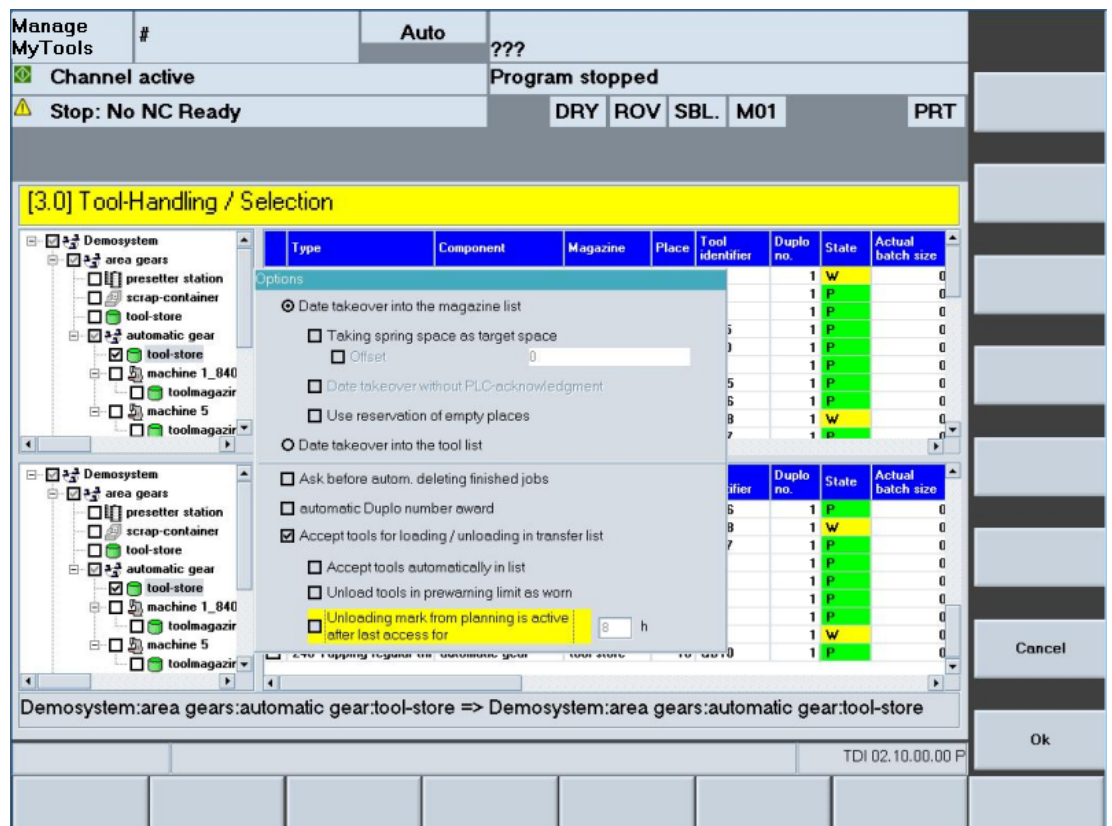


Figure 3-78 Tool handling - options

The tools identified by the "Predict tool change" function as being for loading/unloading are added to the tool transfer list. Use the "Transfer organization" function to make any changes. Using the "New list" softkey, you can restore the transfer list to the original status determined by the "Predict tool change" function.

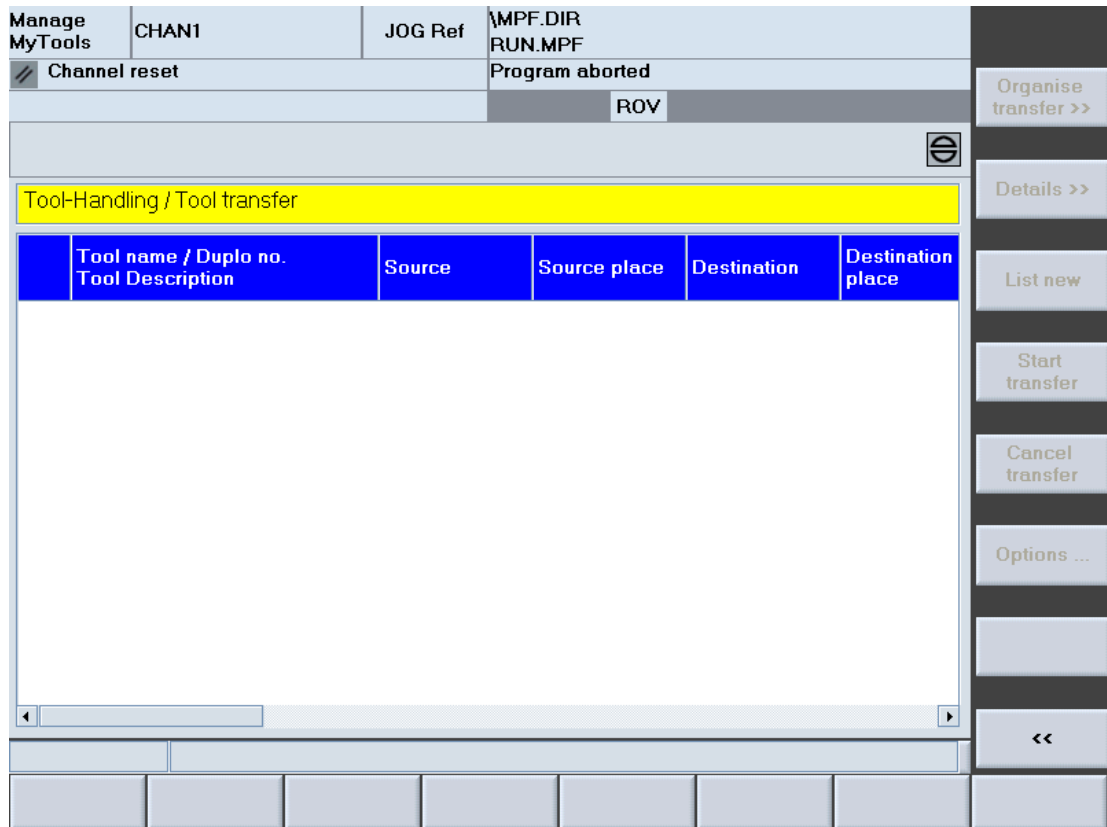


Figure 3-79 Tool handling - tool transfer

### 3.5.7.2 Loading/unloading to the transfer list option

#### Overview

There are several options for "Add tools for loading/unloading to the transfer list".

|  | Meaning   |
|--|---|
| Add tools for loading/unloading to the transfer list | The entire loading/unloading list functionality is activated. If only this checkbox is activated, the loading/unloading lists are generated manually by pressing the "New list" softkey.  |
| Automatically add tools to the list                  | Worn tools on the machine are automatically taken into the transfer list for unloading. Tools that have recently been put into the tool cabinet and that are allocated to a specific machine, are automatically taken into the transfer list for loading to that machine. |

|   | Meaning  |
|---|--|
| Unload tools within prewarning limit as worn                          | Tools in the machine that are within the prewarning limit are automatically taken into the transfer list for unloading. This option is only active when the higher-level option has also been activated.   |
| Unloading identifier from planning takes effect after final operation | During a balance calculation, unused tools are only marked for unloading after the specified time has elapsed, at the earliest. The time is specified in hours. This option can be used to prevent tools that are only used occasionally being unloaded unnecessarily. |

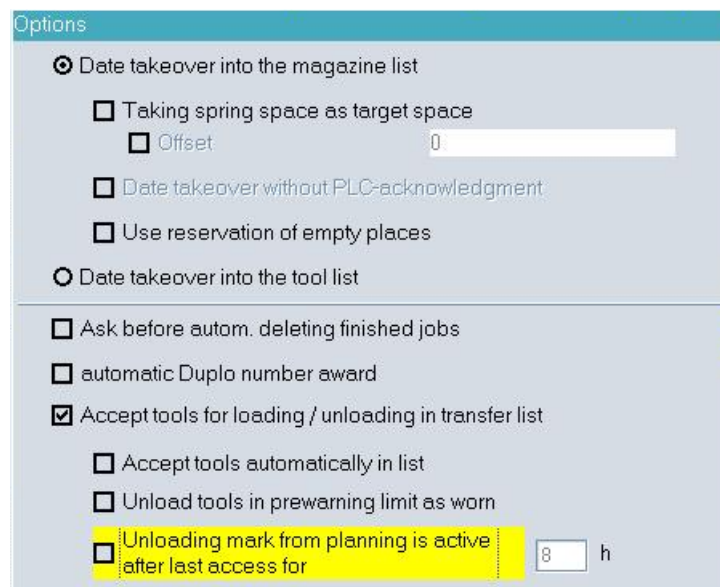


Figure 3-80 Tool handling options

### 3.5.7.3 Data transfer to the magazine list option

You can make settings for the selected movement in the "Options" window.

#### Requirement

The "Data transfer to the magazine list" function has been selected.

Functions

| Functions                                 | Meaning  |
|---|--|
| Unloading point / loading point           | If a machine has more than one loading/unloading point, you must specify which point is to be used for a tool movement. You can do this by selecting the loading/unloading point in the drop-down list. If one loading/unloading point is mainly used, activate the "As default" checkbox. All further movements are defined as default setting.   |
| Accept source location as target location | To facilitate the handling of transport magazines (changing magazines), the location in the transport magazine can be accepted as the target location in the machine. You can either accept the location unchanged or apply an offset. (Transport magazine, locations 1 - 20 => with offset 100: Target magazine locations 101 - 120.)   |
| Data transfer without PLC acknowledgement | If you add complete tool containers, e.g. tool cartridges, to the machine or insert single tools directly in magazine locations, deactivate scanning of PLC acknowledgements. This means that the tool data is entered directly into the magazine list.<br><br>Note:<br>This option is only visible if the configuration for source and/or target magazine contains a machine magazine with activated option "Permit data transfer without PLC acknowledgement".                               |
| Use reservation of empty locations        | This option is activated by default, i.e. MMT automatically reserves empty locations using a virtual tool "MMT_Reservation in the magazine". This option prevents problems caused by several stations attempting to load a tool to the same location simultaneously. This option is stored for each tool movement.<br><br>If the reservation option is deactivated, the softkeys for empty location searches and the setting options for empty locations are not displayed for safety reasons. |
| Data transfer into the tool list          | For tool loading via the tool list, e.g. loading/unloading via OP030, of the standard tool management system, the tool data can be written to the list without actually moving the tool. Depending on the movement, the loading or unloading identifier is set for the relevant tool in the standard tool management system.   |
| Automatic duplo number assignment         | Activate the automatic assignment of the duplo number for duplo number conflicts in the target magazine. The next higher duplo number is assigned based on the existing duplo numbers in the SINUMERIK tool management.  |

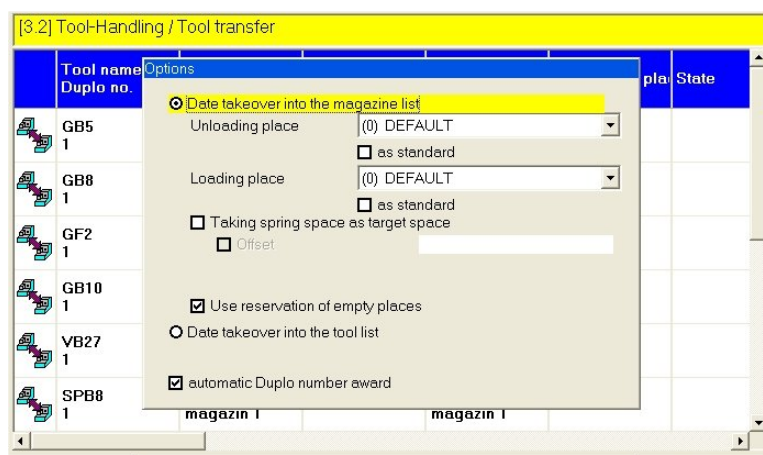


Figure 3-81 Tool movement options

### 3.5.7.4 Handling example

#### Unloading worn tools

1. Select the following in the "Tool Handling" window on the machine:
  - In the Explorer at the bottom: The source = machine  
– AND –
  - In the Explorer at the top: The target = removal container
2. Press the "Filter>>" softkey.  
The worn tools are displayed in the table at the bottom.
3. In the table at the bottom, activate the checkboxes for the tools to be unloaded.
4. Press the "Accept" softkey.  
The selected tools are accepted and displayed in the "Tool Movement" window.
5. Press the "Tool transfer >>" softkey.  
The window is displayed.

### 3.5 Tool handling

6. Press the "Start transfer" softkey to start the unloading operation.  
When the unloading operation starts, a corresponding PI service for unloading is started automatically for each tool in the transfer list.
7. Acknowledge the PI service for unloading after every operation.  
PLC: By pressing the button or automatically.
  - By pressing the button: Remove the physical tools from the unloading point.  
During this operation the tool data is transferred from the machine magazine to the removal magazine.

---

#### Note

If the source or the target is a tool directory magazine, you must also select a loading/unloading point.

Steps 2 - 4 can be performed several times.

---

## 3.5.8 Connection of tool setting stations (TSS)

### Overview

The tool handling module contains the interface for the transfer of tool data from a TSS. If a TSS is integrated into a network with machine tools, the TO data acquired at the TSS can be transferred to Manage MyTools.

The tool data is transferred via files with fixed format specifications.

- The name of the file can be freely selected, but must be unique.
- The file extension is ".ini".

The tool data files are transferred automatically from the specified directory. The tool data is entered in the TSS magazine. (Is defined via the Manage MyTools Configuration application.) The file in the "MMT\_IN" directory is then deleted.

You can view the tool data by selecting the TSS magazine in the Explorer window in the overview or tool handling area.

---

#### Note

If no folder has been specified for the data exchange in the configuration, the following default settings apply:

- On a machine, the TSS must use folder "...\\dh\\tdi\_in.clp" in the SINUMERIK data management.
  - On a PC, the "MMT\_IN" directory below the installation directory must be used.
  - If another folder is specified in the configuration, the TSS must be configured accordingly.
-

The tool data contained in the file must be created by the TSS as follows:

## Example

| Program code                             | Comment  |
|--|--|
| %_N_SEG_001_COM                          | ; Program header (optional)  |
| \$TDI_MACHINE="Machine1"                 | ; Machine name for assignment of tools (optional)  |
| \$TDI_SETNAME[1] ="1234"                 | ; Name of tool set   |
| \$TDI_SETDATE[1] =<br>"2001/01/14 15:49" | ; Time of request (optional, only relevant for planning<br>in conjunction with the setting list)   |
| \$TDI HOLDER="8446"                      | ; Holder number for clear identification of the tool<br>within a plant (inventory number) (optional)   |
| \$TC_TP1[1] =000                         | : Duplo number; 3-digit; Duplo_Default: 000  |
| \$TC_TP2[1] ="12345"                     | ; Tool identifier (32 characters)  |
| \$TC_TP3[1] =1                           | ; Size on left<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location<br>type)   |
| \$TC_TP4[1] =1                           | ; Size on right<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location<br>type)  |
| \$TC_TP5[1] =1                           | ; Size above<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location<br>type)   |
| \$TC_TP6[1] =1                           | ; Size below<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location<br>type)   |
| \$TC_TP7[1] =1                           | ; Magazine location type<br><br>Note: The magazine location type must match the magazine<br>location type created in the target machine.<br><br>If tools from several machines are used, then the<br>magazine location types must be the same across all<br>machines, e.g.<br>1=small; 2=medium; 3=large |
| \$TC_TP8[1] =10                          | ; Status Default: 10<br>The tool status results, for example, as follows:<br>2 = tool enable +<br>8 = tool measured =10  |
| \$TC_TP9[1] =0                           | ; Tool monitoring method<br>Possible values, e.g.<br>0 = no tool monitoring<br>1 = tool life<br>2 = unit quantity<br>...<br>For further methods, see Description of Functions for<br>Tool Management   |

3.5 Tool handling

| Program code     | Comment   |
|------------------|---|
| \$TC_TP10 [1] =2 | ; Replacement strategy<br>Possible values, e.g.<br>0 = no strategy<br>1 = next duplo no.<br>2 = shortest path<br>...<br>Others: See Description of Functions for Tool Management                                |
| \$TC_TP11 [1] =0 | ; Tool info not used Default: 0   |
| \$TC_TPC1 [1] =1 | ; Loading/unloading identifier for TDI default: 0 Note:<br>If the standard data "Loading/unloading identifier" is<br>not used, OEM data can be used instead. TDI<br>automatically uses the first free OEM data. |

| Program code        | Comment   |
|---------------------|---|
| \$TC_TPC2-10 [1] =0 | ; Possible OEM data   |
| \$TC_DP1 [1,1] =0   | ; Tool type   |
| \$TC_DP2 [1,1] =0   | ; Cutting edge position   |
| \$TC_DP3 [1,1] =0   | ; Geometry - length 1   |
| \$TC_DP6 [1,1] =0   | ; Geometry - radius   |
| \$TC_DP8 [1,1] =0   | ; Geometry - length 4   |
| \$TC_DP9 [1,1] =0   | ; Geometry - length 5   |
| \$TC_DP10 [1,1] =0  | ; Geometry - angle 1  |
| \$TC_DP11 [1,1] =0  | ; Geometry - angle 2  |
| \$TC_DP12 [1,1] =0  | ; Wear - length 1   |
| \$TC_DP13 [1,1] =0  | ; Wear - length 2   |
| \$TC_DP14 [1,1] =0  | ; Wear - length 3   |
| \$TC_DP16 [1,1] =0  | ; Wear - groove width b / rounding radius   |
| \$TC_DP17 [1,1] =0  | ; Wear - projection k   |
| \$TC_DP18 [1,1] =0  | ; Wear - length 5   |
| \$TC_DP19 [1,1] =0  | ; Wear - angle 1  |
| \$TC_DP20 [1,1] =0  | ; Wear - angle 2  |
| \$TC_DP21 [1,1] =0  | ; Adapter - length 1  |
| \$TC_DP22 [1,1] =0  | ; Adapter - length 2  |
| \$TC_DP23 [1,1] =0  | ; Adapter - length 3  |
| \$TC_DP24 [1,1] =0  | ; Clearance angle   |
| \$TC_DP25 [1,1] =0  | ; Reserved, default: 0  |
| \$TC_MOP1 [1,1]=0   | ; Prewarning limit in minutes, default: 0   |
| \$TC_MOP2 [1,1]=0   | ; Residual tool life in minutes, default: 0                                       |
| \$TC_MOP3 [1.1]=0   | ; Unit quantity prewarning limit, default: 0                                      |
| \$TC_MOP4 [1,1]=0   | ; Residual unit quantity, default: 0  |
| \$TC_MOP5 [1,1]=0   | ; Wear prewarning limit - or location-dependent offset<br>fine - prewarning limit |
| \$TC_MOP6 [1,1]=0   | ; Actual wear value - or location-dependent offset fine                           |



| Program code       | Comment  |
|--------------------|--|
|                    | - actual value   |
| \$TC_MOP11 [1,1]=0 | ; Target tool life   |
| \$TC_MOP13 [1,1]=0 | ; Target unit quantity   |
| \$TC_MOP15 [1,1]=0 | ; Wear setpoint - or location-dependent offset fine - setpoint |

Further cutting edge data, if available:

| Program code     | Comment               |
|------------------|-----------------------|
| \$TC_DP1 [1,2] = | ; Cutting edge 2      |
| \$TC_DP2 [1,2] = | ; Cutting edge 2      |
| \$TC_DP3 [1,2] = | ; Cutting edge 2      |
| ...              | ;                     |
| ...              | ;                     |
| M17              | ; File end (optional) |

### Note

The parameters described for the individual sections are illustrated by examples. For a detailed list of other possible system parameters, please refer to the Description of Functions, SINUMERIK Tool Management.

Only the relevant cutting edge and monitoring data must be provided, 0 is set for data that is not required.

## 3.5.9 General conditions for location types

### Location type

The location type defines the kind of location in the magazine. With the allocation of location types to magazine locations, the magazine is subdivided into different areas when the standard tool management system of the SINUMERIK is configured.

### Requirement

The name and size of the location type are read from the MS Access file "WZACCESS.MDB" of the standard tool management. If this information is not available, blanks are output.

### Function

It is only possible to load a tool to a location of the appropriate type. It is therefore possible to assign various types of special tools, e.g. "large", "heavy" to specific locations. There is no need to apply fixed location coding for this purpose.

When loading the tool, make sure that the type of the magazine location (\$TC\_MPP2) matches the magazine location type. Enter the magazine location type in the tool-specific data (\$TC\_TP7) of the tool setting station.

The machine manufacturer assigns location types when configuring/commissioning the machines. In this context, ambiguities may arise between individual machines and manufacturers in relation to the following definitions:

- Location type name
- Magazine location type (\$TC\_MPP2)
- Size and form of the location in the magazine.

The operator must check to ensure that all location types are clearly defined on all machines in the plant.

**Example illustrating ambiguities in location type definition**

|           | Location type name | Magazine location type \$TC_MPP2 | Size Width / total height |
|-----------|--------------------|----------------------------------|---------------------------|
| Machine 1 | Normal             | 1                                | 2/2                       |
|           | Large              | 2                                | 4/4                       |
|           | Heavy              | 3                                | 2/2                       |
| Machine 2 | Normal             | 1                                | 2/2                       |
|           | Large              | 2                                | 2/2                       |
|           | Heavy              | 4                                | 2/2                       |

The example above illustrates the following problems:

- Different tool sizes are defined for the "large" location type. I.e. if a tool is set with tool-specific data \$TC\_DP7=2 for machine 1 and then loaded to machine 2, there is a risk of collision as the tool management in machine 2 is programmed to reserve only one magazine location for magazine location type \$TC\_MPP2=2.
- Different magazine location types \$TC\_MPP2 are defined for the "heavy" location type. I.e. if a tool is set with tool-specific data \$TC\_DP7=3 for machine 1 and then loaded to machine 2, it is not possible because magazine location type 3 is not defined for the tool management in machine 2.

**Note**

When automatic magazine identification is active, the magazine location types are identified for the standard tool management and entered in a table for the relevant magazine. This information can be used to detect conflicts within the plant.

See Section: Creating a tool magazine with standard tool management (PC) (Page 32)and

See Section: Creating a tool magazine with standard tool management (PCU/NCU) (Page 57)

## 3.5.10 Tool identification

### Overview

The following chapter describes the principle of operation and the connection of the "Tool identification" function by means of barcode in MMT.

The "Handling" module enables the tool data to be exchanged electronically between a CNC machine tool and a higher-level master computer.

The advantage compared to manual input of tool data on the CNC machine tool is the reduction of possible error sources.

Further error sources can be excluded by so-called tool identification systems.

In these systems, unique tool identification characteristics are carried directly on the physical tool, e.g. barcode, code carrier, RFID, etc.

Generally a distinction is made between two types of tool identification systems:

- "Read only" system: A typical example of this is a barcode identification.
- "Read/write" system: Allows the writing back of tool data to an identification carrier.

The tool identification described here is restricted to the "read-only" system.

The concept for the connection of a tool identification system to MMT described in the following only takes into account identification systems that cover a production area.

The use of tool identification systems on single machines cannot be taken into account as MMT has to clearly assign each physical tool within the production in networked plants.

### 3.5.10.1 Barcode identification system

#### Principle of operation

This section describes the principle of operation of MMT with a connected barcode identification system.

- In this identification system, each physical tool must carry a unique barcode on the tool itself.
- No two tools may have the same identification characteristics within a production area, otherwise MMT cannot ensure the assignment between tool data record and physical tool.

3.5 Tool handling

- The uniqueness of the tool identification characteristic can be ensured through technical measures, e.g.
  - Barcode as an engraving on the tool holder, read-only RFID.
    - OR -
  - Unique assignment of the tool identification at the tool presetting and when creating the tool via master data.
- The tool identification can be generated as follows:
  - On the basis of an independent range of numbers (e.g. RFID)
    - OR -
  - On the basis of a tool identifier and duplo number

Depending on the barcode type used, only numeric values or alphanumeric values are permitted for the tool identifier, e.g. the "Code 39" barcode type supports these alphanumeric values.

3.5.10.2 Tool identification system

You can operate MMT with a connected tool identification system.

Connection

The barcode scanner must be connected in parallel to the keyboard. In this way, all entries can be made manually or through the barcode scanner.

The cursor must be positioned on the appropriate entry field in the operating software before every scanning action. MMT cannot differentiate between a manual entry and an entry via barcode scanner.

3.5.10.3 Configuring the tool identification

In the configuration, perform the parameterization of the tool identification system in the "Options" tab.

Tool identifier + global duplo number

If you select "Tool identifier + global duplo number", you must make an entry in the "Template for tool identification" parameter containing the syntax for the identification.

In the template, set a "#" for each character that is to be replaced by a tool identifier, duplo number or tool user data item.

| Template for tool identification |                                |                        |
|----------------------------------|--------------------------------|------------------------|
| T#####D###                       | Tool identifier + duplo number | Use the separator "D". |
| H#####                           | Tool user data item            |                        |

```

ToolId="NEW1" DuploNo=2 → tool identification = "TNEW1D002"
ToolId="4711" DuploNo=3 → tool identification = "T00004711D003"

```

#### General conditions for syntax template:

- The template may only contain the following characters
  - A to Z
  - 0 to 9
  - Blanks
  - "#" as place holder
- The first character may not be a "C" as this is used for internal function barcodes.
- There must be at least one separator defined between the place holders for the tool identifier and duplo number.
- The template may not start with a place holder.
- The template must contain at least two characters.

#### General conditions for the display of the "Tool identification" option

A "tdi\_cfg.ini" file must be available in the "data directory". This file is not part of the scope of delivery and must be created manually.

The "tdi\_cfg.ini" file specifies how the barcode scanner is connected.

This file must be available on every machine and every PC to which a barcode reader is connected.

The file is not transferred during an update!

#### Example: Structure of the "tdi\_cfg.ini" file

```

-----
; SIEMENS AG A&D B24 - tdi_cfg.ini;
; ;
; The file specifies whether and how a ;
; barcode scanner is connected. ;
-----

[TDI_GUI]
-----

; Connected barcode scanner
; CON = keyboard interface
; COMx = serial interface (currently not supported)
; <empty> = not connected
BARCODEDEVICE=CON

```

**Procedure**

1. You are in the MMT configuration and then click the "Options" tab.
2. Activate the "Unique tool identification in the working area by:" checkbox in order to activate the identification.  
The following selection is displayed:
  - Tool identifier + global duplo number
  - Global tool identification (e.g. holder number) defined by External Id (external tool data)

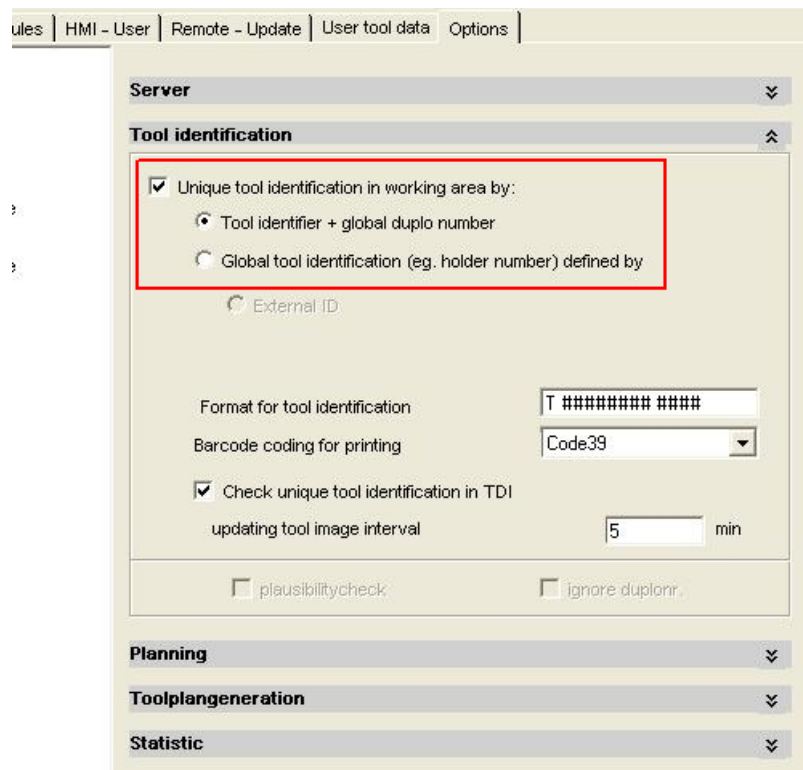


Figure 3-82 Tool identification

**Note**

**"Automatic Duplo number allocation" option**

If you select "Unique tool identification in working area by:" and the option "Tool identifier + global duplo number", then the option "Automatic Duplo number assignment" is no longer displayed. In this case, it is not permissible that the Duplo number is automatically changed, as otherwise the tool identification will no longer identify the tool as a result of the modified code.

## Example

A "Drill" tool with Duplo number "5" has the code "TBohrerD5". If the Duplo number automatically changes to "6", then the tool is allocated the code "TBohrerD6". For the tool image, which only knows the code, this represents a completely new tool.

### 3.5.10.4 Connecting a barcode scanner

#### Overview

The barcode scanner must be connected in parallel to the keyboard. The user also requires direct access to an operator station.

It is also necessary that all operating steps are performed by the user, such as:

- Find tool via filter function
- Select tool for the handling
- Add selected tool to the handling list
- Start handling

As there is usually no HMI operator at the tool changing point, the "Barcode scanner machine connection" described here defines a procedure that enables tool functions (e.g. tool loading) to be controlled by a scanner only.

The barcode scanner is connected via the V24 interface to the PCU or parallel to the keyboard (however with additional activated keyboard hook). The data from the scanning operations is not transferred as entries to the relevant entry field on MMTI, but as an event.

After a tool function (e.g. tool loading) has been triggered by a scanning operation, the operator receives an immediate reaction to the triggered function by the response of the machine (e.g. chain is positioned, tool exchange door is released). Only if an error occurs do you have to view the relevant messages at the HMI operator station.

In order to trigger various tool functions, additional function barcodes are defined. These function barcodes are scanned by the operator immediately before the relevant tool is scanned. (The value range of the function barcodes must not collide with the value range of the tool identification.)

The following function barcodes are implemented:

- Scanner test (no tool required)
- Perform tool loading (with automatic empty location search)
- Perform tool replacement 1:1  
Prerequisite is that there is a blocked tool of the same tool group in the machine.
- Perform tool unloading  
This can be performed, for example, based on an unloading list with barcodes that you first print on the MMT.
- Perform tool unloading with specified source  
This can be performed, for example, based on an unloading list with barcodes that you first print on the MMT. The source of the tool is specified in the function barcode. This function is required for machines where the barcode scanner is connected to a PC.

After selecting a function (by scanning a function barcode), you can perform several similar tool functions in succession, e.g. loading of several tools.

In addition to the required function, the function barcode also contains the identification of the tool changing point at which the function is performed. In this way, you can operate several changing points on the machine with a barcode scanner, e.g.

- Changing point spindle
- Changing point magazine left
- Changing point magazine right

In order that the current tool storage location can be booked for the precise magazine or location, the described procedure is also valid for:

- The PC operator stations for external magazines
- Machine-related tool cabinets
- Central tool cabinets
- Tool transport carriages

The printing of a table with function barcodes for a specific machine / changing point is supported by the configuration or can be created with WinWord (and the corresponding barcode font).

### Structure of the barcode

BCxxyyyzzzz

|     |        |  |
|-----|--------|--|
| xx  | 01     | Scanner test   |
|     | 02     | Load tool  |
|     | 03     | Tool replacement 1:1   |
|     | 04     | Unload tool  |
|     | 05     | Unload tool with source specification                        |
| yyy | nodeNo | Assigned number of the target component/container or "0000". |



If the target component/container is not defined ("0000"), then the magazines or the machine are used as loading target. If the barcode scanner is connected to an MMT PC version, the function barcode must contain the target component/container.

With function barcode "05", the node ID of the component, on which the tool is located, is specified.

**zzzz** Loading/unloading point / target location or "0000".

The value "zzzz" is used to specify the loading/unloading point ("Bzzz") or the target location ("Pzzz"). The two versions are distinguished by the letter at the first position (B or P). Simultaneous specification of the loading/unloading point and the target location is not possible.

If a loading/unloading point is not defined, the default loading/unloading point of the target container is always used.






If the target location is not defined, an automatic search for an empty location is started.

Neither the loading point nor the target location is defined with the value "0000".

Only specify the target location for the "Load tool" operation.

A location specification is ignored for the "Perform tool unloading with specified source" function.

### Example of barcodes

| Barcode   | Structure      | Function                            |
|---|----------------|-------------------------------------|
|  | *BC0100000000* | Scanner test                        |
|  | *BC0200000000* | Load tool                           |
|  | *BC0300000000* | Tool replacement 1:1                |
|  | *T12345678D01* | Tool "12345678" with duplo number 1 |
|  | *BC0400000000* | Unload tool                         |

Further manual adaptations are required in the "tdi\_cfg.xml" file for the commissioning of the "Tool identification" function. Assign a "nodeNo" to the magazines involved. The value of the "nodeNo" describes the target component/container.

### Extract from the "tdi\_cfg.xml" file

```
<?xml version="1.0" encoding="UTF-8"?>
  <Configuration versionLabel="2009-10-27T17:23:41" crc32="907DF866"
    distributed="0" versionOCX="TDI 02.30.69.00" saveDate="2009-10-
    28T17:09:25">
    <GlobalToolMirror enabled="1" type="id_duplo" template="T#####D##"
    plausiCheck="1" barcode="Code39" interval="300000" />
```

```
<Node nodeId="TESTTRACK" host="195.208.2.156">
<Modules Overview="1" Handling="1" Machine="1" Planning="1"
Key="005000450035002d004c0044003300290055003f0034002b00550047003a002a0050
004300320025005700450035002d00510044003400290050003f0035002b00530047005d0
04c0056005a0053004300470053006a007d006a00660036003906011c"
RuntimeLicence="FALSE" />
<Container nodeNo="1" id="KETTE_60" no="1"
containerClass="MachineNCUContainer.NCUContainer"
dataFormat="dataFormatTESTTRACK">
<PlaceType name="normal" id="1" size="2|2" />
</Container>
<Container id="WZSP" no="9998"
containerClass="MachineNCUContainer.NCUContainer"
dataFormat="dataFormatTESTTRACK" />
<Container id="BEMA" no="9999"
containerClass="MachineNCUContainer.NCUContainer"
dataFormat="dataFormatTESTTRACK" />
<Container id="WZ-LIST" no="0"
containerClass="MachineNCUContainer.UnassignedContainer"
dataFormat="dataFormatTESTTRACK" />
<Container nodeNo="888" id="New magazine" no="2"
containerClass="MachineSQLContainer.SQLContainer" type="PRESETTING" />
<Container nodeNo="999" id="Demontage" no="3"
containerClass="MachineSQLContainer.SQLContainer" type="TRASH">
<ContainerConfiguration PlaceCount="0" storageTime="0" />
</Container>
<ContainerAssignment>
<ContainerToAssigne nodeId="TESTTRACK" containerId="New magazine"
asLoad="1" asUnload="" />
<ContainerToAssigne nodeId="TESTTRACK" containerId="Demontage" asLoad="0"
asUnload="UNLOAD" />
</ContainerAssignment>
```

**Test as to whether a barcode scanner is available**

If you want to test the basic functional capability of the barcode scanner under MMT, read in the following function barcode with the barcode reader:

\*BC0100000000\* 

The following message confirms the readiness of the scanner:

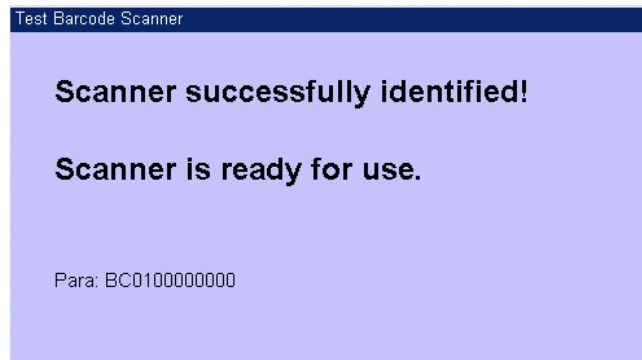


Figure 3-83 Barcode scanner

### 3.5.10.5 Loading a tool to the magazine of a machine tool

You can load a tool with automatic empty location search from the setting magazine to a specified magazine.

#### Procedure

In the following example, the setting magazine (container) is called "New magazine" with nodeNo="888" and the magazine to be loaded "KETTE\_60" with "nodeNo="1".

1. Select the following barcode:

\*BC0200010000\*

2. After reading the following window opens:

| Source      | Component | Magazine | Place |
|-------------|-----------|----------|-------|
| Destination | HERMLE    | Pick_Up  | 0     |

Figure 3-84 Tool identification - Kette 60

3. Now select the barcode of the tool to be loaded.  
In the example, the tool with identifier "5634159" and duplo number 1 is loaded to the "KETTE\_60" magazine:

\*T05634159D01\*

- 4. After reading in the tool identification via barcode, a message is output for the operation. If the loading operation is completed without error, "Completed, waiting for tool identification" is displayed in the information line with a green background. A further tool can then be read in via barcode without having to perform the function code again.
- 5. If no further tools are to be loaded, press the "<<" softkey to complete the operation.

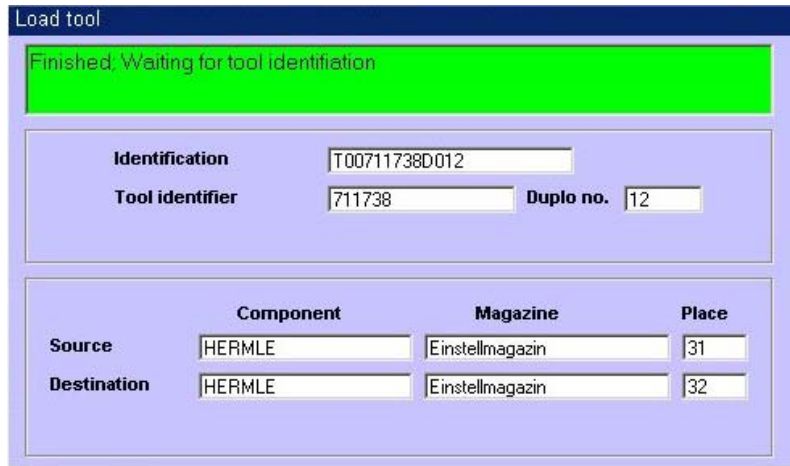


Figure 3-85 Tool replacement completed

**Note**

The format of the barcode for the tool identification (T#####D###) is set in the configuration.

**3.5.10.6 Unloading a tool to the removal magazine**

You can unload a tool from the machine tool to the removal magazine.

**Procedure**

In the following example, the tool has the identifier "5634159" and the removal magazine is called "Demontage" with "nodeNo="999".

- 1. Select the following barcode:

\*BC0409990000\*

After reading the following window appears:

Figure 3-86 Tool identification - removal

2. Now select the barcode of the tool to be unloaded.  
In the example, the tool with identifier "5634159" and duplo number 1 is unloaded.

\*T05634159D01\*

3. When the tool has been completely unloaded, the message "Completed, waiting for tool identification" is displayed.
4. A further tool can then be unloaded via barcode without having to perform the function code again.
5. If no further tools are to be unloaded, press the "<<" softkey to complete the operation.

Figure 3-87 Tool identification - removal completed

**Error message**

If an attempt is made to unload a tool that is not on the machine, the following error message appears:



Figure 3-88 Tool identification - interrupted

**3.5.10.7 Tool replacement 1:1**

You can perform a tool replacement 1:1 via barcode.

**Prerequisite**

- Tool with the status "Worn (W)" or "Disabled (D)" in the magazine of the machine tool
- Tool with the same tool identifier in the loading magazine

**Procedure**

1. Activate the following barcode for "Tool replacement 1:1":

\*BC0300010000\* 

After reading the following window appears:

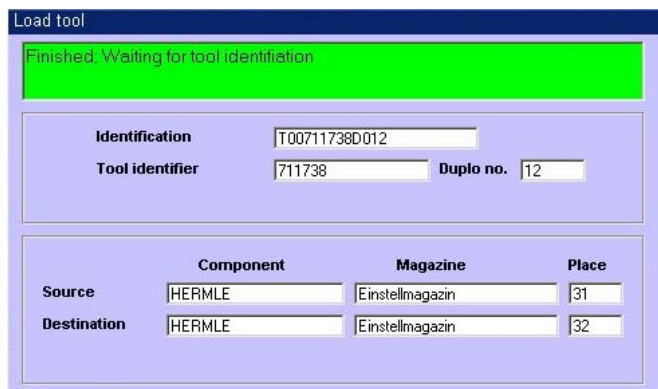


Figure 3-89 Barcode scanner, tool replacement 1:1

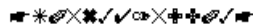
2. Now select the barcode of the tool to be replaced.

After reading in the tool identification and the duplo number of the tool via barcode, MMT searches in the target using the tool identifier.

In the example, a search is performed in the "Tetrack" component, in the "KETTE\_60" magazine for a worn tool with the same tool identifier. If the general conditions are satisfied, the unloading of the worn tool and the loading of the new tool to the old location is started automatically.

In the example, tool "5634159" is replaced on the machine tool.

\*T05634159D03\*



3. When the tool has been completely replaced, the message "Completed, waiting for tool identification" is displayed.
4. A further tool can then be replaced via barcode without having to perform the function code again.
5. If no further tools are to be replaced, press the "<<" softkey to complete the operation.

|             | Component | Magazine        | Place |
|-------------|-----------|-----------------|-------|
| Source      | HERMLE    | Einstellmagazin | 31    |
| Destination | HERMLE    | Einstellmagazin | 32    |

Figure 3-90 Tool identification - tool replacement completed

## 3.6 Planning

Machine capacity can only be used to the full if tools are made available for the next production period. Module planning can be used to ensure that the required tools are provided at the right time.

Planning puts together the tool requirement for the next production period based on the current tool inventory on the machine and machine environment.

Any containers can be taken into account in the planning, e.g. machine magazines, machine-related tool stores, tool presetting.

The planning area is available in interconnected operation with a Manage MyTools server and also on individual machines.

**Subareas**

Planning comprises the subareas:

- Machining sequence
- Tool plan
- Balance calculation with
  - Balance options
  - Setting list

**3.6.1 Machining sequence**

Planning requires a specification of the machining sequences in order to be able to determine the tools required for the next machining operations.

The machining sequence and the tool plan together form the basis for the balance calculation.

The machining sequence describes the planned sequence of:

- Workpieces to be machined (jobs)
- The number of workpieces to be manufactured

The "Machining Sequence" window is opened via the "Machining sequence" softkey on the horizontal menu bar.

**Function**

A user interface is provided in the "Machining Sequence" window for the specification of the jobs for planning.

You can create the jobs / NC programs for the production for each machine and assign the unit quantities to be planned.

|                      | Meaning   |
|----------------------|---|
| No.                  | Consecutive number of the job.                      |
| E                    | Check mark set = enabled for balance calculation.   |
| Machining            | Name of the machining sequence / job.               |
| Component            | Name of the associated unit.                        |
| Target unit quantity | Maximum number of workpieces per job.               |
| Balance batch size   | Workpieces to be planned per job.                   |
| Actual unit quantity | Machined workpieces of the job.                     |
| Production job       | A further identifier for the machining sequence. *) |
| Working cycle        | A further identifier for the machining sequence. *) |
| Deadline             | Completion deadline for the job. *)                 |
|                      | *) Not compulsory                                   |



**Note**

The actual unit quantity is automatically incremented by NC end of program and the display is updated, see Section: Creating/displaying/changing a machining operation. (Page 156).

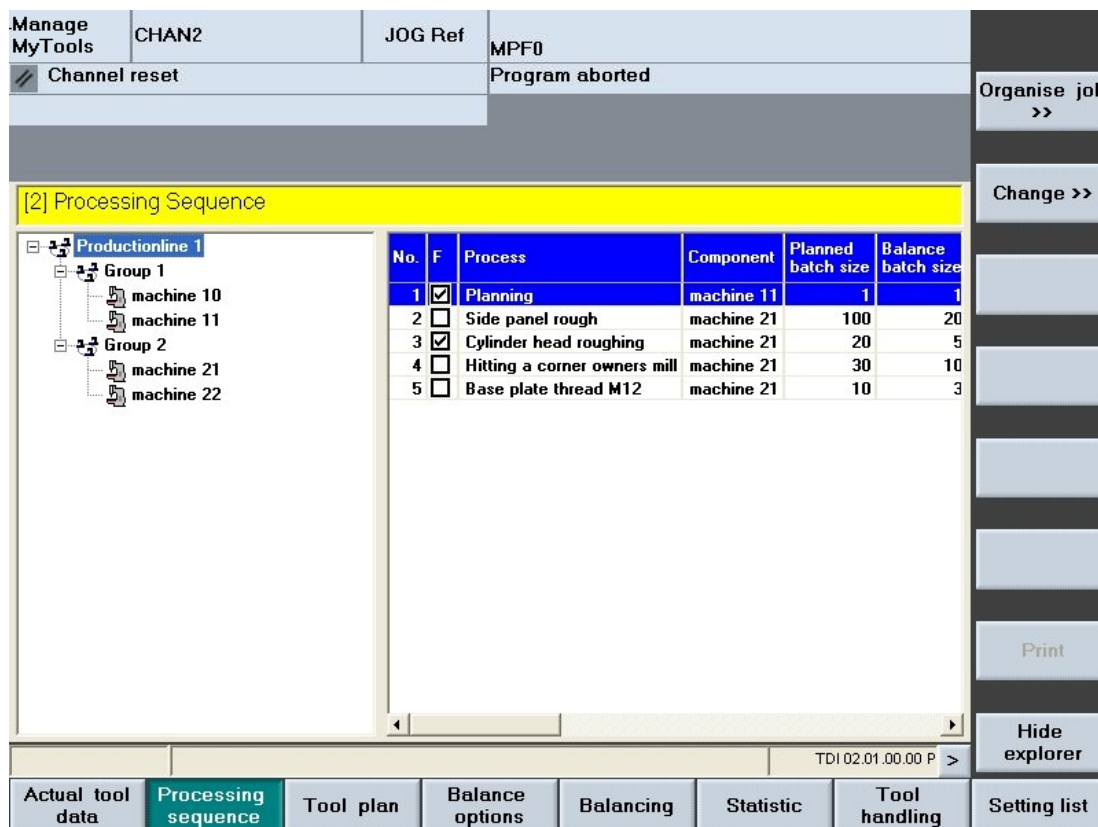


Figure 3-91 Machining sequence overview













**Description of softkeys**

The following functions can be executed using the vertical softkeys:

| Softkey               | Meaning  |
|-----------------------|--|
| Organize machining >> | Open the sequence menu for customizing the machining sequence.           |
| Change/display >>     | Open window to change the selected machining sequence.                   |
| Print                 | Print the list of the machining sequences.<br>Equivalent: Window display |
| Explorer on/off       | Show or hide the tree representation of the Explorer view.               |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function  |
|---|---|
|    | Use the TAB key to switch between the Explorer view and table format.   |
|       | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.  |
|       | Use the up/down arrow keys to move the cursor up and down within the Explorer.  |
|    | Use the <SELECT> key to select and deselect the active machining sequence for the balance calculation.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection.   |
|     | Within the machining sequence list, use the arrow keys to move the cursor up or down.   |
|   | Displays the defined columns.<br>The list of the available columns can, however, be larger than that of the selected columns.<br>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area. |
|    | Use the <P> key to make the Explorer window and the table columns wider.  |
|    | Use the <M> key to make the Explorer window and the table columns narrower.   |

### 3.6.1.1 Organizing the machining

#### Procedure

1. Press the "Organize machining>>" softkey.  
The vertical softkey bar is switched to the sequence menu.
2. Select a machining sequence.

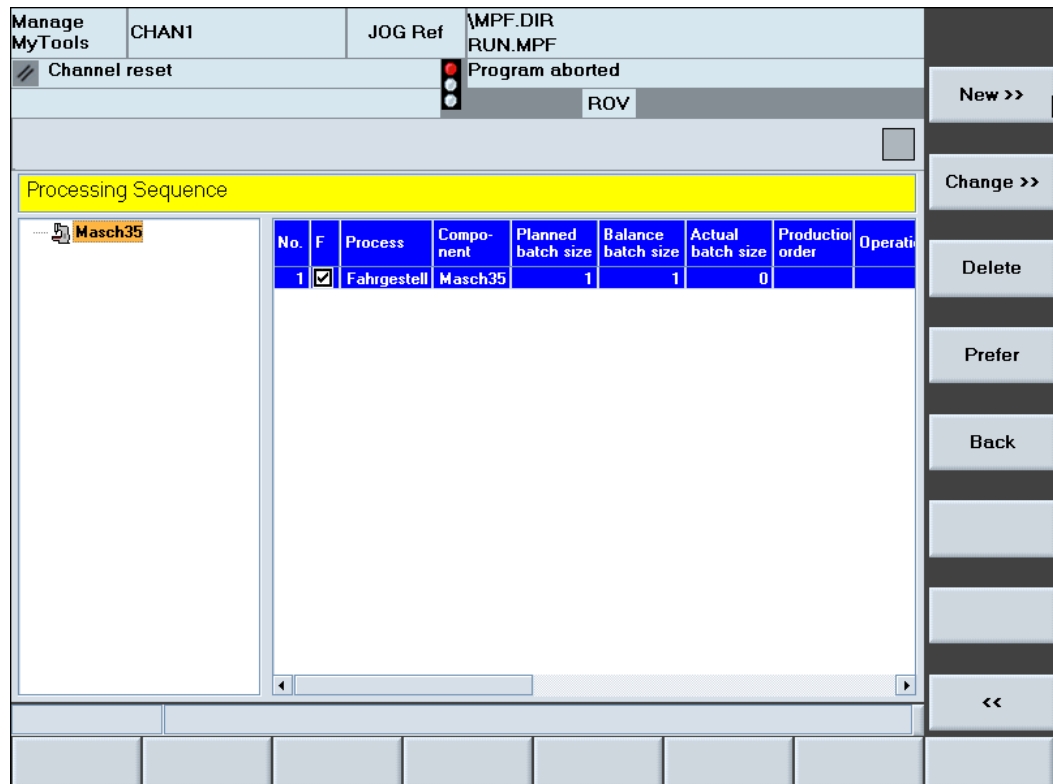


Figure 3-92 Organizing the machining

#### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey           | Meaning  |
|-------------------|--|
| New>>             | The "Add Machining" window is opened and you can create a new machining sequence.<br>The softkey is only active if a machine is selected in the Explorer tree. |
| Change/display >> | Display of change data of a selected machining sequence.   |
| Delete            | Delete selected machining operation.<br>The deletion of the machining operation follows a prompt that you confirm with "OK".                                   |
| Advance           | Move the machining operation up one position in the overview. The softkey is only active if a machine is selected in the Explorer tree.                        |

| Softkey | Meaning   |
|---------|---|
| Back    | Move the machining operation down one position in the overview. The softkey is only active if a machine is selected in the Explorer tree. |
| <<      | Switch back the vertical softkey bar.   |

### 3.6.1.2 Creating/displaying/changing a machining operation.

#### Displaying/changing/creating a new machining operation

You can re-enter all the data required for a balance calculation or display or change a previously selected machining operation.

#### Functions

|                      | Meaning  |   |
|----------------------|--|---|
| Machining            | Freely assignable name for defining the production process.<br>The name of the machining operation can be assigned manually.   |   |
| Tool plan name       | Entry field for direct entry of the tool plan for the machining operation.<br>You can also jump directly to the tool plan overview via the button belonging to the machining operation. Select a tool plan and accept it with "OK".  |   |
| Quantity             | If the machining has already started, the current number of machined workpieces is displayed here.   |   |
|                      | Actual   | When the "Update actual part counter" is set, the part counter is incremented by 1 at the end of each NC program. |
|                      | Set  | Planned number of workpieces that are to be produced.   |
|                      | Balance  | Settable subset of the planned quantity for the next planning run.  |
| NC program           | Name of the NC program associated with the machining sequence.<br>Only required in conjunction with updating the "Actual unit quantity" field.<br>Only display field in the machining sequence. When a tool plan is transferred, this field is automatically written with the NC program stored there. |   |
| Total run time       | Time required to produce a part (one NC program run). *)<br>Only display field in the machining sequence. When a tool plan is transferred, this field is automatically written with the total run time stored there.   |   |
| Production job       | A further identifier for the machining sequence. *)  |   |
| Working cycle        | A further identifier for the machining sequence. *)  |   |
| Deadline             | Completion deadline for the job (DD.MM.YY HH:MM). *)   |   |
| Actual unit quantity | The following option is available via a selection box: <ul style="list-style-type: none"> <li>Do not update</li> <li>At end of program (M02 or M30 in main program)</li> </ul>   |   |

|                                     | Meaning   |
|-------------------------------------|---|
| Enable for balance calculation / OK | When the enable for balance calculation is set, the selected machining sequence is considered in the next balancing run.<br>The enable can be set/reset via the "Enable" softkey or by "setting/resetting" a selection box. |
|                                     | *) Not compulsory   |

**Note**

The tool plan defined in the machining sequence must be available before the balance calculation starts.

**Procedure**

1. You are in the "Machining Sequence" window.
2. Press the "New>>" softkey.  
- OR -  
Press the "Display/change" softkey.  
The "Machining Sequence / Display/Change Machining Operation" window opens.

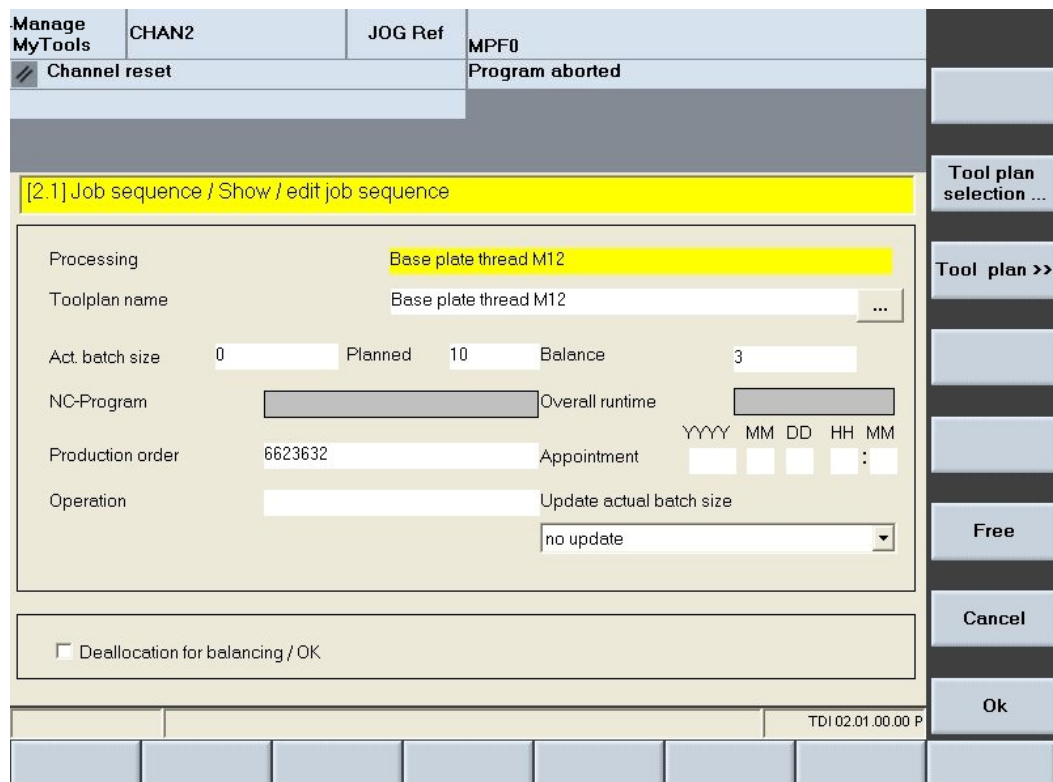


Figure 3-93 Displaying/changing a machining operation








**Description of softkeys**

The following functions can be executed using the vertical softkeys:

|                         | Meaning  |
|-------------------------|--|
| Tool plan selection ... | Jump directly to the tool plan overview, select a tool plan and click the "OK" button to transfer to the "Tool plan name" input field. |
| Tool plan >>            | Display the tool plan displayed as "tool plan name".<br>Other functionality as for "Display/change tool plans".                        |
| Enable                  | Set/reset the release code for the balancing.  |
| Cancel                  | Exit the window without saving the inputs and return to the "Machining Sequence" window.   |
| OK                      | Save the inputs and return to the "Machining Sequence" window.   |

The following keys are available for operation of the controller and the machine tool.

**Keys and functions**

| Key   | Function   |
|---|--|
|    | Use the <TAB> key to jump from one field to the next.                  |
|   | Use the arrow keys to move the cursor from input field to input field. |
|   |  |
|    | Use the <SELECT> key to make a selection.                              |
|    | Use the <INPUT> key to complete the inputs in the fields.              |

**3.6.2 Tool plans**

**Overview**

A tool plan must be stored for the balance calculation for each job. The tool plan and the machining sequence together form the basis for the balance calculation.

These tool plans are managed using the "Tool plan" softkey on the horizontal softkey menu.

The tool plan contains all necessary tool data, e.g. the service period of the tools that are required during an NC program run. These are the basis for calculating the tool life / unit quantity required by each tool type during the balance calculation.

The tool plans can be created in different ways:

- Through manual input via the user interface.
- By importing the tool plans from a higher-level system (e.g. NC programming) via the integrated import/export interface.
- By simulation of the existing NC programs on the SINUMERIK with the Toolplan Generation module  
see Section: Tool plan generation (Page 188)

### 3.6.2.1 Manage tool plans

#### Overview

The "Tool Plans" window provides an appropriate user interface for performing these management tasks.

The tool plans can be saved hierarchically. This depends on the level (area/group/unit) to which you assign them. You can call the tool plans for all machines that are assigned to this area and use them for the balance calculation.

This list of tool plans is called by selecting a machine in Explorer.

#### Functions

|           | Meaning  |
|-----------|--|
| Tool plan | Name of the tool plan.   |
| Component | Name of the machine / machine group that is assigned to this tool plan.                |
| Date      | Tool plan creation date.   |
| Version   | Version of the tool plan (index for the frequency of change, no management criterion). |

#### Note

Tool plans that are assigned to a released machining sequence are shown in boldface type.

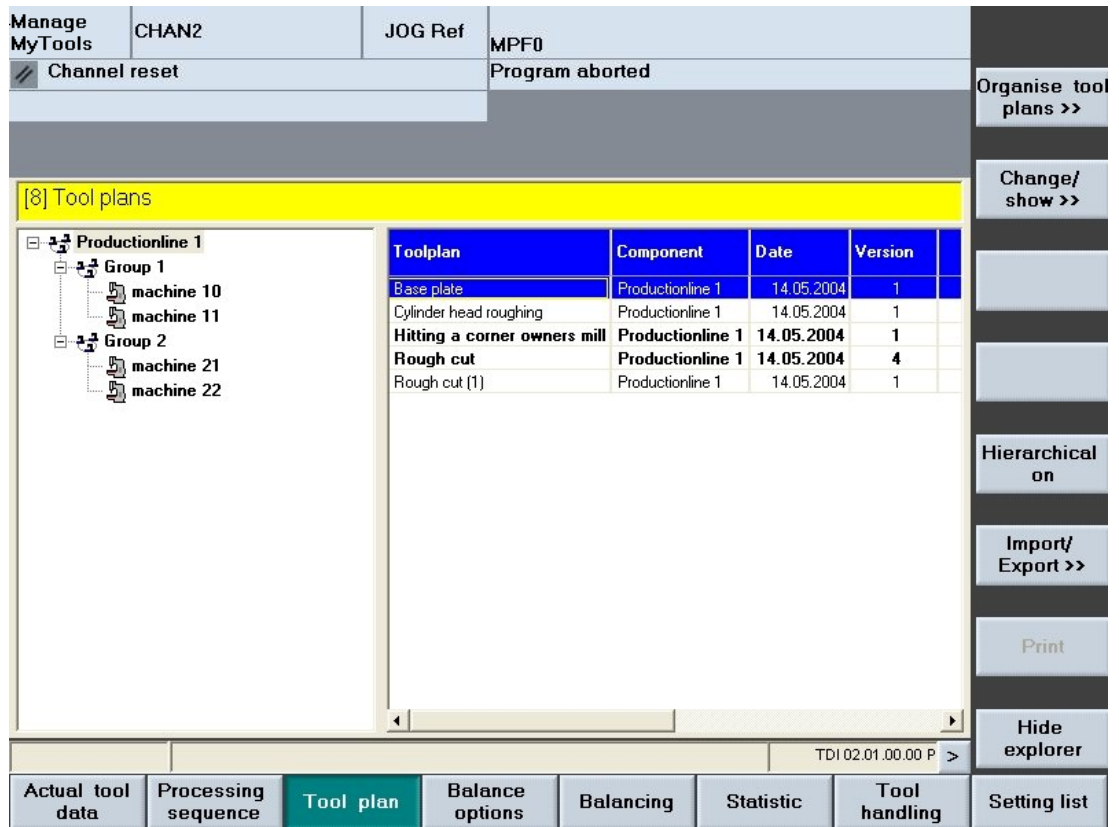


Figure 3-94 Tool plans

### Description of softkeys













The following functions can be executed using the vertical softkeys:

| Softkey                | Description   |
|------------------------|---|
| Organize tool plans >> | Open the sequence menu for customizing the tool plans.  |
| Change/display >>      | Open the window for displaying/creating the selected tool plan.   |
| Hierarchical on/off    | Switch hierarchical function on or off. <ul style="list-style-type: none"> <li>• If the hierarchy function is activated, all tool plans are displayed that are on the same level or above the selected component in the Explorer tree.</li> <li>• If the hierarchy function is deactivated, the tool plans assigned to the selected component are displayed.</li> </ul> |
| Import/export >>       | Open the sequence menu for the import or export of tool plans.  |
| Print                  | Print the list of the machining sequences.<br>Equivalent window representation  |
| Explorer on/off        | Activates/deactivates the Explorer view tree representation.  |



The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|    | Use the TAB key to switch between the Explorer view and table format.  |
|       | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.   |
|       | Use the up/down arrow keys to move the cursor up and down within the Explorer.   |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection.   |
|     | Within the tool plan list, use the arrow keys to move the cursor up or down.   |
|   | Only the columns selected in the layout are displayed.<br>The list of the available columns can, however, be larger than that of the selected columns.<br>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area. |
|    | Use the <P> key to make the Explorer window and the table columns wider.   |
|    | Use the <M> key to make the Explorer window and the table columns narrower.  |

### 3.6.2.2 Organizing tool plans

#### Functions

|                  | Meaning   |
|------------------|---|
| Tool plan        | Input field to display or enter the tool plan names.                      |
| Created          | Display the creation date of the tool plan.                               |
| By               | Display the creator of the tool plan.                                     |
| Plant components | Storage location of the tool plan (selected plant component in Explorer). |

|                | Meaning  |
|----------------|--|
| NC program     | Enter the NC program.<br>- OR -<br>Alternatively, on the unit with SINUMERIK, incl. HMI Advanced, it is possible to display a list of all NC programs assigned to the machine via the "Program selection" softkey (all main programs not only from the workpiece directory but also from the main program directory that are stored in the NC data management of the SINUMERIK).<br><ul style="list-style-type: none"> <li>• Select an NC program.</li> <li>• Confirm with the "OK" softkey.<br/>The program will be included in the input field.</li> </ul> |
| Channel        | Channel details.   |
| Total run time | Total run time of the NC program.<br>This value is adapted automatically as soon as the sum of the tool cutting times (without downtimes) is greater than the value entered.   |

**Create a new tool plan**

1. The "Tool Plans" window is open.
2. In the Explorer tree, select a machine.
3. Press the "Organize tool plans" softkey. >>".  
The vertical softkey menu switches to the sequence menu for editing/creating the tool plans.

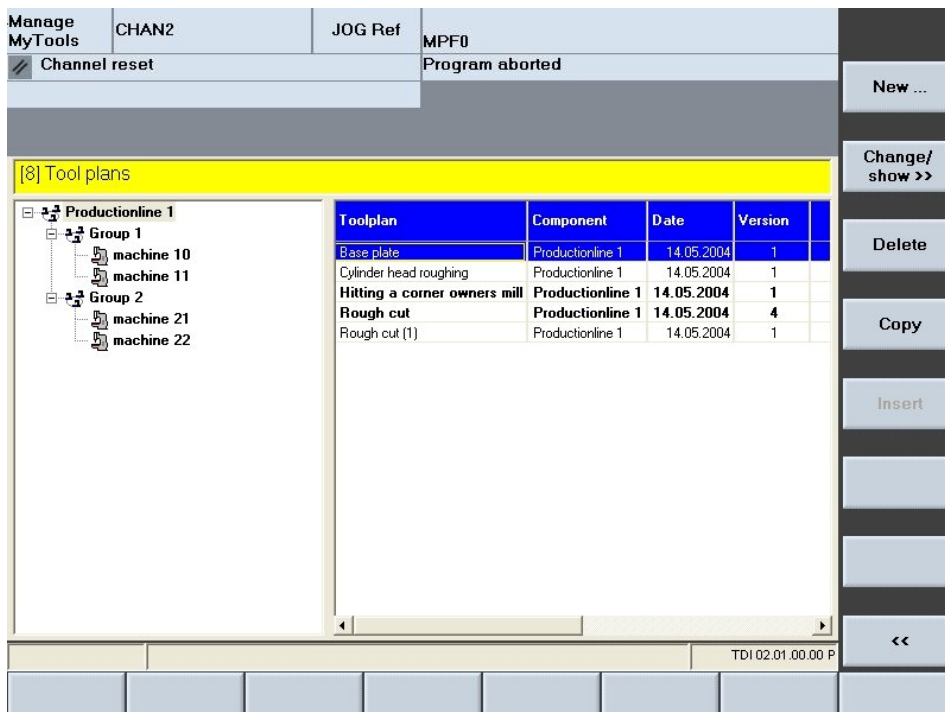


Figure 3-95 Organizing tool plans

4. Press the "New ..." softkey.  
The "New Tool Plan" window opens.

Figure 3-96 New tool plan

### Delete tool plan

1. In the Explorer tree, select the tool plan.
2. Press the "Delete" softkey.  
A prompt will be displayed.
3. Press the "OK" softkey to irrevocably delete the tool plan.

| Toolplan                     | Component        | Date       | Version |
|------------------------------|------------------|------------|---------|
| Base plate                   | Productionline 1 | 14.05.2004 | 1       |
| Cylinder head roughing       | Productionline 1 | 14.05.2004 | 1       |
| Hitting a corner owners mill | Productionline 1 | 14.05.2004 | 1       |
|                              | Productionline 1 | 14.05.2004 | 4       |
|                              |                  | 14.05.2004 | 1       |
|                              |                  | 23.10.2006 | 1       |

Figure 3-97 Delete tool plan

**Description of softkeys**

The following functions can be executed using the vertical softkeys:

| Softkey           | Meaning  |
|-------------------|--|
| New ...           | "New Tool Plan" input window for a new tool plan.  |
| Change/display >> | Data of the selected tool plan in the "Display/Change Tool Plans" window.                          |
| Deleting          | Delete the selected tool plan.<br>The deletion of the tool plan follows a prompt that you confirm. |
| Copy              | Copy the selected tool plan. The tool plan will be saved in the temporary storage.                 |
| Paste             | Insert the tool plan selected in the temporary storage with the changed name (index augmented).    |
| <<                | Reset vertical softkey bar.  |
| OK                | Accept the inputs of the tool plan.  |
| Cancel            | Discard the inputs of the tool plan.   |

**3.6.2.3 Display/change tool plans**

**Change functions**

You can change the following data of a tool plan:

- Tool plan
- Plant components
- NC program
- Channel
- Total run time

**Functions**

|                  | Meaning   |
|------------------|---|
| Tool plan        | Input field for the tool plan name.                                       |
| Plant components | Storage location of the tool plan (selected plant component in Explorer). |

|                | Meaning  |
|----------------|--|
| NC program     | <p>Enter the NC program.</p> <p>- OR -</p> <p>Alternatively, on the unit with SINUMERIK, incl. HMI Advanced, it is possible to display a list of all NC programs assigned to the machine via the "Program selection" softkey (all main programs not only from the workpiece directory but also from the main program directory that are stored in the NC data management of the SINUMERIK).</p> <ul style="list-style-type: none"> <li>• Select an NC program.</li> <li>• Confirm with the "OK" softkey.<br/>The program will be included in the input field.</li> </ul> |
| Total run time | <p>Total run time of the NC program.</p> <p>This value is adapted automatically as soon as the sum of the tool cutting times (without downtimes) is greater than the value entered.</p>  |

### Display/change tool plan

1. The "Display/Change Tool Plans" window is open.
2. Select a tool plan.
3. Press the "Change tool plan ..." softkey.  
The "Change Tool Plan" window opens.

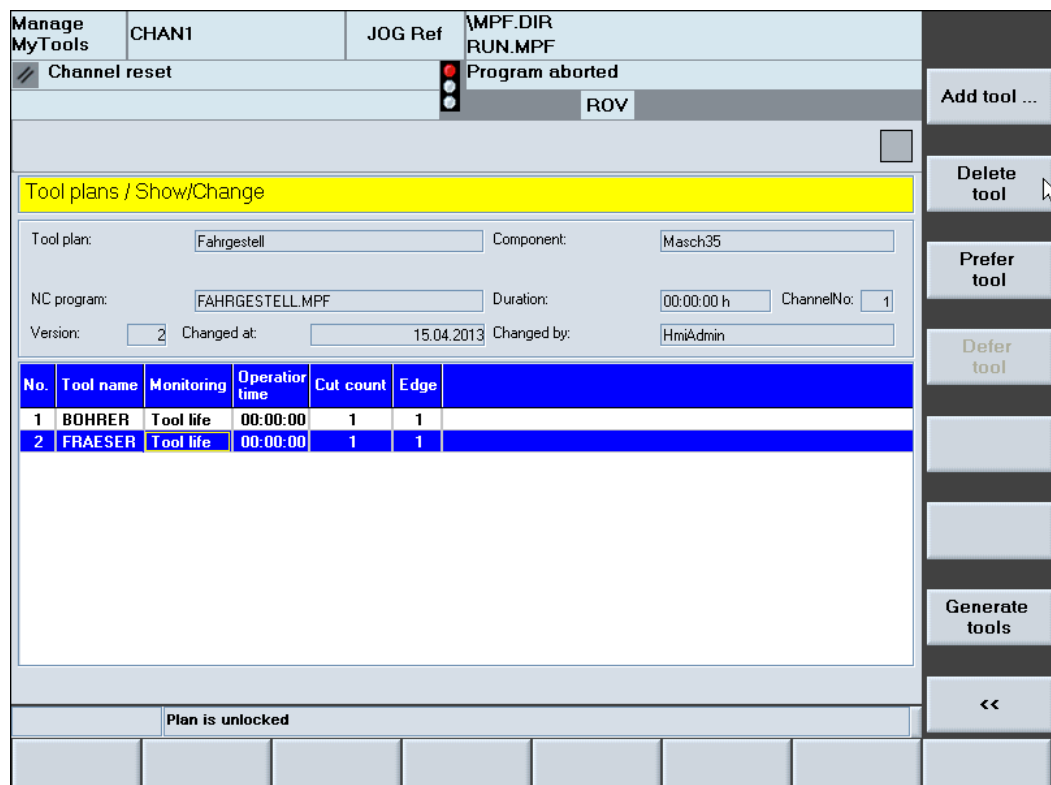


Figure 3-98 Display/change tool plans

4. Change the desired data and press the "OK" softkey in order to save the data.

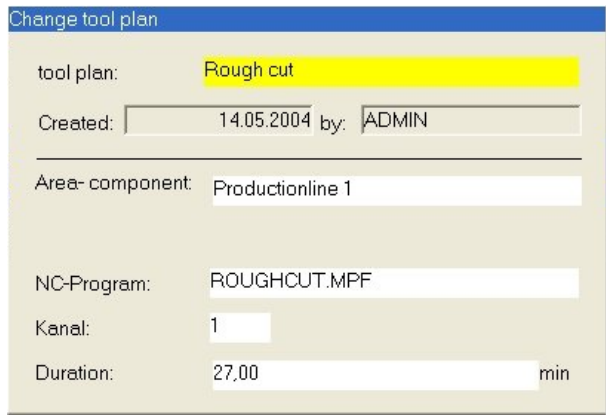


Figure 3-99 Change tool plan

3.6.2.4 Create new tool

Functions

|                       | Meaning   |
|-----------------------|---|
| Tool                  | Input field for the designation of the tool.  |
| Cutting edge          | The cutting edge used for the machining step in the NC program.   |
| Monitoring            | Balancing is performed with the monitoring method selected here. The following selection possibilities are available: <ul style="list-style-type: none"> <li>• No monitoring</li> <li>• Tool life</li> <li>• Quantity</li> </ul> The following fields will be displayed depending on the selected monitoring method: <ul style="list-style-type: none"> <li>• "Cutting time" = for the tool life monitoring</li> <li>• "Cut count" = for unit count monitoring</li> </ul> |
| Cutting time          | Time in minutes for which the tool is cutting.  |
| Consumption cut count | Number of pieces machined between resharpening to be subtracted from the planned cut count per operation.<br>Note:<br>The cut count must match the actual unit quantity (setpiece) in the NC program.   |

## Procedure

1. You are currently in the "Tool Plans" window and have selected a tool plan
2. Press the softkey "Organize tools >>"
3. Press the "Add tool ..." softkey.  
The "Create New Tool" window opens.

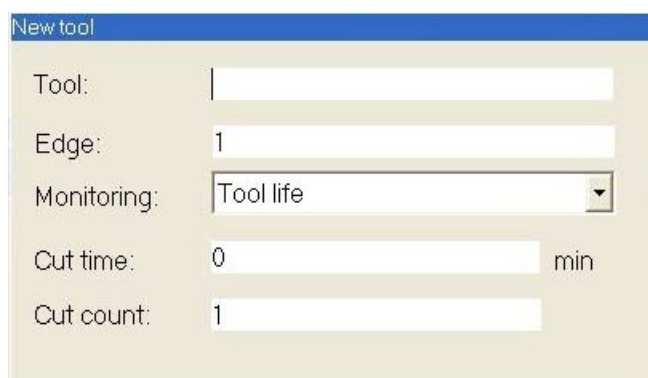


Figure 3-100 Create new tool

## Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkeys     | Meaning  |
|--------------|--|
| Delete tool  | Delete the selected tool.<br>The deletion of the tool follows a prompt that you confirm with "OK". |
| Advance tool | Move the selected tool up one position in the sequence.  |
| Back tool    | Move the selected tool down one position in the sequence.  |
| Print        | Print the current tool plan.   |

### 3.6.2.5 Import/export tool plans

#### Import

You have the possibility to import tool plans from a drive directory into the central database. The assignment is made via the selected components in the Explorer tree.

#### Export

You have the possibility to export tool plans from the central database into a drive directory. The assignment is made via the selected components in the Explorer tree and the selected tool plan.

**Function**

|                    | Meaning   |
|--------------------|---|
| Selected component | Name of the tool plan.  |
| Drives             | Select a drive from the selection list.   |
| Directory          | The "Directory" selection list on the left below shows the selected directories on the selected drive.                          |
| Files              | Select a tool plan for the import/export.<br>After selection of the directory, the stored TOP files (tool plans) are displayed. |

**Procedure**

1. The "Tool Plans" window is open.
2. Select the tool plan.
3. Press the "Import tool plan >>" or the "Export tool plan >>" softkey.  
The "Tool Plan / Import" or "Tool Plan / Export" window opens.

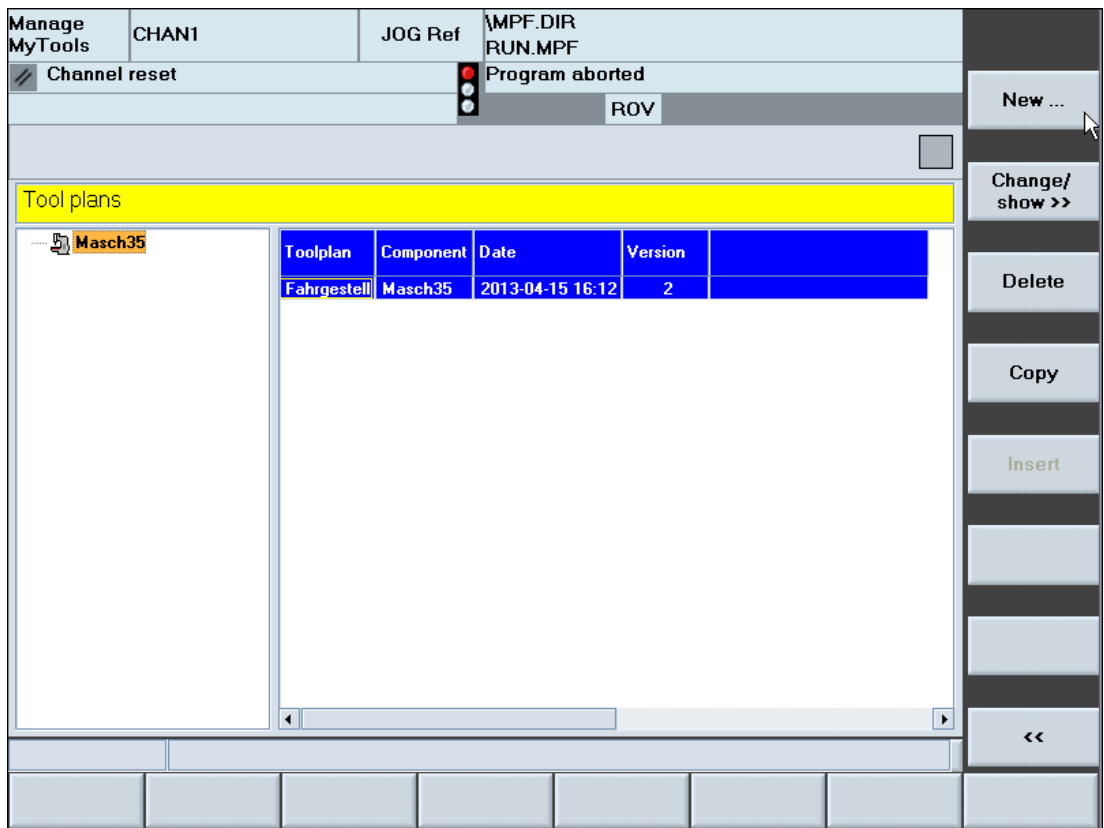


Figure 3-101 Import/export of tool plans



**Note**

Imported tool plans are stored in the tool plan overview with the name they had in the header data of the tool plan.

**Note**

Tool plans in SinTDI format (file type TOP) are converted to an XML-based format via the import function and stored in the database. They are transferred with the file name of the file. Such imported tool plans must still be augmented with the following missing parameters using "Display/change tool plan":

- NC program name
- Total run time
- Changed on
- Changed by

**Note**

Importing/exporting does not delete the tool plans in the source.

In the target directory, existing tool plans that were already exported are overwritten by another export operation.

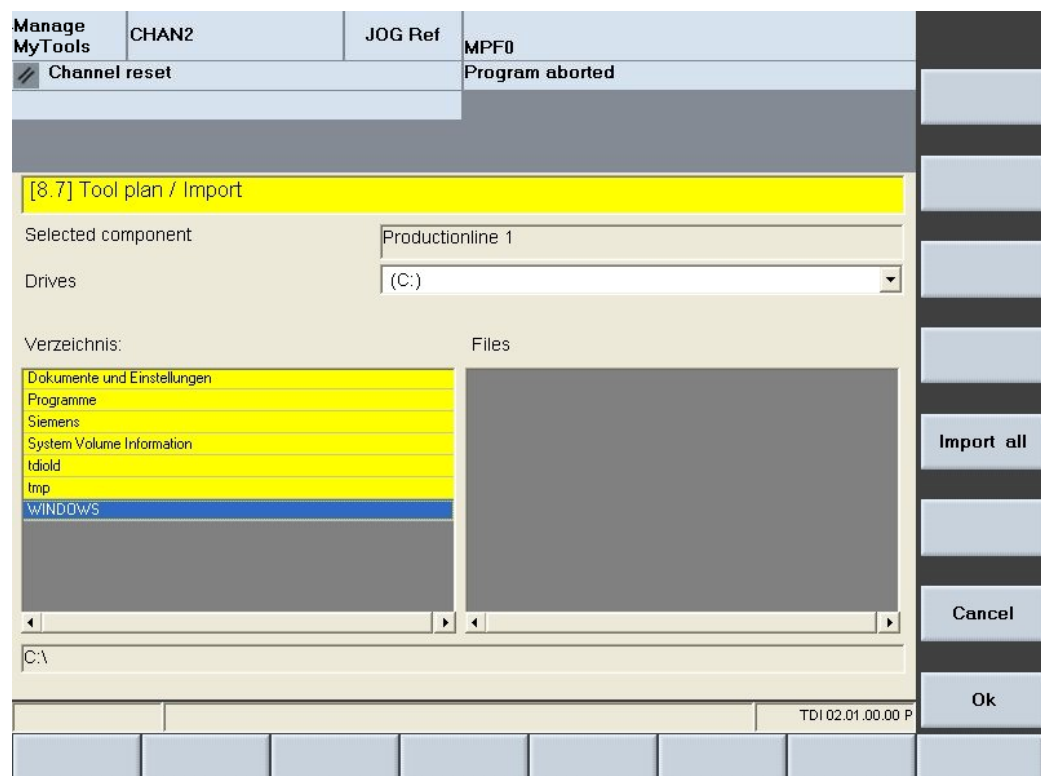


Figure 3-102 Tool plan - import

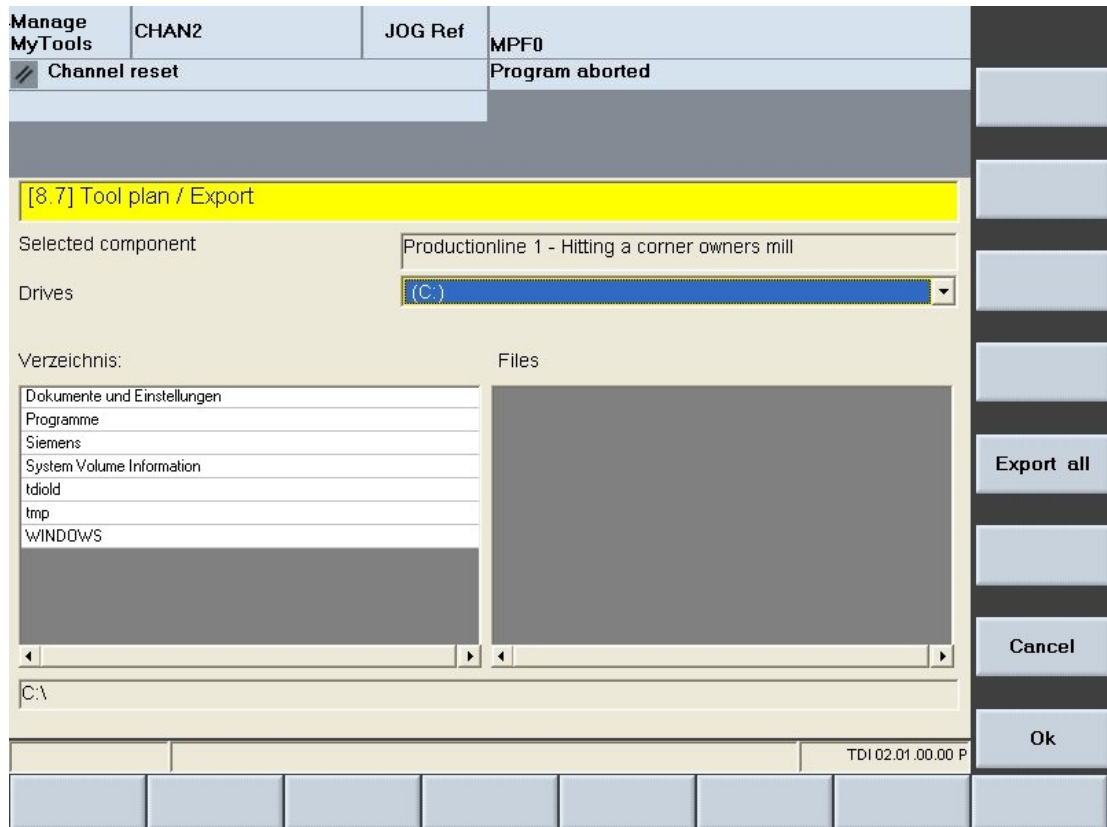


Figure 3-103 Tool plan - export

### Softkey labeling

The following functions can be executed using the vertical softkeys:

| Softkey    | Description  |
|------------|--|
| OK         | Transfer the selected tool plan into the central database and assign it to the component previously selected in the Explorer tree. This component is shown under "Selected component". |
| Import all | Transfer all tool plans present in the directory to the central database and assign to the component previously selected in the Explorer tree.   |
| Export all | Export all tool plans present in the previously selected component.  |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

#### Key



#### Function

Use the <TAB> key to jump from one input field to the next.



Use the arrow keys to move the cursor up and down within the directory list and within the file list.



Use the <SELECT> key to select the drive in the "Drives" selection list.



Use the <INPUT> key to change to a selected directory.

### 3.6.2.6 Tool plan format

#### Parameter description

| Node identifier | Description   | Example   |
|-----------------|---|---|
| <ToolPlan       | Start of the tool plan.   |   |
| id=             | Name of the tool plan.  | "Rough cut"   |
| nodeId=         | Component to which tool plan is assigned.   | "BAZ1"  |
| version=        | Version of the tool plan.   | "4"   |
| prog=           | Name of NC program associated with tool plan (main program of type MPF only). Paths of the SINUMERIK data management can also be defined.<br>Example:<br>//MPF.DIR/ROUGHING.MPF<br>- OR -<br>//WKS.DIR/ ROUGHING.WPD/<br>ROUGHING.MPF | "ROUGHING"<br>Otherwise:<br>"ROUGHING\<br>ROUGHING.MPF" |
| duration=       | Total duration of the NC program.   | "30."   |
| lastChangeDate= | Date of the last change.  | "2004-05-05T12:08:49"                                   |
| lastChangeName= | Name of the last user.  | "ADMIN"   |
| <Tool toolId=   | Name of the first tool.   | "Cutter 100"  |
| cutTime=        | Cut time in minutes of the tool for the operation with monitoring method tool life.   | "15."   |
| cutCount=       | Cut count in workpieces for the operation with monitoring method batch size.  | "1"   |
| mon=            | Monitoring method:<br>0= none<br>1= tool life<br>2= unit quantity   | "2"   |
| </ToolPlan      | End of the tool plan.   |   |

Example

```
<ToolPlan id="Rough cut" nodeId="BAZ1" version="4" prog="ROUGHING" duration="30."
lastChangeDate="2004-05-05T12:08:49" lastChangeName="ADMIN">
  <Tool toolId="Cutter 100" cutTime="5." mon="1"/>
  <Tool toolId="test" cutTime="15." cutCount="1" mon="2"/>
  <Tool toolId="Cutter 80" cutTime="10." mon="1"/>
</ToolPlan
```

3.6.3 Balance options

Overview

There are constraints for the balance calculation such as time limits or type of balance calculation that you must set first. This is done in the "Balance Options" window.

The "Balance Options" window is divided into the following areas:

- Balance calculation type, see Section: Type of balancing (Page 173)
- Balance calculation limits, see Section: Balance limit (Page 173)
- Display of the balance calculation results, see Section: Display balance result (Page 174)
- Selection of the plant view (only in conjunction with HMI-Advanced), see Section: Specify the display of the plant view (Page 174)

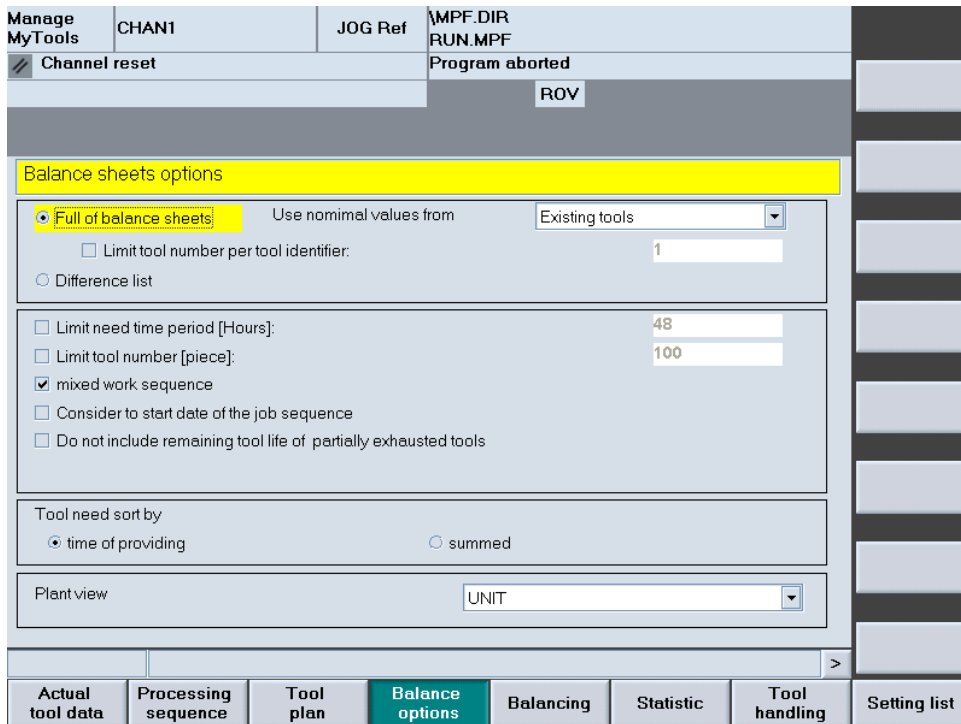


Figure 3-104 Balance options

### 3.6.3.1 Type of balancing

You can chose between two types of balancing:

- Full balance
- Differential balance

#### Function

|  | Meaning  |
|--|--|
| Full balance (standard, tool life from the tool cabinet) | If activated, the balance calculation compares the planned tool life / unit quantity of the tools and the current residual tool life / unit quantity compared with the averaged required tool life / unit quantity. Thus, the cutting time per tool in the tool plan times the number of parts to be produced.<br>The result of the balancing is the required number of tools per tool type. |
| Limit the tool number per tool identifier to:            | The calculation of the balancing is terminated after the specified number of a tool identifier has been reached.   |
| Difference list  | If activated, the tool types used according to the tool plan are compared with the tool types in the tool magazine. The result of the balancing is a list of the tool types not available in the selected magazines.   |

#### Note

In addition to the tool magazine, other magazines can be considered as available capacity in the balancing. The selection is made in the "Balancing" window with the "Container selection ..." softkey.

### 3.6.3.2 Balance limit

You can set the following limits:

#### Function

|  | Meaning   |
|--|---|
| Limit required time period [hours] to: | Limit the time period for the balance calculation, e.g. one shift = 8 hours.  |
| Limit tool number [piece] to:          | Limit the number of tools required to a maximum number across all tool types. |

|               |          | Meaning  |
|---------------|----------|--|
| Mix machining |          | Customize the processing behavior in planning for released machining sequences with regard to the consideration of the workpieces.<br>The option controls the time at which tools are supplied to the machine. |
|               | Disabled | The machining sequences are processed sequentially. Only if one machining sequence has been completed is the next one started.   |
|               | Enabled  | The processing of all released machining sequences begins simultaneously. An idealized mix of workpieces is generated on the basis of the balance batch size.  |

**3.6.3.3 Display balance result**

The result of balancing can be displayed in one of two ways:

- Use time
- Summed

**Function**

|          | Meaning   |
|----------|---|
| Use time | This makes an entry for each tool required in the result list stating the latest time that the tool must be available to the machine without causing downtimes due to a missing tool. |
| Summed   | This makes an entry in the result list for each tool type stating what quantity is required for the tool type in question.  |

**3.6.3.4 Specify the display of the plant view**

**Function**







Use a selection list to select in the HMI Advanced environment the display in the Explorer.

The following settings are available:

|        | Meaning  |
|--------|--|
| AREA   | Display without restriction.                                 |
| H-UNIT | Display the complete machine group on which you are working. |
| UNIT   | Display the machine on which you are working.                |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|    | Use the <TAB> key to jump from one field to the next.                  |
|   | Use the arrow keys to move the cursor from input field to input field. |
|   |  |
|    | Use the <INPUT> key to complete the inputs in the fields.              |

### 3.6.4 Balance calculation

In the "Balancing" window, initiate the balancing action, display the calculation and make additional settings.

#### Procedure

1. Press the "Balancing" softkey.  
The "Balancing" window opens.

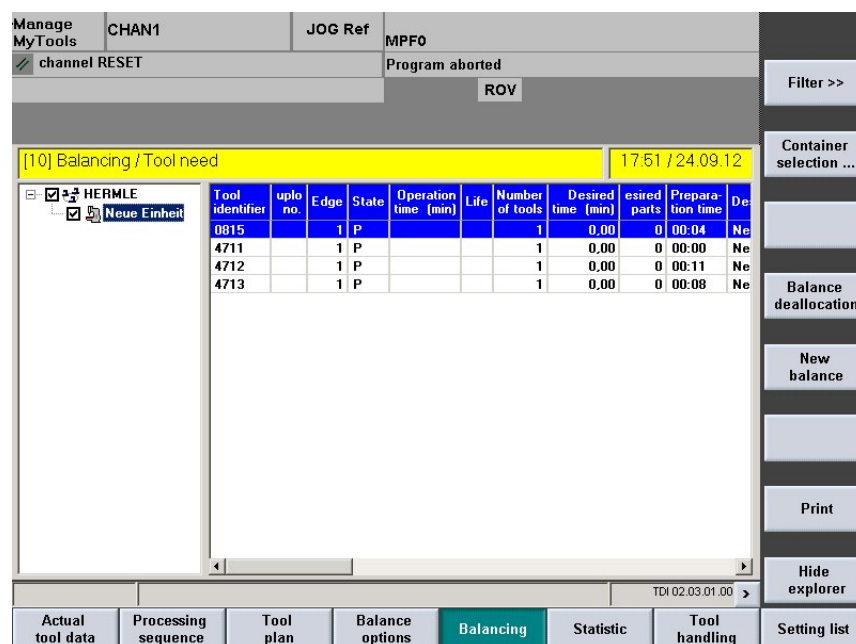


Figure 3-105 Balancing











The following functions can be executed using the vertical softkeys:

**Description of softkeys**

| Softkey                 | Description   |
|-------------------------|---|
| Filter >>               | The balance result is displayed according to certain criteria.          |
| Container selection ... | The window for selecting the tool magazine to be included in balancing. |
| Balance release         | Release the balancing last created and storage of the requirement list. |
| New balance             | Initiate new balance run.   |
| Print                   | Print the visible balance result.                                       |
| Explorer on/off         | Display and hide the tree representation of the plant components.       |

The following keys are available for operation of the controller and the machine tool.

**Keys and functions**

| Key   | Function   |
|---|--|
|    | Use the TAB key to switch between the Explorer view and table format.  |
|   | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.   |
|   | Use the up/down arrow keys to move the cursor up and down within the Explorer.   |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection.   |
|   | Within the tool list, use the arrow keys to move the cursor up or down.  |
|   | Only the columns selected in the layout are displayed.<br>The list of the available columns can, however, be larger than that of the selected columns.<br>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area. |





Use the <P> key to make the Explorer window and the table columns wider.



Use the <M> key to make the Explorer window and the table columns narrower.

### 3.6.4.1 Filter for balance result

The balance result display can be altered using filters.

## Functions

|   | Meaning  |
|---|--|
| Requirement for new tools                       | Display the tools that must be set new.  |
| Tools that can be unloaded                      | Display the tools that can be unloaded from the machine magazine of the machine selected in the Explorer.  |
| Reserved and requested tools                    | Display the tools considered for a specific machine as available capacity in the balance calculation. The tool containers to be considered are selected in the "Container Selection" window.   |
| Tools that are no longer required               | Display those tools that have a reservation code from an earlier balance calculation session but are no longer required in the current balance calculation.  |
| Display only tools from the following magazines | Further limit the hit list of the "Reserved tools" and "Tools not required" filters.<br>Three settings are available: <ul style="list-style-type: none"> <li>• Machine magazines</li> <li>• External magazines</li> <li>• Setting list</li> </ul>          |
| Table format                                    | Representation of the table format using the "Table format >>" softkey on different views.<br>Use the "Table format" selection field to call previously defined or default stored tables. Operating mechanisms, see Section: Layout filter area (Page 89). |

The following keys are available for operation of the controller and the machine tool.

## Keys and functions

### Key

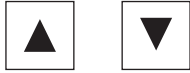


### Function

Use the <TAB> key to jump from one field to the next.



Use the arrow keys to move the cursor from input field to input field.



Use the <INPUT> key to complete the inputs in the fields.

### 3.6.4.2 Container selection for balancing

It is possible to assign the available magazines to each machine as available tool capacity. The tools in the activated magazines are then considered in balancing.

If tools are required in the activated magazines for the balancing period, they are identified with a reservation code by the balancing. You can display just these tools using the "Reserved tools" filter function.

#### Procedure

1. Press the "Container selection" softkey.  
The "Container Selection" window opens.

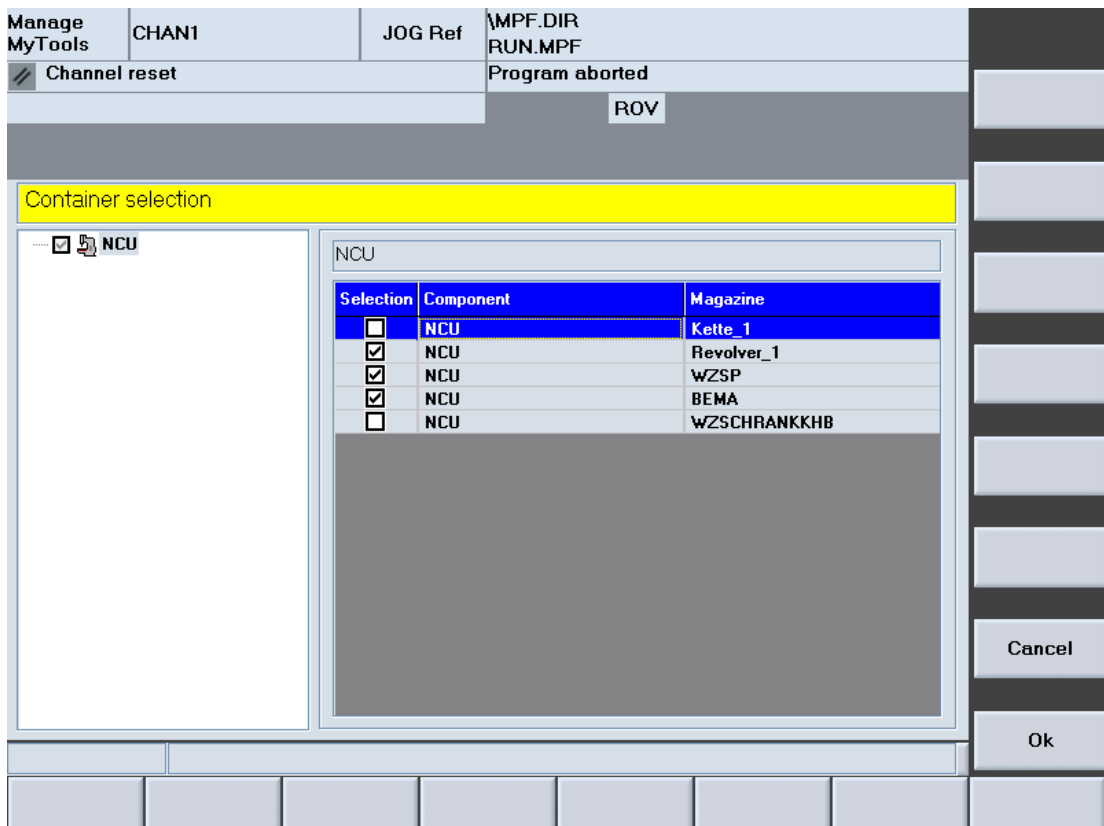


Figure 3-106 Container selection

### 3.6.4.3 Balance deallocation

#### Overview

Balance deallocation sets or deletes the reservation codes for existing tools. If tools are missing, the relevant entry will be made in the settings list.

Tools that are no longer needed but have been set on the settings list in a previous balance calculation and have not yet been set by the tool setting station in the current balance calculation will be removed again.

In addition, if the "Setting magazine and export" function in the Manage MyTools Configuration application is active, the tool requirement is transferred to the tool setting station (TSS) in a file. The file name starts with "toseg", followed by a 3-digit consecutive number and ends with the extension ".ini" (e.g. toseg002.ini).

To export the tool requirement to the TSS, a directory is created per default. On the machine (HMI / MMC103), directory "tdi\_out.clp" is set-up in the data management and directory "MMT\_OUT" is set-up on the server in the installation directory.

The tool data file is automatically transferred to the defined directory on deallocation of the balance calculation by pressing the "OK" softkey. This writes all tools to be set for the current balance calculation into a file.

---

#### Note

To allow network access, this folder must be set up as a network share.

---

Activate the export to the "MMT\_OUT" directory separately in the Manage MyTools Configuration application for the relevant setting magazine. Also customize the export path here.

#### "MMT\_OUT" file

The tool data stored in the file is structured as follows:

#### Example

| Program code                      | Comment  |
|-----------------------------------|--|
| %_N_ToSEG_001_INI                 | ; Program header (optional), stating the file name. In the example, the file is named ToSEG001.ini |
| \$TDI_SETDATE ="2004-03-15 16:49" | ; Time of query<br>Format: YYYY-MM-DD HH:MM  |
| \$TC_TP2[1] ="Drill11"            | ; Tool identifier (32 characters).   |
| \$TDI_MACHINE[1] ="Machine1"      | ; Machine name for which the requirement was ascertained.  |
| %_N_ToSEG_001_INI                 | ; Name of the machining sequence.  |
| \$TDI_PART[1] =2                  | ; Workpiece count as of which the tool will be required in the machining sequence.                 |
| \$TDI_ACCESS[1] ="2004-           | ; The parameter states the planned operational time for  |

| Program code                            | Comment   |
|---|---|
| 03-16 09:01"                            | use of the tool.<br>Format: YYYY-MM-DD HH:MM.   |
| \$TDI_TOOL_COUNT[1]=2                   | ; Number of tools required (only summated requirement)  |
| \$TC_TP2[2] ="Cutter1"                  | ; Tool identifier (32 characters).  |
| \$TDI_MACHINE[2]<br>="Machine2"         | ; Machine name for which the requirement was ascertained.   |
| \$TDI_WORK[2]="Gearbox"                 | ; Name of the machining sequence  |
| \$TDI_PART[2] =4                        | ; Workpiece count as of which the tool will be required<br>in the machining sequence.                   |
| \$TDI_ACCESS[2] ="2004-<br>03-16 09:50" | ; The parameter states the planned operational time for<br>use of the tool.<br>Format: YYYY-MM-DD HH:MM |

### 3.6.4.4 New balance

#### Overview

You can balance the machining sequences of all selected machines that have a release code.

#### Procedure

1. Press the "New balance" softkey to initiate a new balancing run.  
A progress display that shows that the balancing is active appears on the screen.
2. If the balancing aborts with an error, a window with the error display will open, e.g. tool plan not present or component faulty.

#### Note

If, after a balancing operation, the balance result is released and then balancing performed again, a different balancing result will be obtained because the released balance result is taken into account as the requested capacity.

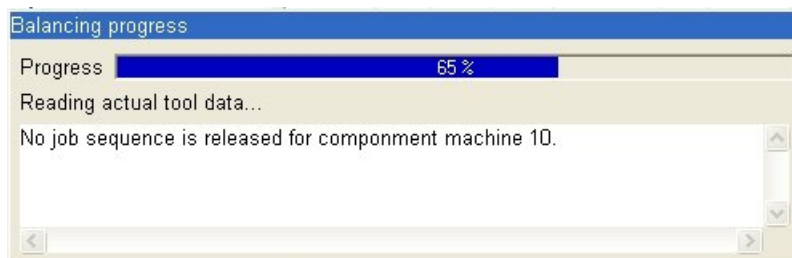


Figure 3-107 Balancing with progress bar

### 3.6.5 Setting list - adjust columns

#### Overview

All tools that have been defined as a new requirement by the current balancing, are transferred to the settings list with the balance deallocation.

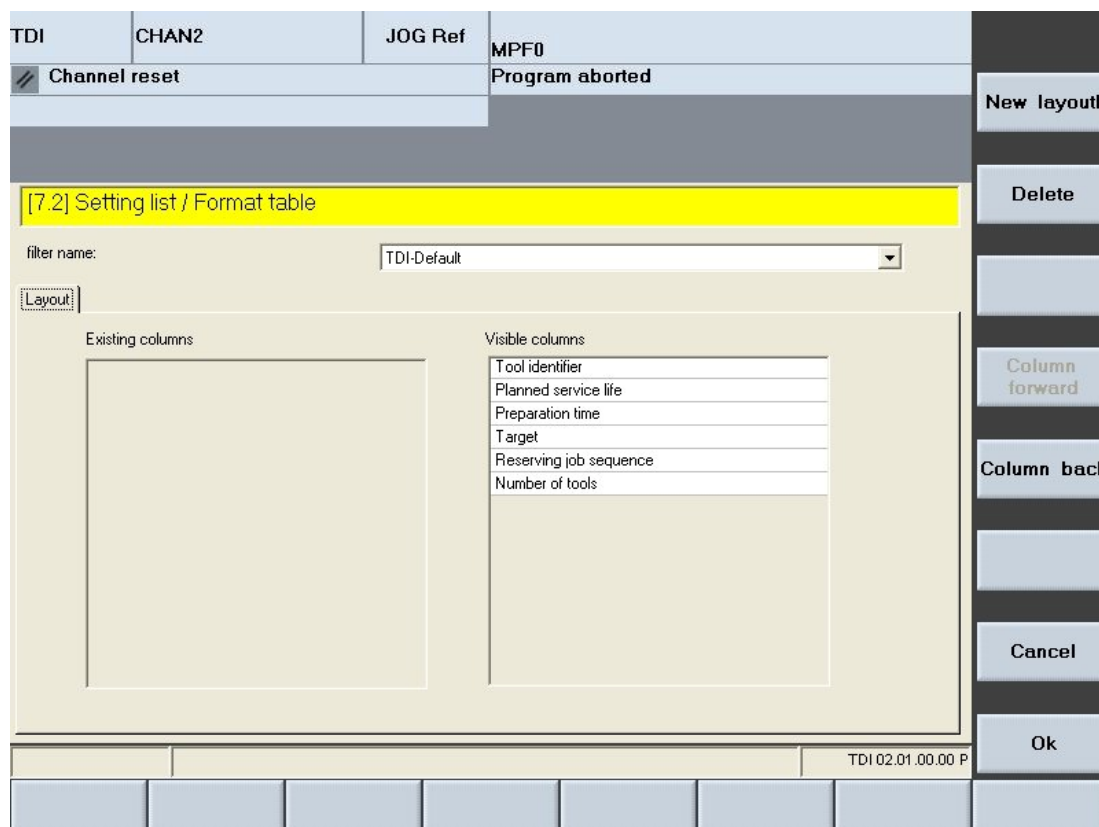


Figure 3-108 Setting list













#### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey         | Meaning   |
|-----------------|---|
| Table format >> | Set different views in the "Table Format" window.                 |
| Print           | Print setting list.   |
| Explorer on/off | Display and hide the tree representation of the plant components. |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|    | Use the TAB key to switch between the Explorer view and table format.  |
|       | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.   |
|       | Use the up/down arrow keys to move the cursor up and down within the Explorer.   |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection.   |
|     | Within the tool list, use the arrow keys to move the cursor up or down.  |
|   | Only the columns selected in the layout are displayed.<br>The list of the available columns can, however, be larger than that of the selected columns.<br>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area. |
|    | Use the <P> key to make the Explorer window and the table columns wider.   |
|    | Use the <M> key to make the Explorer window and the table columns narrower.  |

Use the "Table format" softkey to customize the visible columns.

### Functions

|                   | Meaning   |
|-------------------|---|
| Available columns | The list box shows all tool data that has not been selected.                            |
| Visible columns   | The list box shows the values displayed for each tool in the tool actual data overview. |

|                              | Meaning  |
|------------------------------|--|
| Provision                    | Time when the tool must be available on the machine. |
| Reserving machining sequence | Machining sequence for which the tool was balanced.  |
| Target                       | Component for which the tool is to be set.           |
| Tool identifier              | Identifier of the balanced tool type.                |
| Target tool life             | Planned tool life of the balanced tool type.         |

### Procedure

Please refer to the following section for the procedure:

See Section: Layout filter area (Page 89)

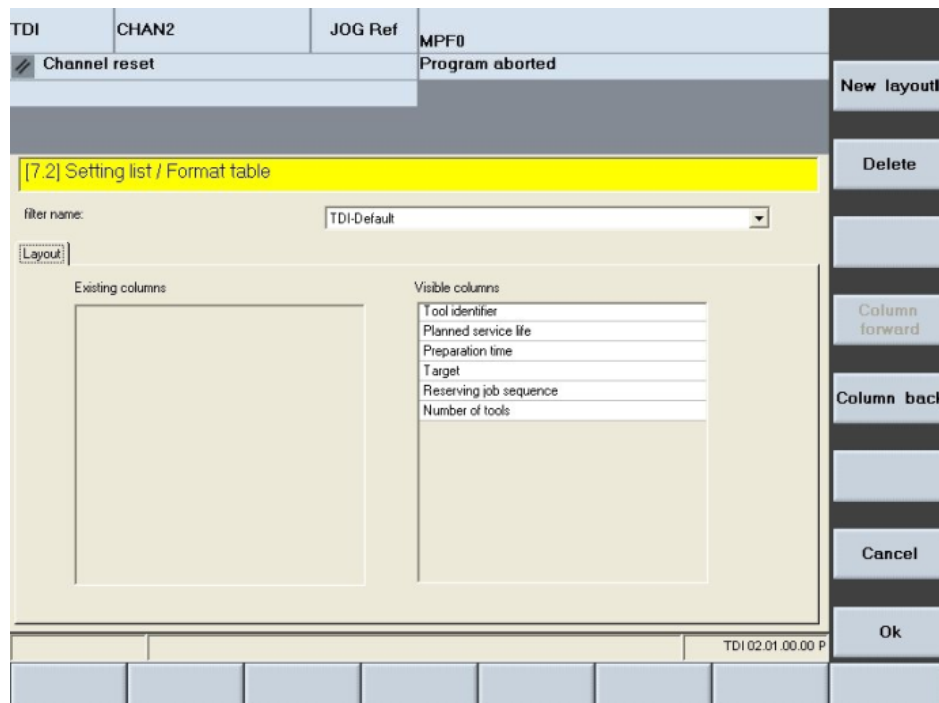


Figure 3-109 Setting list table format

### 3.7 Manage MyTools server

#### Overview

You can use the installation of a Manage MyTools server to make Manage MyTools functions installed on individual machines available across an entire network.

#### 3.7.1 Plant structure

##### Example of a plant structure

The individual components to be managed are defined in the configuration program. A plant configuration can consist of several levels.

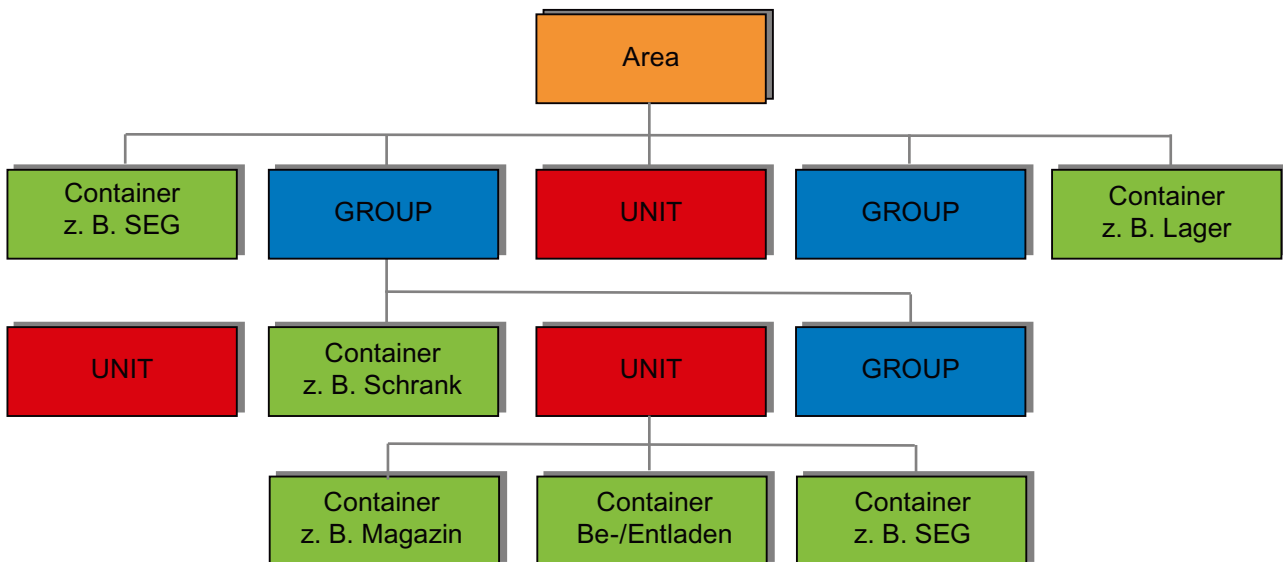


Figure 3-110 Plant configuration

1st level:  
Entire plant (Area)  
Overview of all the connected plant components.

2nd level:  
Group level (GROUP)  
Grouping of single machines, with tool stores / tool setting stations for whole groups and individual machines.

3rd level:  
Unit level (UNIT)  
Single machines, subgroups and tool stores / tool setting stations for whole machines.



4th level:  
Machine magazine (Container)  
Image of the machine magazines of a machine and its directly assigned external tool storage locations.

---

**Note**

The scalability of the server and its ability to be distributed over several PCs makes for improvements in performance and fault tolerance within the plant.

---

## Plant components

The following plant components can be handled:

- SINUMERIK with standard tool management (the integration is carried out project-specifically if standard tool management is not present or if customized tool management exists)
- SIMATIC S7 with DB59 via OPC server
- Third-party controls via OPC server (project-specific adaptation necessary)
- PC-based control systems (e.g. MCIS PDA or TDM from TDM Systems)
- External tool stores (e.g. preset tools or used tools without machine assignment)
- Tool setting stations

## Plant configuration

The following points should be noted when configuring the plant tree:

- Theoretically there is no limit to the maximum number of levels the plant tree may have. In general, we do not recommend that you exceed a depth of five levels.
- The path, which is derived from a branch of the plant tree (directory path), must not exceed 256 characters in length.
- All nodes in the tree must have unique names. The only exception to this rule is for the identifiers used for the magazines. Magazines are always at the bottom level and are only required to be unique within their own group.

### 3.7.2 Configuration

#### Procedure

Please refer to the following section for the precise procedure:

See Section:Configuration (Page 24)

### Enable functions

With a Manage MyTools server installation you can activate the following functions via the Manage MyTools Configuration application:

- Create an area in the configuration
- Allocate network addresses
- Import and export plant configurations

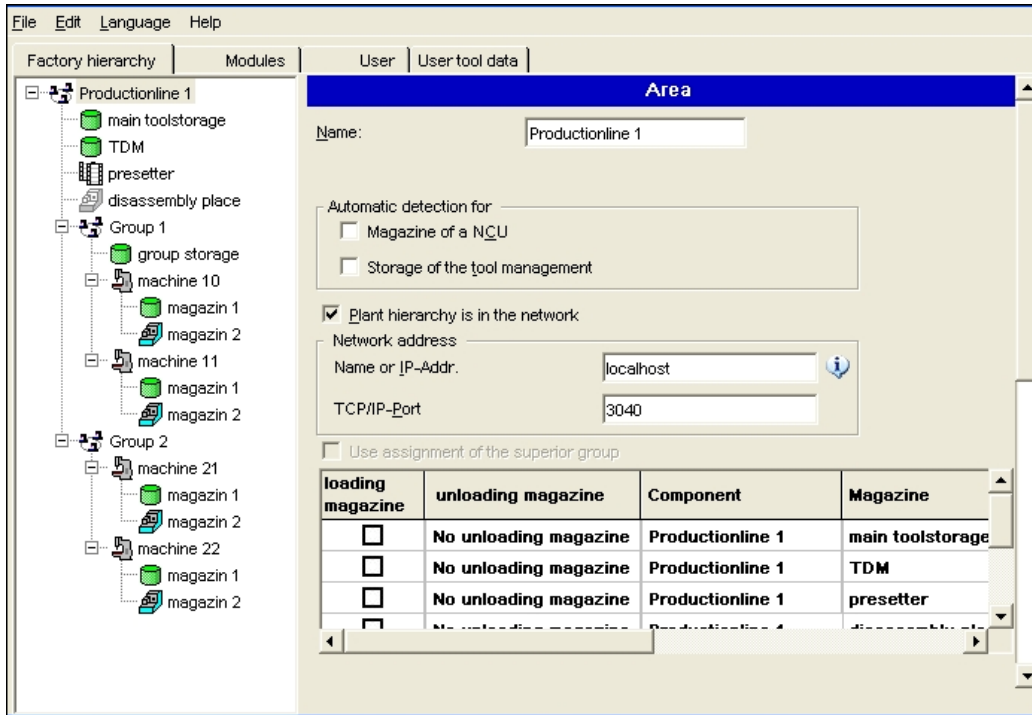


Figure 3-111 Configure user administration

### 3.7.3 Function

#### Overview

With an interconnected Manage MyTools production line, the following data can be managed centrally on a master computer or any workplace PC:

- Manage the following data:
  - Tool master data
  - Tool plans
  - Tool queries
- Call all actual tool data of the connected units, see Section: Overview (Page 80).
- Perform planning sessions for all connected units.
- Transfer data from and to higher-level tool management systems or production planning systems (MCIS PDA).

---

#### Note

The functions described above can be performed for the unit on the host computer on which the appropriate function has been installed.

---

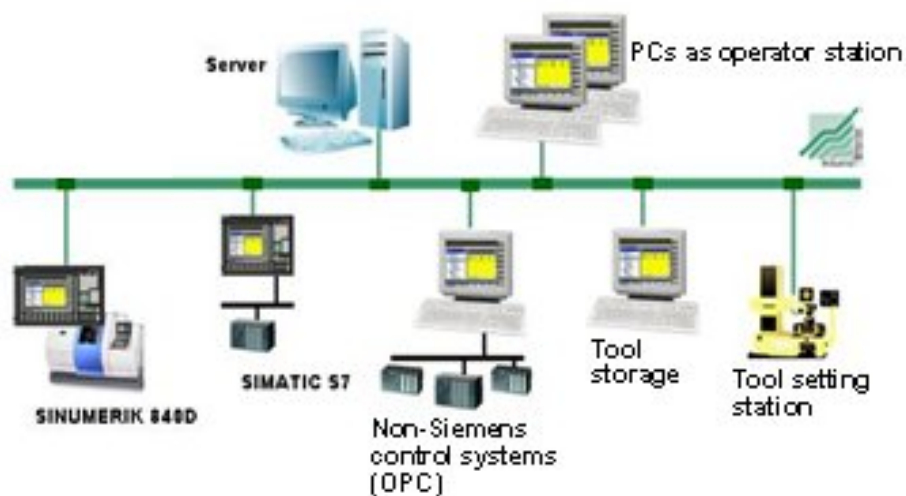


Figure 3-112 Configuration example of Manage MyTools

## 3.8 Machine

### Overview

In the case of machines that are not networked, users have the option to install the following functions on the individual machine as a compact package using the "Machine" function.

- Overview
- Planning
- Tool handling

Machine provides the functional scope of the modules described in the following sections.

## 3.9 Tool plan generation

The Toolplan Generation module is only available in HMI-Advanced.

### 3.9.1 Configuration

#### 3.9.1.1 Create standard simulation without ShopTurn/ShopMill

### Overview

Toolplan Generation uses the standard simulation settings. This means, put the standard simulation into operation before starting Toolplan Generation for the first time.

To commission the standard simulation, refer to the following documentation:

### References

Base software and operating software commissioning manual

### Settings

The following settings must be made when simulating an NC program:

#### User cycles

If user cycles are called in the NC program with parameter transfer, the parameters must be entered in the "dpcuscys.com" file.

The file is located in the "Utilities" operator area, in the "Dialog programming" directory and in the "Simulation data" sub-directory.

Path: F:\DH\DP.DIR\SIM.DIR

## Example

The sub-routine call "YINC" (1,2,3) is programmed in the part program.

In order that the simulation detects the program, make the following entry in the "dpcuscys.com" file:

```
PROC YINC (REAL POSY, REAL INCY, INT FY)
```

### User-specific definition files

Copy all user-specific definition files (Global User Data) from the Definitions directory (path: F:\DH\DEF.DIR) into the simulation directory (Path: F:\DH\DP.DIR\SIM.DIR).

The Definitions directory is located in the "Utilities" operator area and in the "Definitions" directory.

---

### Note

The new settings take effect only when the standard simulation is started.

Entry in F:\user\dpsimnck.ini

---

To simulate an NC program, ensure during the program creation that the PLC cannot be accessed in the simulation.

Tip: Skip the required PLC access operations in the program with the prompt for \$P\_SIM.

In order to reduce the computational time required, when simulation is active, skip to the change command in the tool change cycle.

The standard simulation and Toolplan Generation mutually exclude each other. This means terminate the Toolplan Generation before calling standard simulation. Consequently, if the standard simulation is running, it is not possible to start Toolplan Generation.

## 3.9.1.2 Multi-channel support

### Overview

As of Version 2.0, Toolplan Generation supports the use of multiple NC channels.

Enter the channel required for the simulation in the "Channel No." input field.

### 3.9.1.3 Create standard simulation with ShopTurn/ShopMill

#### Overview

If ShopMill or ShopTurn is installed on your SINUMERIK then it is not necessary to set up the standard simulation.

---

#### Note

Use of the Toolplan Generation function with ShopMill/ShopTurn requires the following versions, or higher:

ShopMill: 6.4.1/65

ShopTurn: 6.4.3/10

---

### 3.9.1.4 Activate simulation with ShopMill/ShopTurn

#### Setting

You activate the simulation using the following display machine data:

|  |                  |
|--|------------------|
| <b>ShopMill and<br/>ShopTurn as of software release 07.10.13</b> |                  |
| MD9718 \$MM_CMM_OPTION_MASK_2                                    | = 40 hexadecimal |

|   |                  |
|---|------------------|
| <b>ShopTurn until software release 07.10.12</b> |                  |
| MD9898 \$MM_ST_OPTION_MASK                      | = 1000000 binary |

### 3.9.1.5 Setting up simulation without ShopMill/ShopTurn

The following specific settings must be made in order to create the simulation without the use of ShopMill or ShopTurn.

#### "smac.def" file

Toolplan Generation operates with a special "smac.def" file based on the standard F:\dh\def.dir\smac.def file in the MMT installation directory (e.g. F:\add\_on\mcisdata\tdi).

Toolplan Generation requires an additional entry from the manufacturer which is used to load (change) the tool in the spindle (e.g. M06). This entry corresponds to the setting in the MD22560 \$MC\_TOOL\_CHANGE\_M\_CODE machine data.

Toolplan Generation uses the "Adjust machine data" function (softkey in the "Generate Tools" window) to create the new "smac.def" file. The M function from the MD22560 \$MC\_TOOL\_CHANGE\_M\_CODE machine data is transferred to this file.

## Example

Original "smac.def" file:

```
;V04.04.04 17.07.98 Sca macro definition file  
N10 DEFINE M13 AS M3 M7  
N20 DEFINE M14 AS M4 M7  
N30 DEFINE M15 AS M5 M9  
N40 DEFINE RL AS REAL  
N99 M30
```

Entry in the F:\add\_on\mcisdata\tdi\smac.def file:

```
DEFINE M06 AS M00 H6=4711.06  
;V04.04.04 17.07.98 Sca macro definition file  
N10 DEFINE M13 AS M3 M7  
N20 DEFINE M14 AS M4 M7  
N30 DEFINE M15 AS M5 M9  
N40 DEFINE RL AS REAL  
N99 M30
```

---

### Note

Copy the "smac.def" file from the "Definitions" directory (F:\dh\def.dir) to F:\add\_on\tdi\data.  
The "smac.def" file relevant for the machine must remain in the "Definitions" directory!

---

## "tdi\_cfg.xml" file

A free M function that you enter in the "tdi\_cfg.xml" file is required for each NC channel.  
As of TDI V2.1, the configuration tool can be used to make the entry.

### Example

In the example below the M function M106 is used for channel 1.  
M functions for additional channels can be added in the same way:

```
<Configuration ...>
  <Node ...>
    <Modules ...>
      <Toolplan ...>
        <ToolplanGeneration>
          <MFunctions Channel1="106"/>
        </ToolplanGeneration>
      </Toolplan>
    </Modules>
  </Node ...>
</Configuration ...>
```

### "initial.ini" file

To allow Toolplan Generation to operate as closely as possible to the control, the "initial.ini" file must be located in the F:\add\_on\tdi\data directory.

After Toolplan Generation is called for the first time, the "initial.ini" file is re-generated using the active NC data in the "Generate Tools" window by running the "Adjust machine data" function.

If necessary, the file can be re-generated at any time (e.g. change of the machine data).

---

#### Note

Press the "Adjust machine data completed" softkey to end the simulation.

Press the "Start simulation" softkey to restart the simulation.

---

### "to\_ini.ini" file

When determining the tool cutting times, Toolplan Generation only works together with the special tool and magazine data from the "to\_ini.ini" file. This file will be created when you press the "Adjust tool data" softkey.

|  |
|--|
|  <b>WARNING</b> |
|--|

This "to\_ini.ini" file must not be changed.

To simulate NC programs in Toolplan Generation, the limitations listed in Section "Setting-up the standard simulation" must be observed.



### "dpsim.ini" file

The "dpsim.ini" file (located in the hmi\_adv directory) is used to specify whether cycles are preloaded by the simulation. To use Toolplan Generation, set the CYCLES parameter to 1 in the [PRELOAD] section.

### "tdi\_cfg.ini" file

In the "tdi\_cfg.ini" file you specify how Toolplan Generation should behave when the cutting times determined for the tools are zero.

The TPGSIMTOOLS parameter in the [MaServer] section determines the behavior:

- 0 : All tools are displayed,  
even those with cutting time  
= zero
- 1 : Only tools with cutting  
time > zero are displayed
- 2 : Project-specific solution
- 3 : Reserved

## 3.9.2 Create tool plan without ShopTurn/ShopMill

### Overview

If you activate the Toolplan Generation module via the Manage MyTools Configuration application, the "Toolplan Generation" softkey is added to the "Tool plan" area.

Before an NC program can determine the tool cutting times, the header data of the tool plan in which the determined tools are to be saved with their cutting times must be created.

See Section: Tool plans (Page 158)

For Toolplan Generation to work correctly, the NC program from which the tool cutting times are to be determined must be saved in the header data.

This NC program must be located in the SINUMERIK NC data directory.

### Procedure

1. Select the appropriate tool plan.
2. Press the "Display/change >>" softkey.
3. Press the "Organize tools" softkey.

- Press the "Generate tools" softkey on the vertical softkey bar. The window for the tool plan simulation opens.

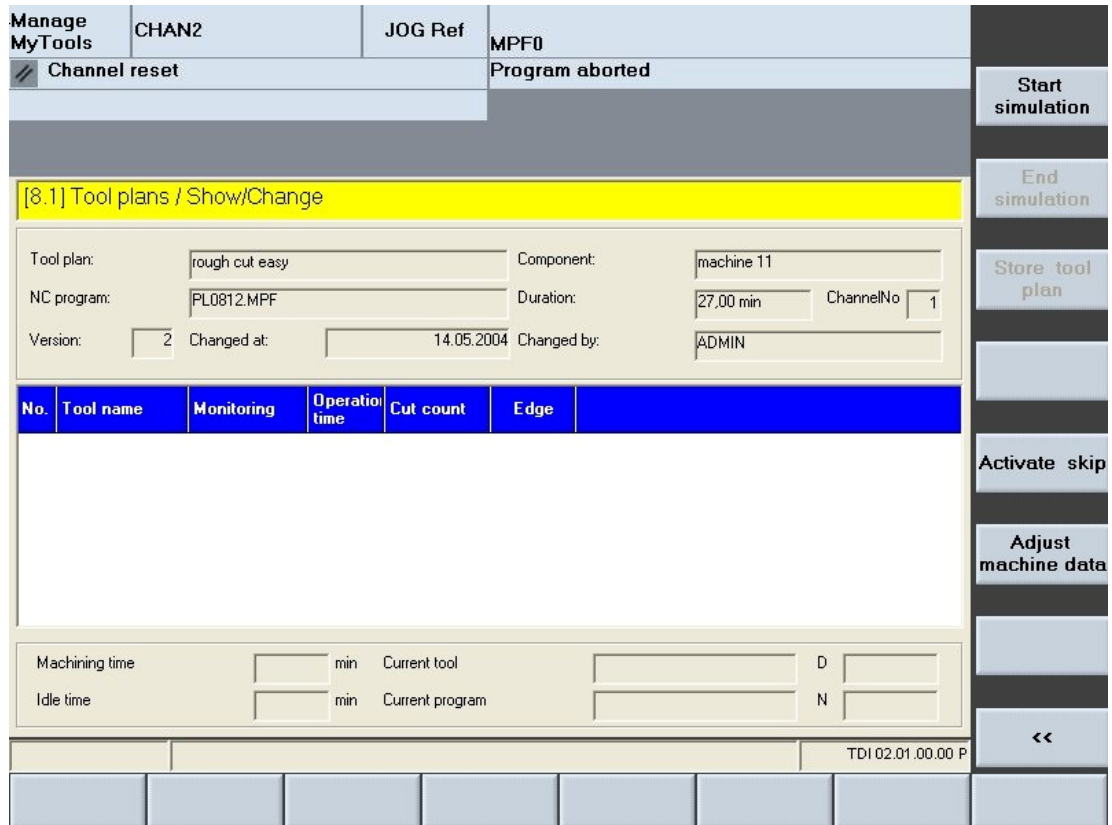


Figure 3-113 Create tool plan

- Press the "Start simulation" softkey to initialize the tool plan creation. Not only is the standard simulation with the settings for Toolplan Generation loaded, but also the associated part program loaded and started. The tools, called in the part program together with the determined cutting times and the programmed cutting edge, are continually entered into the tool plan while the simulation is running.
- The dialog line informs about the progress of the simulation. The following status information is also displayed during the simulation below the tool plan:
  - Machining time
  - Idle time
  - Current tool
  - Current program
  - D number
  - Block number

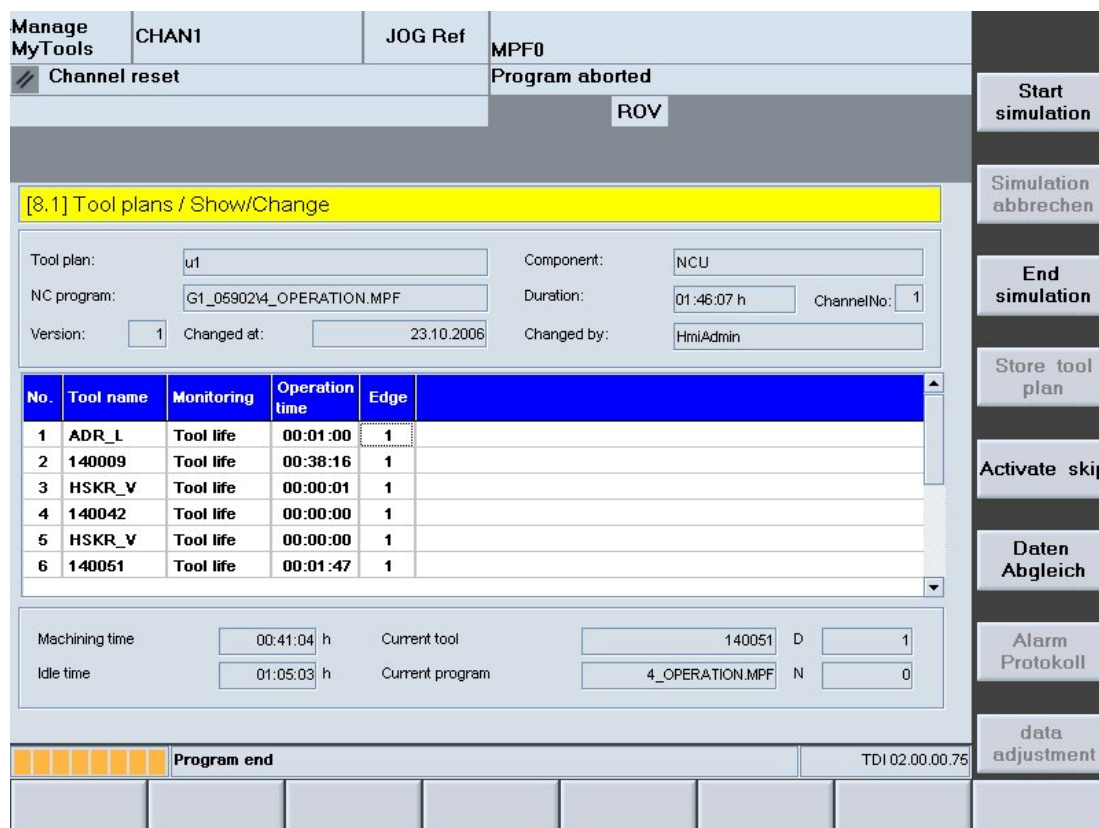


Figure 3-114 Simulation

7. The result of the simulation is available as a tool plan with the cutting times that have been determined:
8. Press the "Save tool plan" softkey to save the data.  
- OR -  
Exit the window without saving to discard the determined values.

### Simulation settings

In the simulation initiated by Toolplan Generation, the following settings are permanently set:

- F-Override = 100%
- M01 is disabled
- Single block is not active

### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey              | Meaning                        |
|----------------------|--------------------------------|
| Start the simulation | Initialize tool plan creation. |
| End simulation       | End simulation.                |

| Softkey               | Meaning   |
|-----------------------|---|
| Save tool plan        | Transfer the determined tool plan and the resulting total run time of the tool plans to the database. |
| Enable/disable hiding | Consider or not consider hiding records in the simulation.  |

## Overview

MMT checks whether ShopMill or ShopTurn is installed on the PCU. If ShopMill or ShopTurn is installed, the parts of Toolplan Generation that are no longer needed are hidden in the user interface. Toolplan Generation uses the ShopMill or ShopTurn simulation. The standard simulation is then no longer available.

## Simulation data

- If simulation data is not yet available for the selected tool plan, Toolplan Generation will issue a message.  
This data must then be generated with the ShopMill or ShopTurn simulation.
- If the data is available, it is displayed immediately and can be added to the tool plan by pressing the "Save tool plan" softkey.
  
- Toolplan Generation always uses the simulation file last supplied by ShopMill or ShopTurn to create the tool plan.
- For syntax errors in the NC program or when one or more of the tools used in the NC program does not exist in the tool list, ShopMill or ShopTurn will not supply any new simulation file.

---

### Note

To ensure that the simulation data used by Toolplan Generation is up-to-date, the simulation file must be recreated with ShopMill or ShopTurn after each change of the NC program. ShopMill or ShopTurn will create a current simulation file only after an error-free simulation.

---

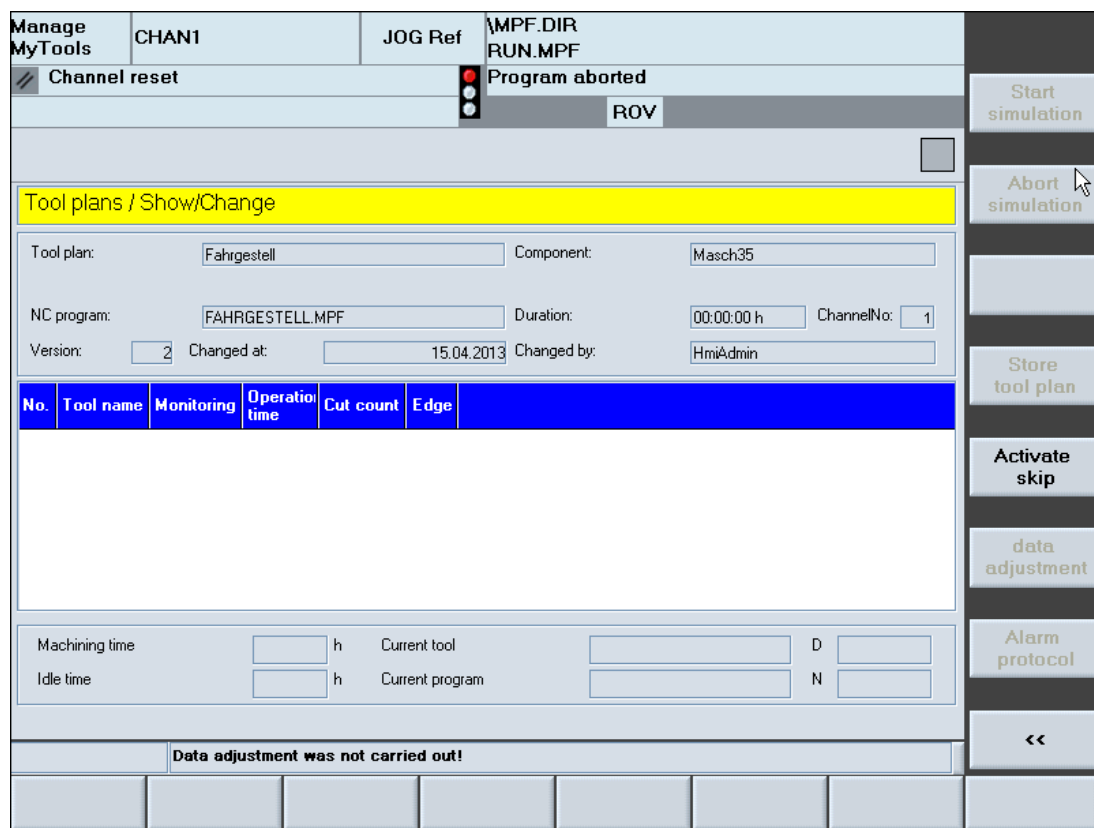


Figure 3-115 Simulation with ShopMill/ShopTurn

### 3.9.3 Restrictions

#### 3.9.3.1 Without ShopMill/ShopTurn

##### Spindle

Simulation using Toolplan Generation is only available for one spindle.

##### Tool change

Toolplan Generation requires the tool change to be initiated by an M function.

Tool plan generation cannot be used for machines where the tool change is initiated using a T function.

##### Cutting edge change

If only one cutting (cutting edge 1) is being used, the NC program can be simulated unchanged.

If several cutting edges are being used for machining, the NC program to be simulated must be adapted in order that the simulation identifies a cutting edge change. To do this, create an additional DSIM subprogram, see below.

Call the program in the NC program after each cutting edge selection.

The variable `_NCSIMACT` used in DSIM must be created in the `mgud.def` file for each specific channel, e.g. `def chan int _NCSIMACT=0`.

---

**Note**

- Only after the DSIM call are all traversing motions for the current tool considered. The programming of `D2 X...` (before DSIM) would cause the cutting times to be added to the previous tool.
- Also, correction/offset data `<> 0` must exist for all of the valid tool cutting edges.

A cutting edge change of the known tool will only be displayed correctly when the cutting edges specified in the NC program actually exist.

---

**Example**

**Main program:**

```
N1000 T="T1"  
N1200 M6  
N1300 D2  
N1400 DSIM  
N1500 X ... Y ...
```

**DSIM subprogram:**

```
N1000 if _NCSIMACT ==1  
N1100 M0 H6=4711.07  
N1200 endif  
N1300 M17
```

---

**Note**

Toolplan Generation takes into account both the tools that already exist in the tool management system as well as unknown tools when determining the cutting times.

Note that only those cutting edges that actually exist for a real tool can be selected.

---

**Extended M functions**

Extended M functions are not supported.

### Tools without a cutting time

Any tools that have not yet been in operation are not listed in the generated tool plan.

#### 3.9.3.2 With ShopMill/ShopTurn

##### Overview

- Toolplan Generation takes the data needed for the tool plan from the ShopMill/ShopTurn simulation. To avoid any confusion, the name of the NC program in the SINUMERIK data management may only be used once.
- ShopMill/ShopTurn creates a tool plan only when all plans used in the NC program exist in the tool list.

## 3.10 Statistics

##### Overview

The statistics module records all tool movements and events, and saves them for statistical evaluation.

These evaluations provide detailed information about the tool consumption and the tool motions. The data can be shown in graphical or tabular form and can be used to derive optimizations for the tool requirement and the tool handling.

##### Requirement

- SQL database (MSDE)
- NC software version as of 5.2
- Set bit 0, bit 1 and bit 2 in the MD27860 \$MC\_SMC\_PROCESSTIMER\_MODE machine data
- Network connection to the host computer in the case of installation in multiple locations

---

**Note**

If the installation is made on a PCU and an ACCESS database is used, statistic diagrams will not be displayed on an individual control.

---

### 3.10.1 Diagram overview

The recorded results can be displayed directly in tabular form. You can change the display using filters.

See Section: Filters for the tabular display (Page 207)

The last statistic is displayed when the “Statistics” horizontal softkey is pressed.

The plant components appear in a tree structure (Explorer view) on the left-hand side of the window. The statistics for the required machines are selected here. The statistics can then be adapted to the new machine selection using the “Update” softkey.

The statistics are displayed in graphical or tabular form on the right of the screen. The size at which the statistics are displayed can be enlarged by hiding Explorer.

### Display fields

The following table explains the significance of the individual columns in the statistics table:

|                  | Meaning  |
|------------------|--|
| Event date       | Date/time of event record (Unix time)                  |
| Event time in ms | Millisecond time of event record                       |
| Event            | Code to identify the event                             |
| Component        | Unique identifier of a plant component                 |
| Container        | Magazine identifier                                    |
| Location         | Location number  |
| Tool identifier  | Tool identifier  |
| Duplo no.        | Duplo number   |
| Cutting edge     | Cutting edge number                                    |
| Internal ID      | Internal T number                                      |
| External ID      | Holder number  |
| Tool status      | Tool status  |
| Monitoring       | Tool monitoring method                                 |
| Spindle no.      | Spindle number   |
| Mode             | Active operating mode                                  |
| Channel no.      | Channel number   |
| Prog. name       | Workpiece name and program name of the current program |
| Prog. position   | Position in the current NC program                     |
| Prog. run time   | Run time of the selected NC program (in seconds)       |
| Cutting time     | Machining time of the selected tool / cutting edge     |
| Idle time        | Idle time of the selected tool / cutting edge          |



### Diagram selection

The following diagrams are available:

- Tool frequency  
The number of tool operations is recorded. This evaluation type can be used, for example, to define master tools for individual machines.

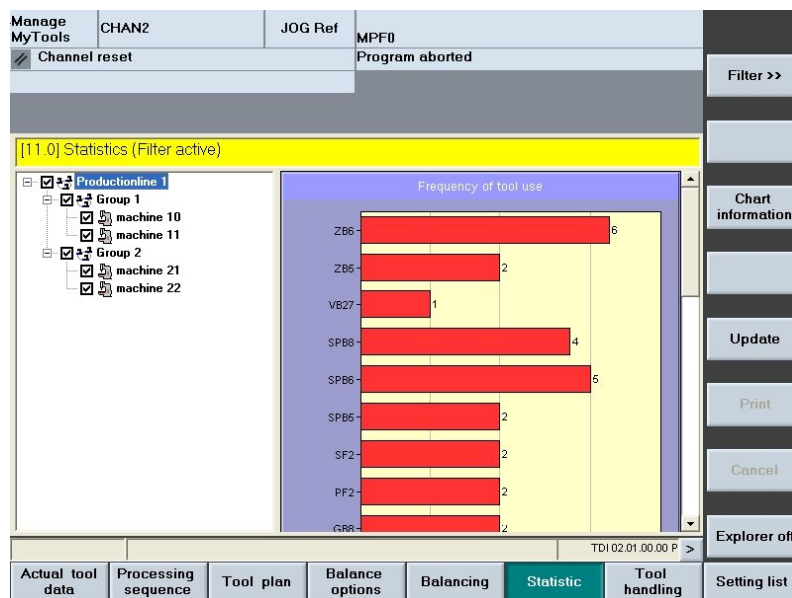


Figure 3-116 Overview with diagram of frequency of use

- Tool usage time (min)  
Sum of the cutting times. This evaluation type can be used, for example, to define master tools for individual machines.

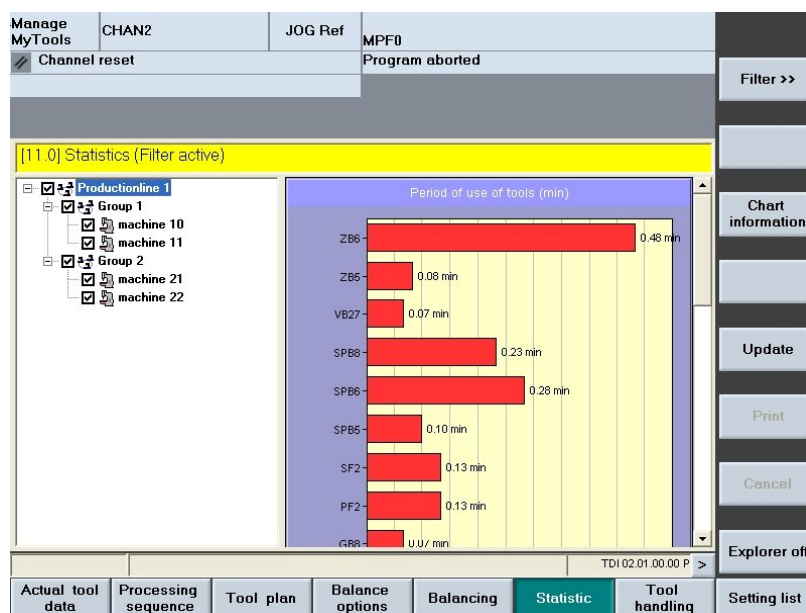


Figure 3-117 Overview with diagram of usage time

- Tool failure in the spindle  
Monitoring of the tools loaded into the spindle by the part program. If the tool status changes to “Locked” this is recorded as a tool failure.

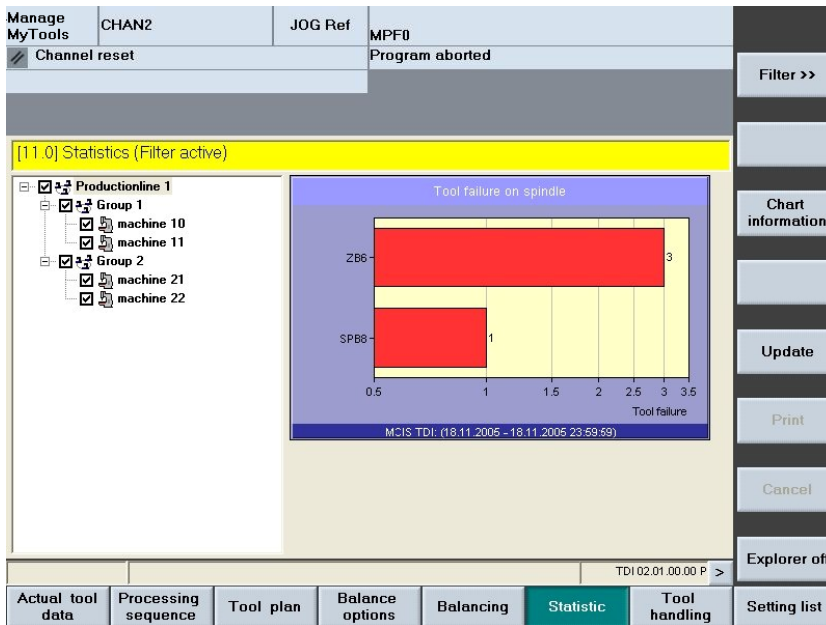


Figure 3-118 Overview with diagram of tool failure in the spindle

- Program standstill due to missing tool  
Based on the recording of program interruptions when no operable tool was available in the magazine.

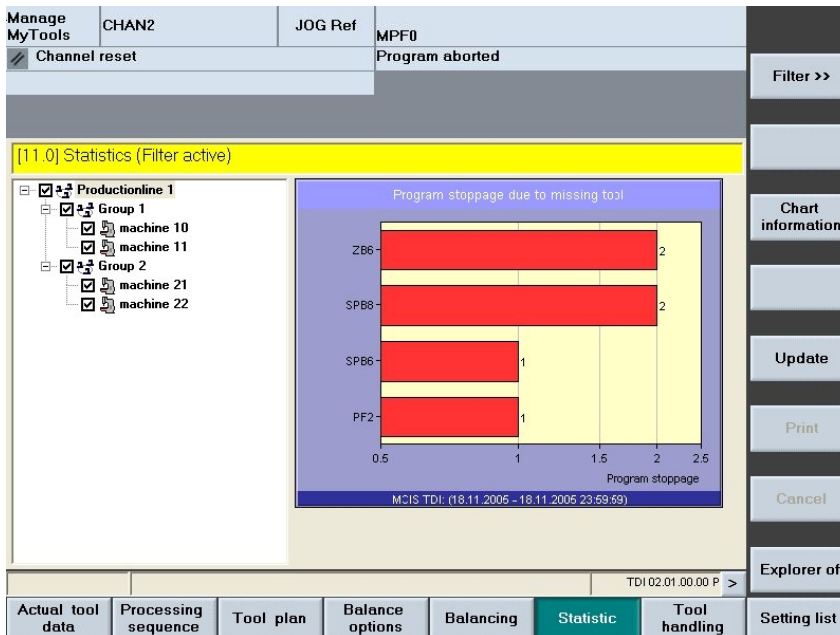


Figure 3-119 Overview with diagram of program standstill

- Event list for all tools  
Displays the recorded events in a table.

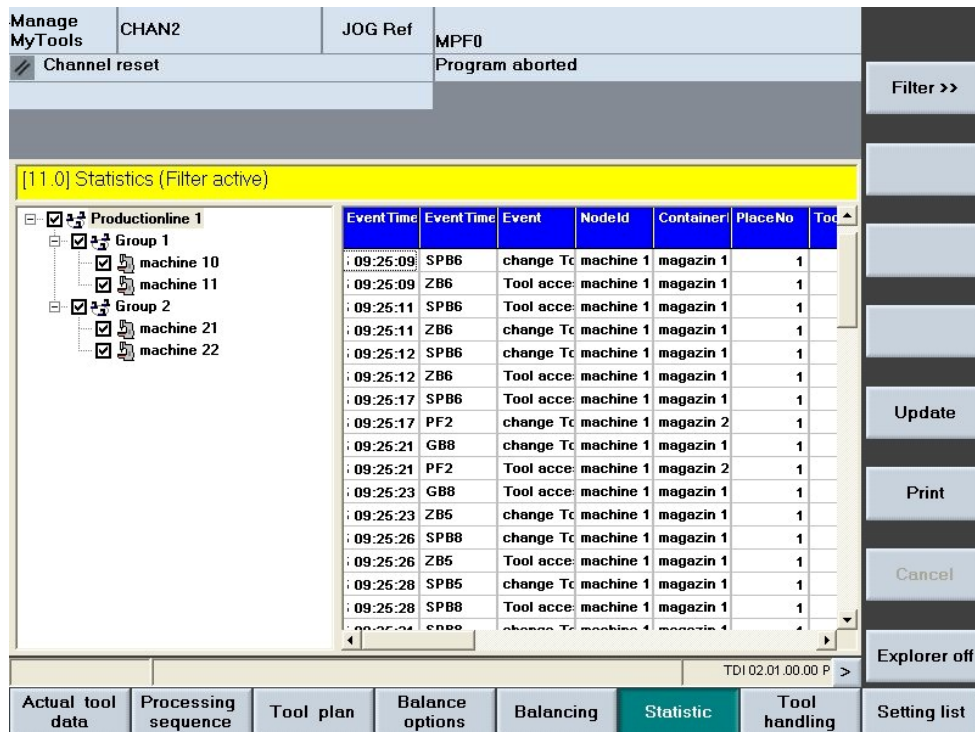


Figure 3-120 Overview with table

**Note**

- If the network connection fails, the machine cannot display any statistics data. Reload the statistics window when the network connection becomes available again.
- If more than one machine is selected, all tools with the same name in all of the diagrams are added together and displayed as a bar chart.
- Filters can be set in the event list only if just one machine is selected.

**Description of softkeys**








The following functions can be executed using the vertical softkeys:

| Softkeys            | Meaning   |
|---------------------|---|
| Filter >>           | Window for defining selection filters and for selecting the desired statistics.   |
| Diagram information | Detailed information from the database request for the current display. This is only debug information that is not required for operating. The display appears irrespective of the language in English. |
| Update              | Refresh the statistics display taking account of the changed machine selection in Explorer.   |

| Softkeys        | Meaning   |
|-----------------|---|
| Print           | Print evaluation.   |
| Cancel          | Interrupt data request.   |
| Explorer on/off | Display and hide the tree representation of the plant components. |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|   | Use the left/right arrow keys to open and close the individual levels of the displayed plant components.   |
|   | Use the up/down arrow keys to move the cursor up and down within the Explorer.<br>In the diagram: Scroll when a scroll bar is visible.   |
|    | Use the <SELECT> key to select and deselect the plant components to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection. |
|    | Use the <P> key to make the Explorer window and the table columns wider.   |
|    | Use the <M> key to make the Explorer window and the table columns narrower.  |

### 3.10.2 Setting the filter

#### Overview

Filter settings can be used to select the display form and the required time range.

The following filters are available:

- Filters for diagram display
- Filters for the tabular display

The "Statistics" horizontal softkey displays a window in which you can define the display form.

The upper area is reserved for diagram and table display.

The lower area is used only for the tabular display.

Additional filters are provided for the tabular display.

## 3.10.2.1 Filters for diagram display

## Function

|             | Meaning   |   |
|-------------|---|---|
| Diagram     | Select from the following displays: <ul style="list-style-type: none"> <li>• Tool frequency</li> <li>• Tool usage time (min)</li> <li>• Tool failure in the spindle</li> <li>• Program standstill due to missing tool</li> <li>• Event list for all tools</li> </ul>  |   |
| Plant view  | The behavior is identical to that in the "Overview" operating area.<br>See Section: Actual tool data - filter (Page 83) <ul style="list-style-type: none"> <li>• AREA<br/>Display of the complete plant without restriction.</li> <li>• H-UNIT<br/>The entire group of the machine on which you are working is displayed, along with the higher-level general container (magazine).</li> <li>• UNIT<br/>The machine on which you are working is displayed.</li> </ul> |   |
| Time type   | This selection list is used together with the input fields for the date selection.<br>The following time types can be selected:   |   |
| from ... to | • Free input  | Enter the individual start and end times.               |
|             | All other entries will hide the input fields and propose a fixed time period.   |   |
|             | • Today   | "Today 00:00" until "End of the day"                    |
|             | • This week   | "Start of current week 00:00" until "End of the week"   |
|             | • This month  | "Start of current month 00:00" until "End of the month" |
| • This year | "Start of current year 00:00" until "End of the year"   |   |

When you select "Event list of all tools" in the "Diagram" selection list, the display is made as a table and the lower filter area will be activated.

See Section: Filters for the tabular display (Page 207)

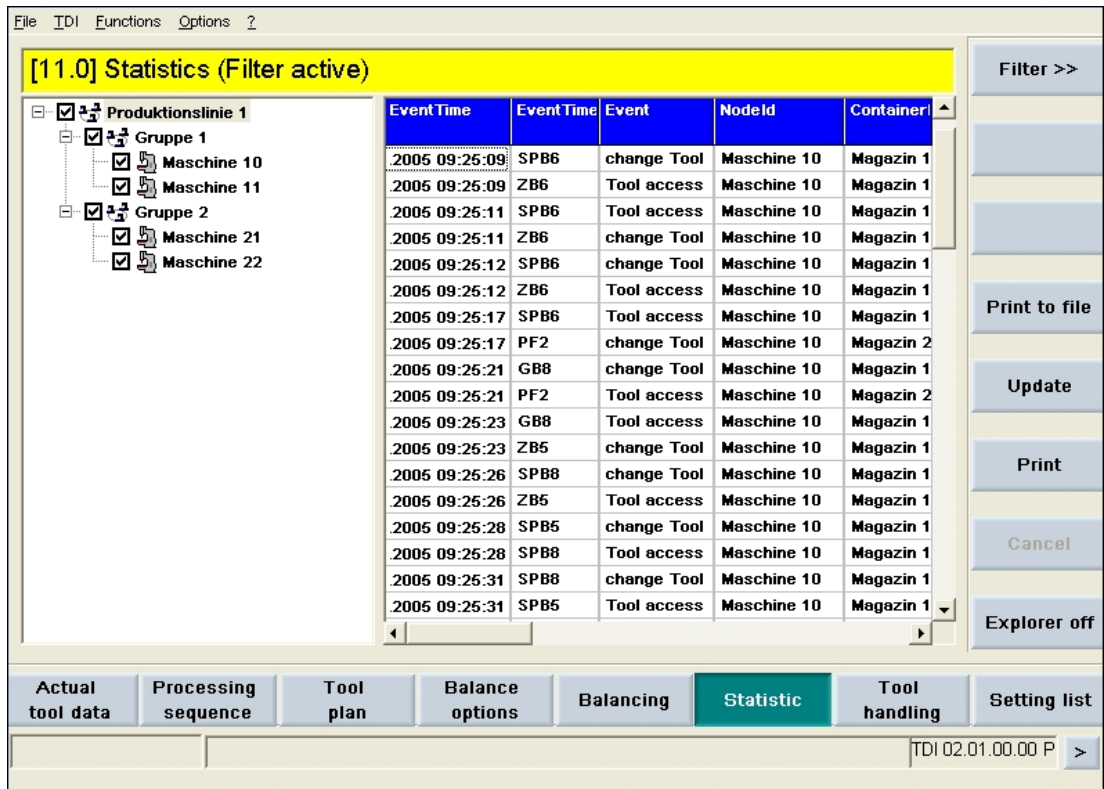


Figure 3-121 Filters for diagrams

**Description of softkeys**

The following functions can be executed using the vertical softkeys:

| Softkey | Description  |
|---------|--|
| Cancel  | Discard previously entered data and display the previous window with the statistics display. |
| OK      | Accept the data and display the previous window with the statistics display.                 |

### 3.10.2.2 Filters for the tabular display

#### Procedure

1. Select "Event list for all tools" in the "Diagram" selection list.  
The data is displayed as a table in the main screen. The lower area is activated in the filter where the display can be restricted to certain events.
2. Set a tick for the appropriate events to display the data only when it satisfies this condition.  
This means the activation of a filter, on the one hand, changes the number of displayed columns because only relevant columns are displayed. On the other hand, only those data blocks that satisfy the filter criterion will be output.  
The default setting is no restrictions. If no ticks are set, all data will be displayed.

---

#### Note

The display is limited to 1000 data blocks.

You can change the selection of data blocks by entering start and end times in the upper filter area.

---

#### Note

If you want to use event filters, you must enable this in the configuration.

To do this, open the "Statistics" item in the "Options" tab.

See Section: Statistics (Page 79)

---

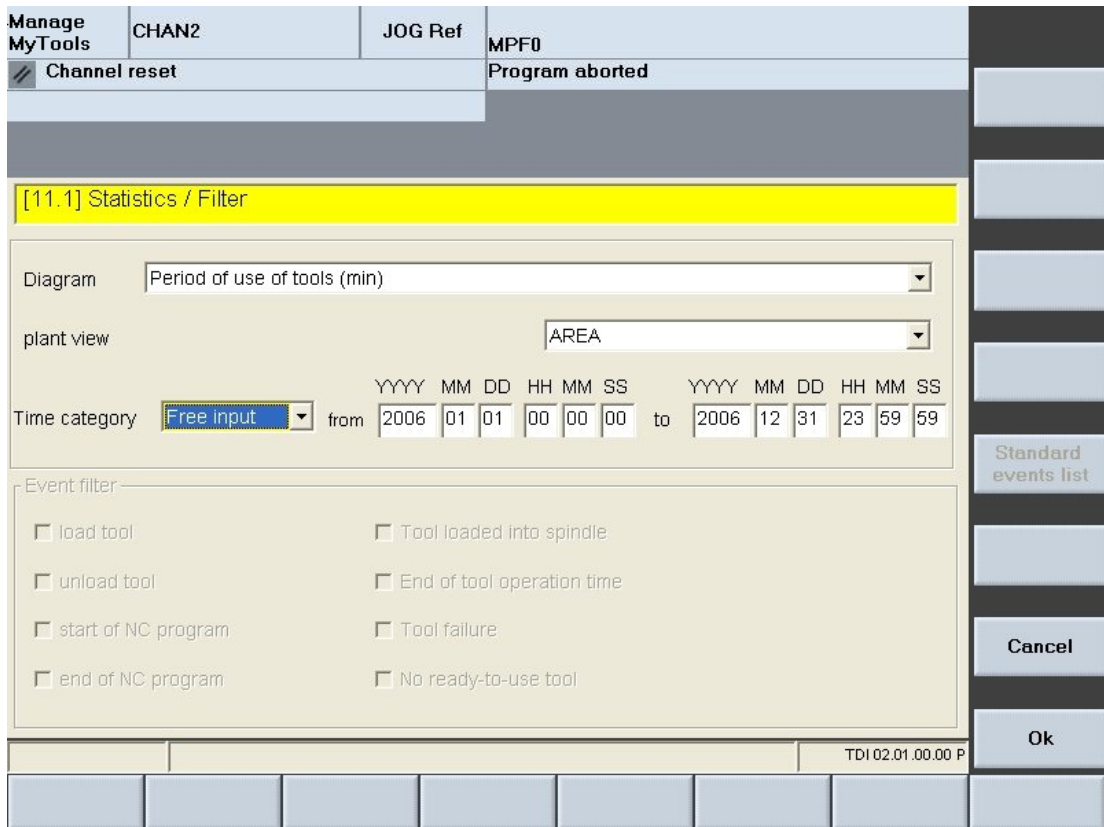


Figure 3-122 Filters for the tabular display

### Description of softkeys








The following functions can be executed using the vertical softkeys:

| Softkey               | Description   |
|-----------------------|---|
| Event list (standard) | Reset the selection of the events to be displayed in the lower area to the default setting. In this case, no tick is set and all data will be displayed. However, the maximum number specified in the "Max. data blocks" field. |
| Cancel                | Discard previously entered data and display the previous window with the statistics display.  |
| OK                    | Accept the data and display the previous window with the statistics display overview.   |



The following keys are available for operation of the controller and the machine tool.

## Keys and functions

| Key   | Function  |
|---|---|
|    | Use the <TAB> key to switch between input and selection fields.                   |
|   | Use the left/right arrow keys to move the cursor from input field to input field. |
|   | Use the up/down arrow keys to move the cursor into a pull-down selection list.    |
|    | Use the <SELECT> key to activate the entries in a closed selection list.          |
|   | Use the <INPUT> key to complete the inputs in the fields.                         |

### 3.11 Master data

#### Overview

The tool master data module is activated together with the "Planning" module. You can use this module to manage the tool master data.

It provides functions for editing, creating and deleting tool data. The tool master data area is available in interconnected operation with a Manage MyTools server and also on individual machines.

#### 3.11.1 Opening tool master data

#### Procedure

1. Press the menu stepping key on the horizontal softkey bar.
2. Select the "Tool master data" softkey.  
The "Tool Master Data" window opens and the data shown in a table.

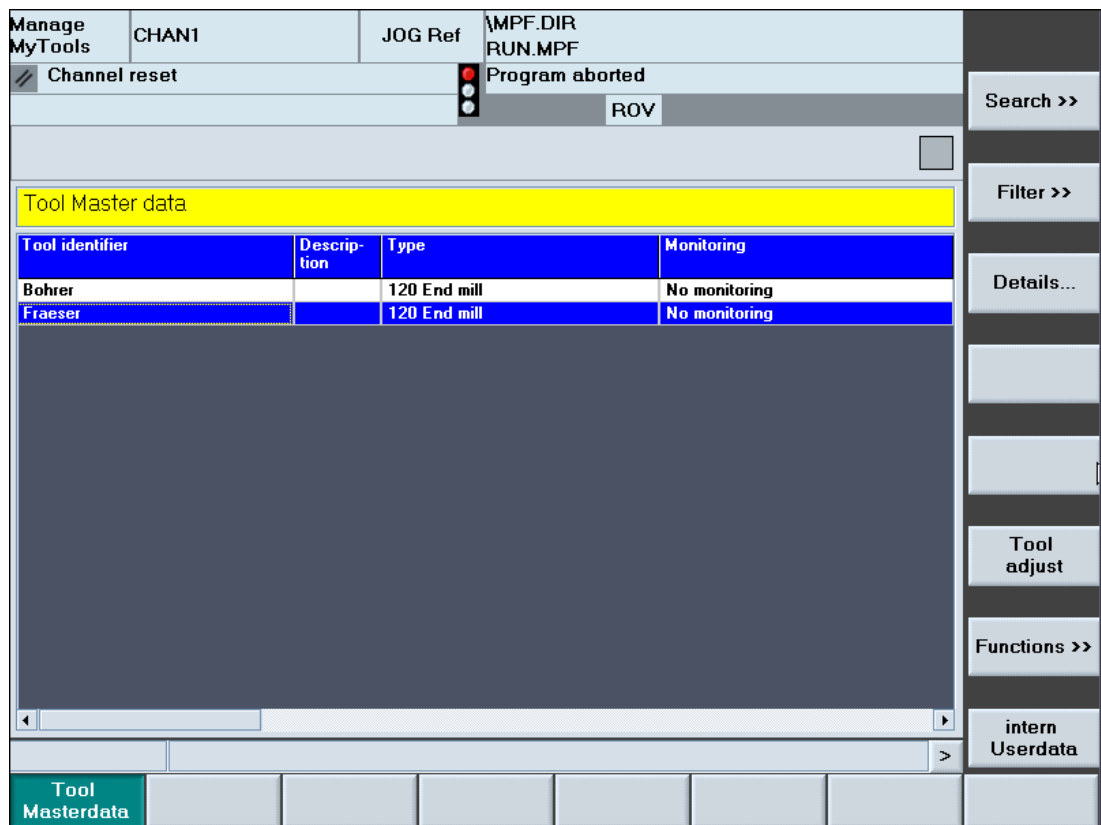


Figure 3-123 Overview of the tool master data

## Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey            | Meaning  |
|--------------------|--|
| Find >>            | Start the search for a specific tool identifier.   |
| Filter >>          | Window for defining selection filters and for selecting the desired statistics.  |
| Create tool        | Window to create a new tool.   |
| Details ...        | Display details of the selected tool. A distinction is made between NC data and PLC data. Some of the data displayed can be edited.  |
| Delete tool        | Delete the selected tool from the database after confirmation of the prompt.   |
| Set up tool        | Set up the selected tool in a selected tool cabinet.<br>Specify the optional Duplo number.<br>For the default setting "0", an unused Duplo number is assigned automatically. |
| Internal user data | Display for browsing and editing the internal user data of the selected tool, dependent on the machine manufacturer.   |





### Note

The following functions can be locked using access rights:

- Set up tool
- Create tool
- Delete tool

The following keys are available for operation of the controller and the machine tool.

## Keys and functions

| Key   | Function   |
|---|--|
|   | <p>Within the tool master data list, use the arrow keys to move the cursor up or down.</p>   |
|   | <p>Displays the defined columns.<br/>The list of the available columns can, however, be larger than that of the selected columns.<br/>Use the horizontal arrow keys to scroll left or right to view the columns that lie outside the visible area.</p> |

### 3.11.2 Search for tool

#### Overview

The "Find" function allows you to search for a specific tool identifier.

#### Procedure

1. The "Tool Master Data" window is open.
2. Press the "Find >>" softkey.  
The "Find Tool Master Data" window opens.
3. Enter the complete search term or with the "\*" wildcard.
4. Press the "Find" softkey.  
The search for the specific tool identifier begins.  
If the tool identifier exists, the appropriate line will be selected. Otherwise an appropriate message appears.
5. Press the "Find next" softkey if the specified tool identifier exists more than once.  
The found entries are displayed successively.  
A message will be issued when no further tool identifier matches the search term.

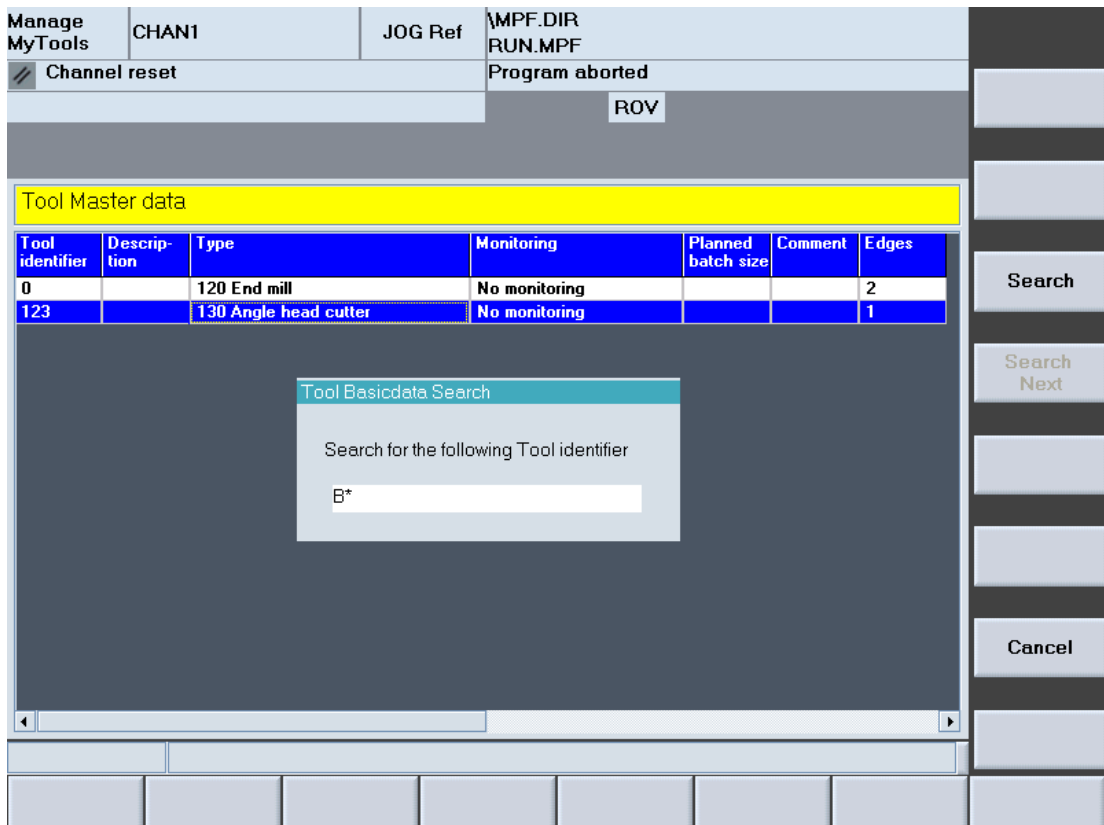


Figure 3-124 Search for tool master data

### 3.11.3 Setting the filter

#### Overview

The "Tool master data / filters" is divided into the following areas:

- Standard
- Layout

Use horizontal softkeys or tabs to select the areas.

#### 3.11.3.1 Standard

The filter settings for the tool master data to be displayed are defined in this window. The filter criteria are always ANDed.

The more criteria you define, the more refined searches for specific tools will be.

#### Functions

|           | Meaning   |
|-----------|---|
| Tool name | Manually enter the tool name.<br>You can use the asterisk (*) as a wildcard.<br>Example: If you enter the word "Drill*" all tools whose identifier begins with "Drill" are returned (i.e. Drill 10 mm, Drill 14 mm, etc.).<br>The tool name filter is case-sensitive. |
| Tool type | Enter the tool type manually as three-digit value.  |
| Comment   | Manually enter the comment.<br>You can use the asterisk (*) as a wildcard (in the same way as for the tool name).<br>The comment filter is case-sensitive.  |

#### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey | Description   |
|---------|---|
| Cancel  | Discard previously entered data and display the previous window with the tool master data overview. |
| OK      | Save the settings and display the previous window with the tool master data overview.               |

### 3.11.3.2 Layout

#### Overview

In this window, use filters to define the table layout for the tool master data overview.

The following filters are available:

- Specify the column order
- Show and hide columns

#### Function

|                   | Meaning   |
|-------------------|---|
| Available columns | The list box shows all tool data that has not been selected.                            |
| Visible columns   | The list box shows the values displayed for each tool in the tool master data overview. |

#### List display: Possible columns

Various table views are predefined to simplify this task.

| Master data (default layout) | Description   |
|------------------------------|---|
| Tool identifier              | Name of tool  |
| Tool description             | User-defined input  |
| Monitoring                   | Monitoring method: <ul style="list-style-type: none"><li>• No monitoring</li><li>• Tool life</li><li>• Quantity</li></ul> |
| Target tool life             | Target tool life (min)  |
| Target unit quantity         | Target unit quantity  |
| Comments about the tool      | User-defined input  |
| Cutting edges                | The number of cutting edges the tool has.   |

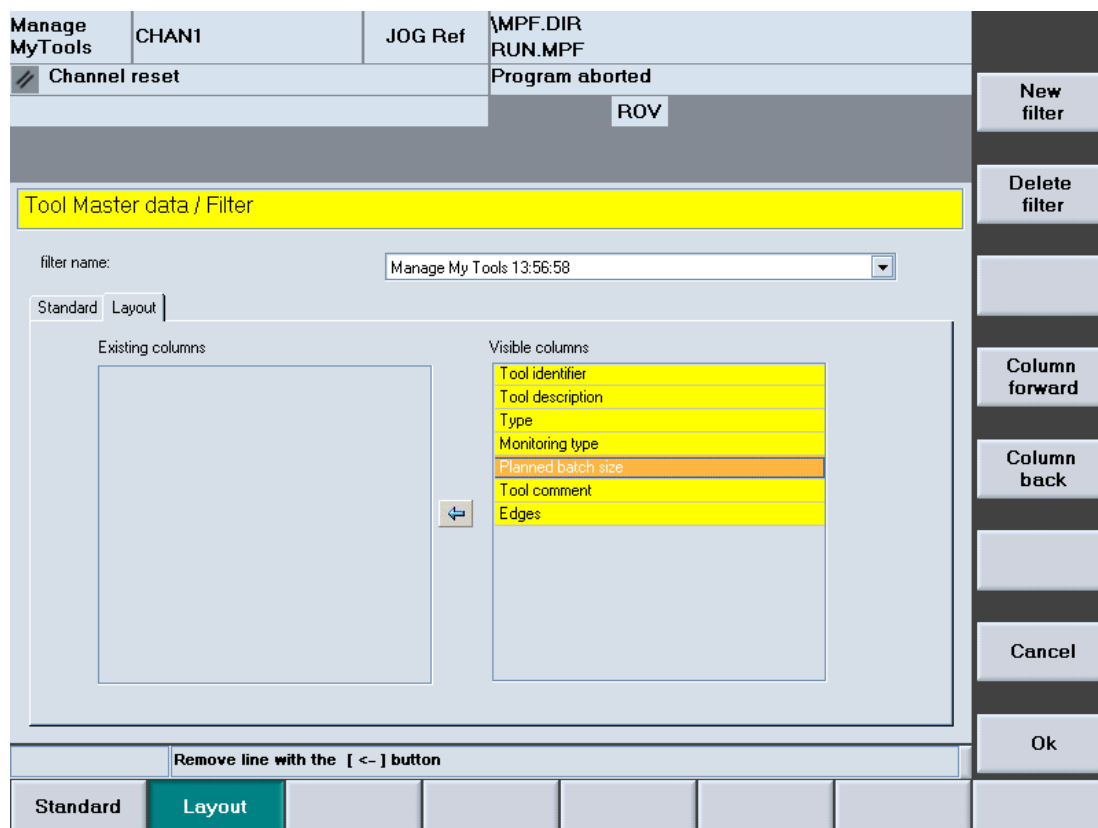


Figure 3-125 Layout settings








## Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey         | Description  |
|-----------------|--|
| New filter      | Window used to enter the filter name.  |
| Delete filter   | Deletes the current filter after confirmation of the prompt.   |
| Up one column   | Moves the line selected in the "Visible columns" list up one position.<br>In the table view, this moves the associated column one position to the left.    |
| Down one column | Moves the line selected in the "Visible columns" list down one position.<br>In the table view, this moves the associated column one position to the right. |
| Cancel          | Discard previously entered data and display the previous window with the overview.   |
| OK              | Save the settings and display the previous window with the overview.   |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function  |
|---|---|
|    | Use the <TAB> key to jump from one field to the next.   |
|   | Use the left/right arrow key to move the tools from the active table to the associated inactive table.<br>This function is available only for user-defined layouts.       |
|   | Use the up/down arrow keys to move the cursor from one input field to the next.   |
|    | Use the <SELECT> key to select and deselect the functions to be displayed.<br>For selection, a tick is visible in the checkbox.<br>The checkbox is empty for deselection. |
|   | Use the <INPUT> key to complete the inputs in the fields.   |



### 3.11.3.3 Edit layout

#### Editing the layout

1. The "Tool Master Data / Filter" window is open.
2. Select a table format in the "File name" selection list.  
The "Visible columns" list box lists all tool data displayed per tool in the tool master data overview.  
The "Available columns" list box lists all other available tool data.
3. Use the softkeys to change the selection and the order of the columns.  
The arrow symbol between the two list boxes indicates in which direction the tool data selected in the list can be moved.

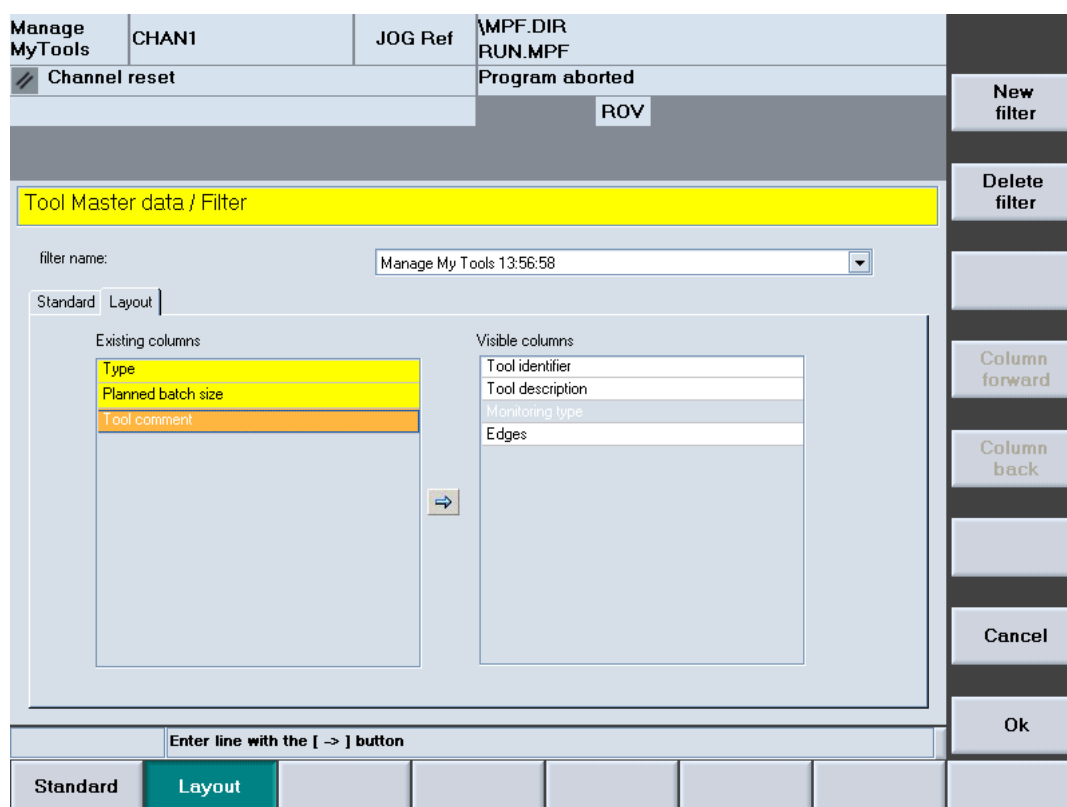


Figure 3-126 Editing the layout

#### Creating a new filter

1. Press the "New filter" softkey.  
The "Table Format" window opens.
2. Enter in the "Enter new name:" input field the filter name for the new layout. Please observe the following:
  - Only letters, numbers and underscores (\_) may be used.
  - The name can be no longer than 40 characters.

- All names must be unique.

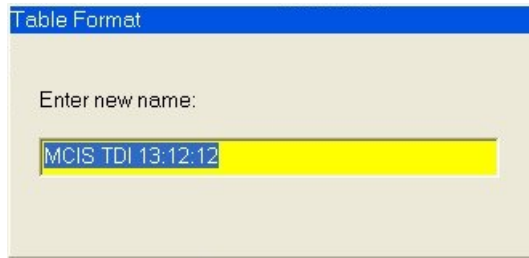


Figure 3-127 New filter

3. Press the "OK" softkey.  
Accept the data and create a new filter.  
If the window does not close, check the filter name.  
- OR -
4. Press the "Cancel" softkey.  
No new filter is created, all inputs will be discarded, and return to the "Tool Master Data / Filter" window.

---

**Note**

If the maximum number of filters has been reached, a new filter can only be created by overwriting an existing one. If this is the case, a list of the existing filters is also displayed in addition to the input box for the name.

---

**Deleting a filter**

1. Select the table format.
2. Press the "Delete filter" softkey.  
A prompt will be displayed.
3. Press the "OK" softkey to irrevocably delete the tool plan.  
- OR -
4. Press the "Cancel" softkey to retain the filter.

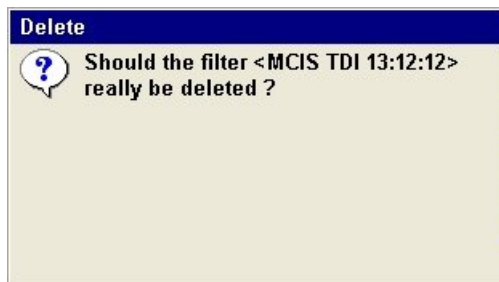


Figure 3-128 Deleting a filter

### 3.11.4 Create tool

#### Overview

You can create new tools to add them to the table of the tool master data overview.

The window selection is password protected with protection level 1 (manufacturer password).

A scroll bar may appear depending on the number of data items. The screen is divided into a number of sections each separated with a yellow divider bar.

#### Procedure

1. The "Tool Master Data" window is open.
2. Press the "Create tool" softkey.  
The "General Tool Data" window opens.
3. Enter the tool identifier and other values.

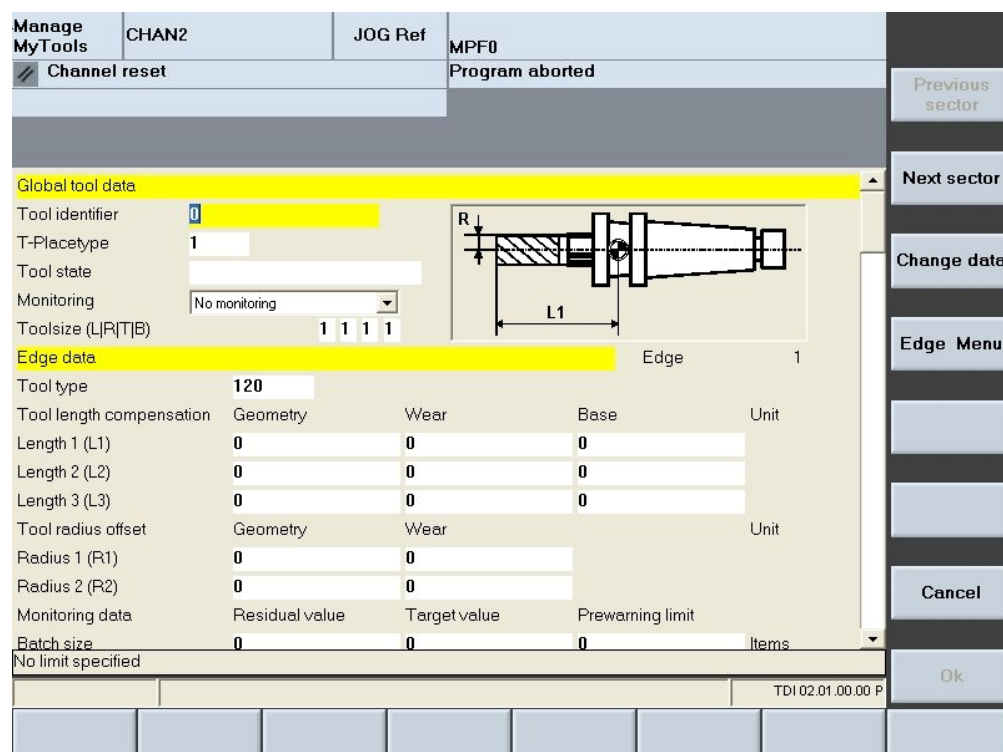


Figure 3-129 Create tool

|                              |                |                 |                  |                   |
|------------------------------|----------------|-----------------|------------------|-------------------|
| Manage MyTools               | CHAN2          | JOG Ref         | MPF0             |                   |
| Channel reset                |                | Program aborted |                  |                   |
| Edge data                    |                |                 |                  | Edge 1            |
| Tool type                    | 120            |                 |                  |                   |
| Tool length compensation     | Geometry       | Wear            | Base             | Unit              |
| Length 1 (L1)                | 0              | 0               | 0                |                   |
| Length 2 (L2)                | 0              | 0               | 0                |                   |
| Length 3 (L3)                | 0              | 0               | 0                |                   |
| Tool radius offset           | Geometry       | Wear            |                  | Unit              |
| Radius 1 (R1)                | 0              | 0               |                  |                   |
| Radius 2 (R2)                | 0              | 0               |                  |                   |
| Monitoring data              | Residual value | Target value    | Prewarning limit |                   |
| Batch size                   | 0              | 0               | 0                | Items             |
| Life time                    | 0              | 0               | 0                | Minutes           |
| External tool auxiliary data |                |                 |                  |                   |
| Tool case assignment         | [Dropdown]     |                 |                  |                   |
| Tool description             | [Text Field]   |                 |                  |                   |
| Tool comment                 | [Text Field]   |                 |                  |                   |
|                              |                |                 |                  | TDI 02.01.00.00 P |

Previous sector

Next sector

Change data

Edge Menu

Cancel

Ok

Figure 3-130 Create tool

**Note**

**Optional function**

If Duplo numbers or import interfaces have been specified for the creation of master data, the following conditions must be satisfied for the plausibility check:

- In a networked plant, the presetter in the plant configuration must lie directly below the root node.

## 3.11.4.1 General tool data

## Overview

|                    | Meaning  |
|--------------------|--|
| Tool identifier    | Entry of the tool identifier   |
| Tool location type | The tool location type defines the kind of location in the magazine. The selected tool can only be loaded (changed) to a location of the appropriate type.<br>For additional details, refer to the description of the standard tool management of SINUMERIK. |
| <Graphics>         | When a SINUMERIK with standard tool management is used, a tool graphic of the selected tool is displayed depending on the tool type.   |

|       | Meaning/selection  |
|-------|--|
| State | Change the status of a tool.<br>After selecting the "Change data" softkey and the status field, a window to select the status is opened when the Return key is pressed (see figure "Changing the tool state" below).   |
|       | <p>You can select the following states:</p> <ul style="list-style-type: none"> <li>• Fixed-location-coded (F)</li> <li>• To be loaded (L) *</li> <li>• Master tool</li> </ul> <p>The following states are displayed but cannot be selected:</p> <ul style="list-style-type: none"> <li>• Active tool (A)</li> <li>• Enabled (E) *</li> <li>• Disabled (D) *</li> <li>• Measure (M) *</li> <li>• Prewarning limit reached (P)</li> <li>• Tool being changed (C)</li> <li>• Tool has been used (E)</li> <li>• To be unloaded (U) *</li> </ul> <p>Multiple states can be selected. The states marked with *) are represented by the letter (abbreviation) in the display field.</p> |

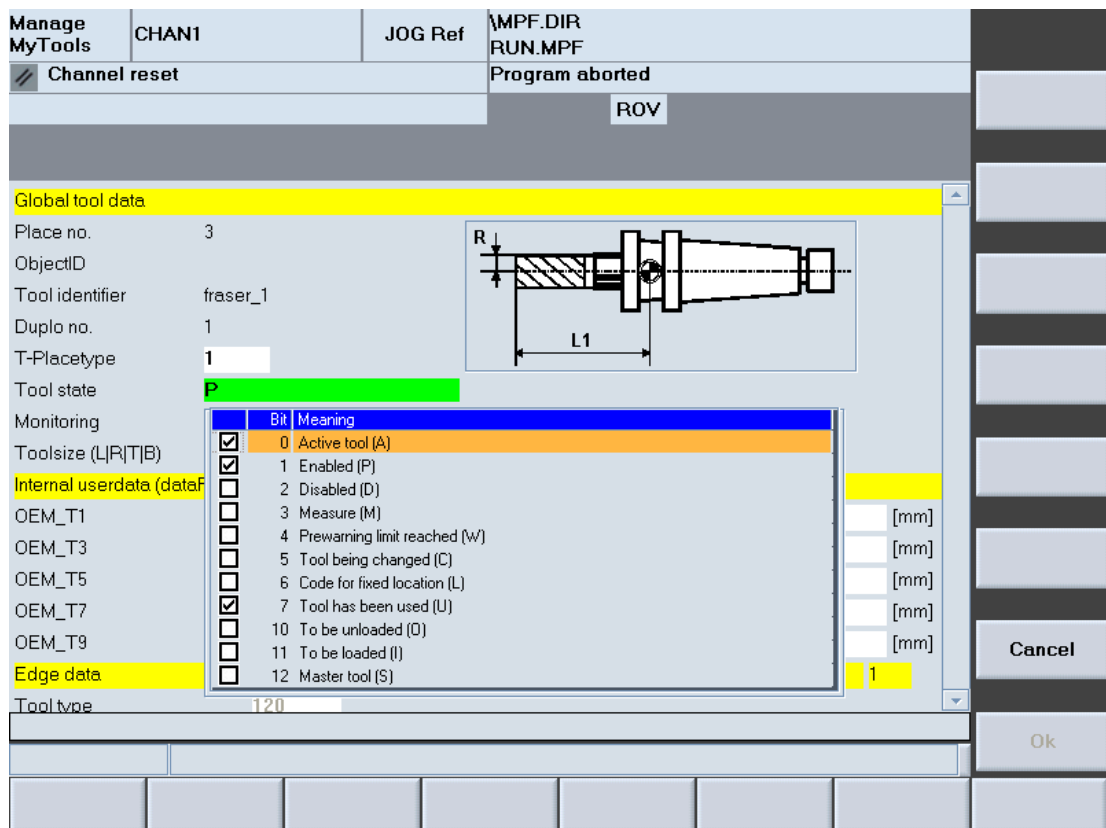


Figure 3-131 Changing the tool status

For a description of the individual states, refer to the following literature:

## References

Function Manual, Tool Management

|            | Meaning/selection  |
|------------|--|
| Monitoring | <p>You can select from the following monitoring settings:</p> <ul style="list-style-type: none"> <li>• No monitoring</li> <li>• Tool life</li> <li>• Quantity</li> </ul> |

|                                  | Meaning/selection  |
|----------------------------------|--|
| Cutting edge data                | <p>The following data is displayed (and some of which can be changed) for each cutting edge:</p> <ul style="list-style-type: none"> <li>• Tool type</li> <li>• Tool length compensation <ul style="list-style-type: none"> <li>– Geometry (this data cannot be modified)</li> <li>– Wear</li> <li>– Base (this data cannot be modified)</li> <li>– Unit (this data cannot be modified)</li> </ul> </li> <li>• Tool radius correction: <ul style="list-style-type: none"> <li>– Geometry</li> <li>– Wear</li> </ul> </li> <li>• Monitoring data (unit quantity / tool life) <ul style="list-style-type: none"> <li>– Residual value</li> <li>– Setpoint</li> <li>– Prewarning limit</li> </ul> </li> </ul> <p>Depending on the number of cutting edges or the tool type, additional data may be available. If this is the case, a scroll bar appears.</p> <p>A sand clock will be displayed while the tool data is being loaded. An error message will be issued if an error occurs during the loading.</p> |
| External tool supplementary data | <p>Details for the following data:</p> <ul style="list-style-type: none"> <li>• Cabinet assignment</li> <li>• Tool description</li> <li>• Comments about the tool</li> </ul> <p>In the "Cabinet assignment" selection box</p>  |
| Check limit values               | <p>The input fields can have limit values. These values are displayed in the status line. If you violate the input limit, the status line will indicate this. You can exit the input field only when the value is correct.</p>   |






## Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey          | Meaning  |
|------------------|--|
| Previous section | To view further tool data, scroll the screen view down one section.  |
| Next section     | Scroll screen view up one section.   |
| Change data      | <p>Allows data to be changed.</p> <p>Prerequisite:<br/>The appropriate access rights are set.</p>          |
| Editing          | Edit tool data.  |
| Cutting menu     | <p>Extend the vertical softkey bar with the following functions:</p> <p>Create or delete cutting edge.</p> |
| Cancel           | Discard previously entered data and display the previous window with the overview.                         |
| OK               | Save the settings and display the previous window with the overview.                                       |

The following keys are available for operation of the controller and the machine tool.

### Keys and functions

| Key   | Function   |
|---|--|
|   | Use the arrow keys to move the cursor from input field to input field. |
|   |  |
|    | Use the <INPUT> key to complete the inputs in the fields.              |

#### 3.11.4.2 Add/remove cutting edge data

##### Procedure

1. The "General Tool Data" window is open.
2. Press the "Cutting menu" softkey to reach the extended softkey bar.
3. Press the "Add cutting edge" softkey.  
The "Create Cutting Edge" window opens.  
- OR -  
Press the "Delete cutting edge" softkey.
4. Use the selection list to select the cutting edge number in order to add or delete the cutting edge data.  
The details window re-opens and so refreshed. The cutting edge number is ordered appropriately in the details window.



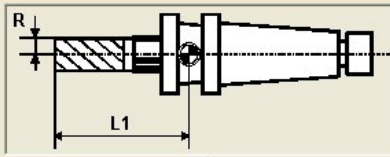
|                              |                |  |                   |
|------------------------------|----------------|--|-------------------|
| Manage MyTools               | CHAN2          | JOG Ref  | MPF0              |
| Channel reset                |                |  | Program aborted   |
| Global tool data             |                |  |                   |
| Tool identifier              | 0              |  |                   |
| T-Placetype                  | 1              |  |                   |
| Tool state                   |                |  |                   |
| Monitoring                   | No monitoring  |  |                   |
| Toolsize (L R T B)           | 1 1 1 1        |  |                   |
| Edge data [12.6] Create Edge |                |  |                   |
| Tool type                    | 120            | Edge   | 1                 |
| Tool length compensation     | Gec            | Edge Nr.   | Unit              |
| Length 1 (L1)                | 0              | 4  |                   |
| Length 2 (L2)                | 0              | 5  |                   |
| Length 3 (L3)                | 0              | 6  |                   |
| Tool radius offset           | Geometry       | 7  |                   |
| Radius 1 (R1)                | 0              | 8  |                   |
| Radius 2 (R2)                | 0              | 9  |                   |
| Monitoring data              | Residual value | 10   | Unit              |
|                              | Target value   | 11   |                   |
| Batch size                   | 0              | 0  | Items             |
| No limit specified           |                |  |                   |
|                              |                |  | TDI 02.01.00.00 P |

Figure 3-132 Add cutting edge

### 3.11.5 Details of the tool master data

#### Requirement

The window selection is password protected with protection level 1 (manufacturer password).

#### Procedure

1. The "Tool Master Data" window is open.
2. Press the "Details >>" softkey to display the geometric, technology and external tool status data.  
Depending on the amount of data, a scroll bar will be provided.  
The window is divided into several sections, each of which begins with a yellow divider bar.

Further information about the shown parameters and their meaning is summarized in the following section:

See Section: Create tool (Page 219)

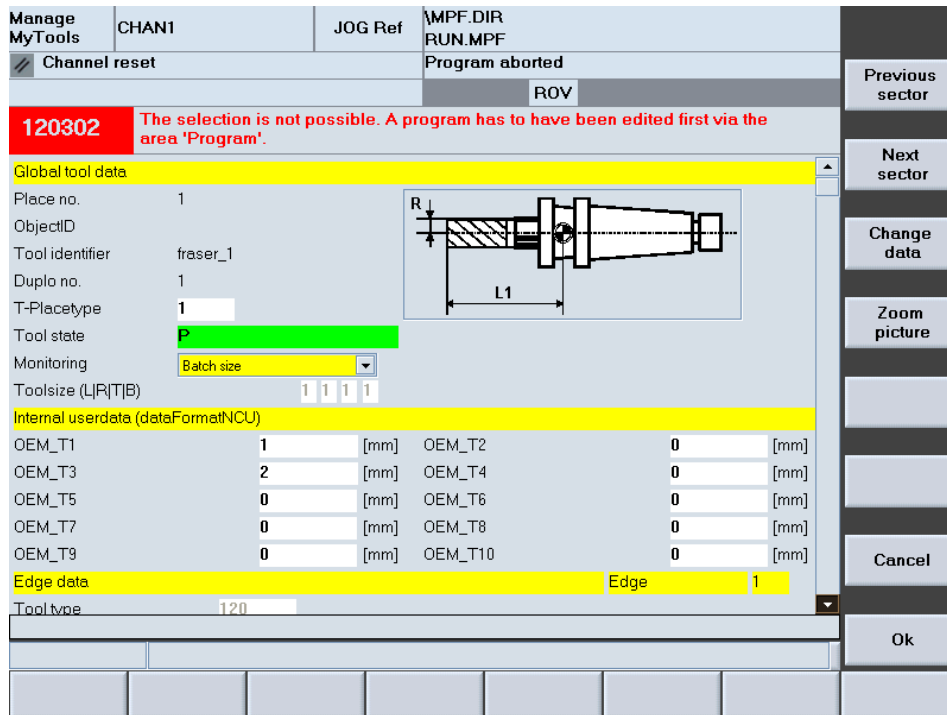


Figure 3-133 Details

### 3.11.6 Delete tool

You can delete tools from the tool master data list.

#### Procedure

1. The "Tool Master Data" window is open.
2. Select a tool in the list.
3. Press the "Delete tool" softkey.  
A prompt will be displayed.
4. Press the "OK" softkey to delete the tool.  
- OR -  
Press the "Cancel" softkey to abort the delete action.  
You return to the tool master data overview.

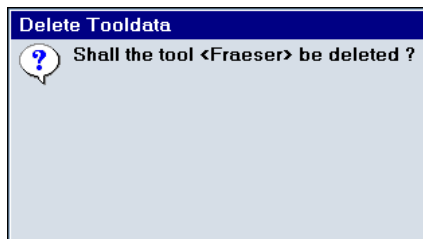


Figure 3-134 Delete tool

### 3.11.7 Set up tool

You can setup tools in a tool cabinet.

#### Procedure

1. The "Tool Master Data" window is open.
2. Select a tool in the list.
3. Press the "Set up tool" softkey.  
The "Set Up Tool" input window opens.
4. Select the tool cabinet from the selection list.
  - You can assign an optional Duplo number.
  - In the default setting "0", an unused Duplo number is assigned automatically.
5. Press the "OK" softkey to save the settings.  
- OR -  
Press the "Cancel" softkey to abort the settings action.  
You return to the tool master data overview.

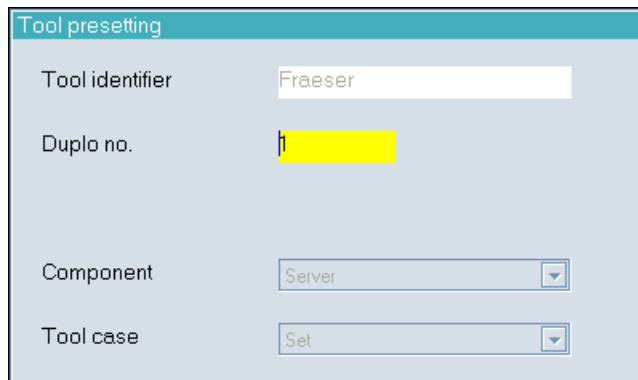


Figure 3-135 Set up tool

### 3.11.8 Internal user data

You can assign internal user data to the tool selected in the tool master data overview.

#### Procedure

1. The "Tool Master Data" window is open.
2. Select a tool in the list.
3. Press the "Internal user data" softkey.  
The window for parameterizing the internal user data opens.

4. Select the appropriate machine manufacturer from the selection list. Different machine manufacturers may use different internal user data, in other words, the view changes dynamically to match the internal user data depending on the machine manufacturer selected.  
See Section: Configuration (Page 24)
5. Press the "OK" softkey to save the data.  
- OR -  
Press the "Cancel" softkey to abort the action.  
You return to the tool master data overview.

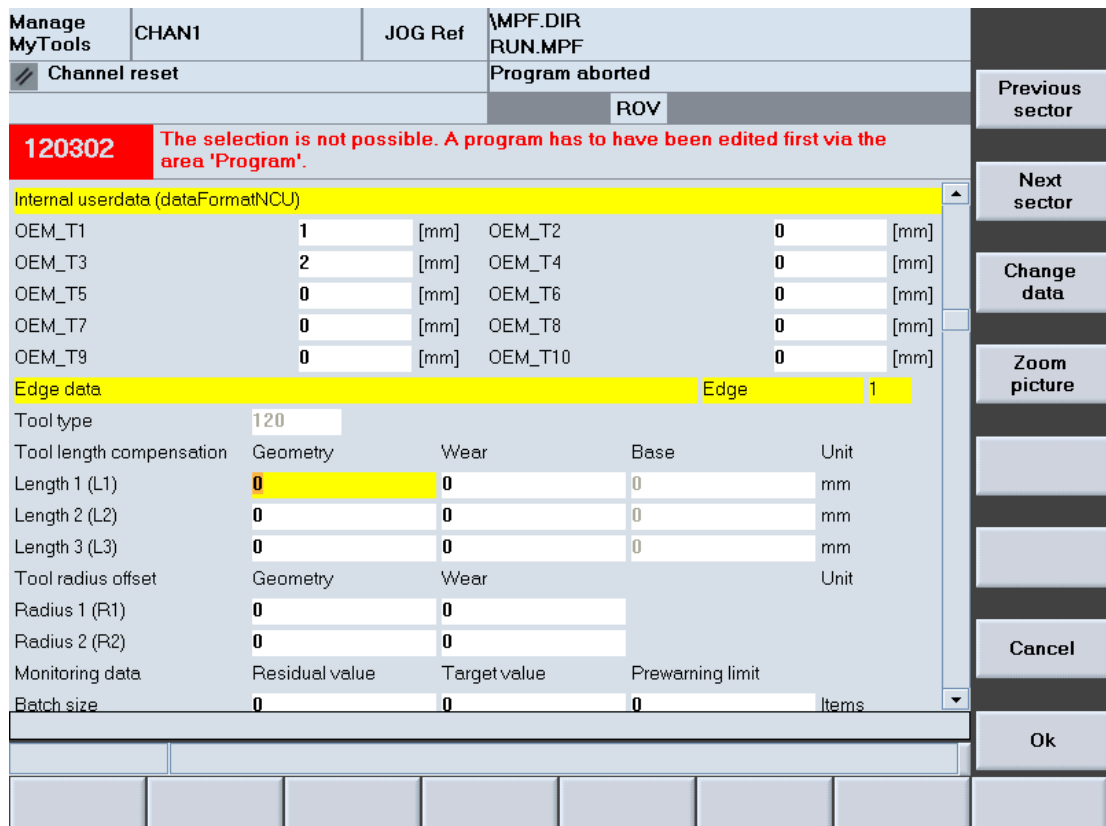


Figure 3-136 Internal user data

### Description of softkeys

The following functions can be executed using the vertical softkeys:

| Softkey          | Meaning   |
|------------------|---|
| Previous section | To view further tool data, scroll the screen view down one section.                   |
| Next section     | Scroll screen view up one section.  |
| Change data      | Allows data to be changed.<br>Prerequisite:<br>The appropriate access rights are set. |
| Editing          | Edit tool data.   |

| Softkey | Meaning  |
|---------|--|
| Cancel  | Discard previously entered data and display the previous window with the overview. |
| OK      | Save the settings and display the previous window with the overview.               |

## 3.12 Manage MyTools Service Manager

The "Manage MyTools Service Manager" provides a user-friendly user interface for the setup and the handling of Manage MyTools Windows services.

### Requirement


Unrestricted administrator rights on the target system are required for the management, setup and removal of services.

### 3.12.1 Manage MyTools Windows services

#### Overview

All defined services are listed in the main window.

Traffic light icons are used to visualize the states of each individual instance:

|   |            |                             |
|---|------------|-----------------------------|
|  | Red        | Service is stopped          |
|  | Red-yellow | Service is being started    |
|  | Yellow     | Service is being terminated |
|  | Green      | Service is started          |
|  | No display | Service is deactivated      |

#### Functions

|           | Meaning   |
|-----------|---|
| Start     | Start the selected instance.<br>This requires that the service has the "Stopped" state. |
| Stop      | Stop the selected instance.<br>This requires that the service has the "Started" state.  |
| Start all | Start all instances.  |

|                           | Meaning  |
|---------------------------|--|
| Stop all                  | Stop all instances.  |
| Wording:<br>Create/delete | Setup and edit Manage MyTools Windows services.<br>See Section: Setting up a service (Page 230). |



Figure 3-137 Server traffic light display

### 3.12.2 Setting up a service

You can set up as many as ten services.

You can assign arbitrary display names and descriptions to each instance.

#### Functions

|                  | Meaning  |
|------------------|--|
| Service name     | Select a maximum of ten services for management.<br>The internal name of a service cannot be changed.  |
| Display name     | Input field for the display name of the service.<br>The name appears in the main window of the Manage MyTools Service Manager.   |
| Application path | Input field for the application that will be started by the created service.<br>This entry field is preassigned and cannot be changed.   |
| Start type       | During the setup of the service, select the start type from a selection list: <ul style="list-style-type: none"> <li>• Automatic</li> <li>• Manual</li> <li>• Deactivated</li> </ul>   |
| Description      | Specify a freely chosen description for the service. The field is preassigned with the used port of the respective service.  |
| System Account   | If a service is created with a different Windows identification on the target system, after deselection of the "System Account", the associated identification and the password will be entered in the following two input fields.<br>Example of an "Account" entry: DOMAIN\USER |

## Procedure

1. The "Manage Service" window is open. The input and selection fields are filled.
2. Click the "Create" button to create the service on the target system. The setup is displayed with an information window.
3. Acknowledge the settings.

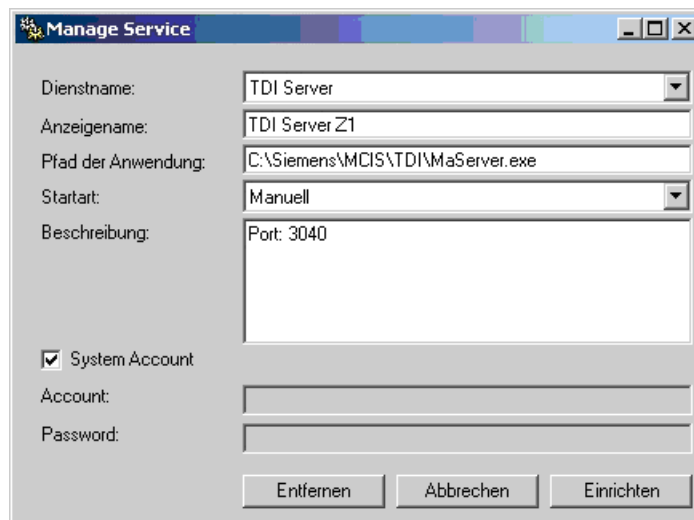


Figure 3-138 Creating a server

### 3.12.3 Removing a service

## Procedure

1. The "Manage MyTools Service Manager" window is open and the appropriate instance selected.
2. Click the "Create/delete" button to display the instance in the "Manage Service" window.
3. Click the "Remove" button to remove the service from the system. The deletion is displayed in an information window.
4. Acknowledge the message.

### 3.12.4 Redundant Manage MyTools servers in a network

#### Restrictions

When Manage MyTools servers are used on redundant servers, only one service may be active in the network per instance.

For the check for coexistence, the IP addresses of the corresponding servers in the Manage MyTools Configuration application must be configured in the "Options" tab at "Server".

The check is performed when an instance is started.

If the "Manage MyTools Service Manager" already detects an identical, active instance in the network, you will receive an appropriate message.

The start procedure of the instance is canceled.

## 3.13 Manage MyTools (MMT) in SINUMERIK Operate

### 3.13.1 Prerequisite

#### Activating SINUMERIK Integrate

SINUMERIK Integrate must be activated in order to be able to use Manage MyTools.

#### References

Information on the activation of the software can be found in the "SINUMERIK Integrate, MMT, MMP, AMB, AMC, AMM, AMP" Installation Manual.

#### Connect machine/server

For the machine/server connection, the machines and users must have been created.

#### References

The procedure is described in the "SINUMERIK Integrate, AMB, AMC, AMM" Function Manual, in Section: Management.



### 3.13.2 Calling Manage MyTools

#### Procedure



1. The control system has booted and the operating areas are displayed.
2. Press the "Manage MMT tool" softkey.  
The last window used by the user is displayed.  
If no Manage MyTools window has been selected, an overview of the available magazines and containers is displayed.

### 3.13.3 Overview of tool data

#### Overview of tool data

An overview of the tool configuration is shown in the "Tool Actual Data" window.

The existing directories with all magazines and containers are shown in the left hand area of the window.

The contents of the directories selected at the left are displayed in the right-hand window area.

The content is sorted alphanumerically in ascending or descending order.

| Display         | Meaning                            |
|-----------------|------------------------------------|
| Configuration   | Configured system                  |
| Node            | Unique node name within the system |
| Magazine        | Name of the machine magazine       |
| Location        | Location number                    |
| Tool identifier | Tool identifier                    |
| Duplo           | Duplo number                       |
| Status          | Status display                     |
| Cutting edges   | Cutting edge number                |

#### Tool data management

The following functions are available for you to manage tool data:

- Importing/exporting tool data (Page 243)
- Configuring filters (Page 236)
- Showing properties (Page 240)
- Lock/unlock tool (Page 242)
- Changing the tool life (Page 242)

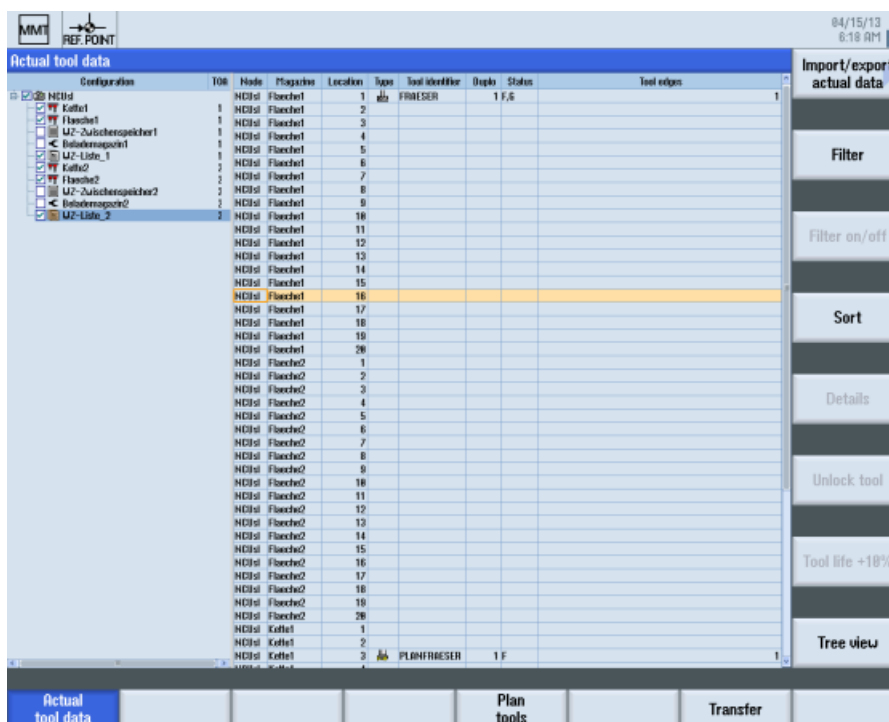
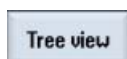


Figure 3-139 "Tool Actual Data" window

### Display/update view



Press the softkey "Tree view", to toggle between the view of the tool actual data with and without directory structure of the configuration.

#### 3.13.3.1 Switching filter on/off

You have the option of influencing the tool display by applying filter conditions therefore restricting the selection of visible tools.

#### Precondition

Filter settings have already been defined.

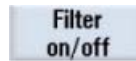
#### See Chapter:

Filter settings (Page 236)

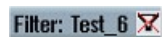
Save filter (Page 238)

Edit filters (Page 238)

## Procedure



1. The "Tool actual data" window is open.  
The filter name and a filter symbol are displayed in the status display.
2. Press the softkey "Filter on/off", to activate or deactivate the selected filter.  
If, for example, the filter is deactivated, then a filter symbol with a slash through it is displayed.



### 3.13.3.2 Sort tool data

You have the option to display the tool data sorted individually. The criteria for sorting can be defined via the user interface.

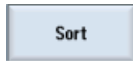
## Criteria

- Up to three sorting criteria can be defined.
- The criteria are selected via a drop-down list. The drop-down lists contain the column designations of the tool data.
- The priority of the sorting order is from the upper, to the medium and the bottom criterion.
- You can select via an option field whether the sorting is to be executed in ascending or descending order.

## Procedure



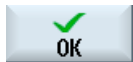
1. Position the cursor on the desired directory of the tool data.
2. Press the ">>" softkey.  
Additional softkeys are displayed on the vertical bar.



3. Press the "Sort" softkey.  
The "Sorting Settings" window opens.



Sorting setting



4. Select the desired sorting criteria according to which you want the tool data to be displayed.
5. Press the "OK" softkey.  
The tool data will be displayed, sorted according to the specified criteria.



- OR -

Press the "Cancel" softkey if you want to make no sorting. The window is closed.

### 3.13.3.3 Configuring filters

#### Filter settings

You have the option to use each column in the list of tool actual data that is displayed as filter criterion.

The following is listed depending on column type:

- Selecting or deselecting using a check box
- Detailed information

## Filter criteria

Since the individual columns of the tool actual data are automatically listed as filter criterion, the subsequent filter criteria are only shown as an example:

| Filter criterion        | Description  |
|-------------------------|--|
| Locked tools            | Selection between locked or unlocked tools: <ul style="list-style-type: none"> <li>• locked</li> <li>• Not locked</li> </ul>   |
| Prewarning limit        | Selection between tools which have reached the prewarning limit or which have not yet reached the prewarning limit: <ul style="list-style-type: none"> <li>• reached</li> <li>• not reached</li> </ul> |
| Unload identifier       | Selection of tools with or without unload identifier: <ul style="list-style-type: none"> <li>• set</li> <li>• Not set</li> </ul>   |
| Load identifier         | Selection of tools with or without load identifier: <ul style="list-style-type: none"> <li>• set</li> <li>• Not set</li> </ul>   |
| Tool identifier         | Input of partial text with placeholder   |
| Duplo No.               | Input of partial text/number with placeholders   |
| Locations               | Selection of the tool locations: <ul style="list-style-type: none"> <li>• All locations</li> <li>• Any location</li> <li>• Only free locations</li> <li>• Only locked locations</li> </ul>             |
| Remaining unit quantity | Limit the remaining unit quantity with input "from" / "to".  |
| Remaining tool life     | Limit the tool life in minutes, with the input "from" / "to".  |

### Note

#### Several filter criteria selected

If you activate the following filters in parallel, then only the tools that meet one or the other criterion are displayed:

- "Locked tools"
- "Prewarning limit"
- "Remaining unit quantity (parts) from ... to ... "
- "Remaining tool life (minutes) from ... to ... "

### Save filter

You can save any individually set filter.

### Saving a filter

| Display     | Meaning  |   |
|-------------|--|---|
| Filter name | Any filter name with a maximum of 40 characters.         |   |
| Comment     | Freely selectable text as a comment to a filter setting. |   |
| Application | Global   | A filter can be used in the entire SINUMERIK Integrate.                               |
|             | Local  | A filter can only be used at the machine for which the filter was originally created. |
|             | User defined   | A filter can only be used by the technician who created it.                           |

### Procedure



1. You have selected the filter criteria and wish to save these settings.
2. Press the "Save filter" softkey.  
The "Save Filter" window opens.

3. Enter the filter name in the "Filter name" entry field.  
You receive a confirmation prompt if you use an existing name.  
Acknowledge the query,
  - as to whether the name should be overwritten- OR -
  - as to whether it should be canceled in order to change the name.Enter the new name and optionally a comment in the entry field.



4. Press the "OK" softkey to save the filter.

- OR -



Press the "Cancel" softkey to reject the settings.

---

### Note

The change is not made in the saved filter, but is only used as temporary filter.

---

### Edit filters

You have the option of reloading filter settings that have already been saved to activate them as filter or to edit the filter settings.

## Loading a filter



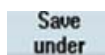
1. The "Saved Filters" window area is open.
2. Press the "Load filter" softkey.

The selection box with the saved filters is activated. In the selection box, you can display the existing filters in alphabetical order.



3. Select the desired filter using the cursor and click the "OK" softkey. The filter settings are displayed.

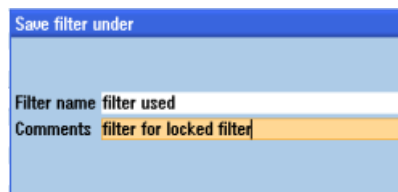
## Saving the filter under a different name



1. If you changed the settings of a filter that has been saved, then you can save the filter under a different name.

Press the "Save as" softkey.

The "Save Filter As" window opens.



2. Enter the new filter name and optionally a new comment.
3. Press the "OK" softkey to confirm your entry. The filter settings are applied and activated as a temporary filter.

## Resetting a filter



1. Press the "Reset filter" softkey to reset the filter criteria that were individually set.

If you saved the filter that was reset under the same name, then the conditions are retained.

**Deleting a filter**



1. Using the cursor, in the filter list select the filter that you want to delete.
2. Press the "Delete filter" softkey.  
A confirmation prompt appears.
3. Press the "OK" softkey to remove the filter settings from the filter list.

**3.13.3.4 Showing properties**

**Use**

Additional information is displayed for a tool selected in the list. In addition to the standard properties of the tool management, all supplementary management data, such as creator, creation date and the date of the last change are also displayed.

With the appropriate authorization, you also have the option of changing some data.

You can individually set-up the view of the properties in a configuration file. To do this, contact your local Siemens sales representative.

**Example of a view**

**General tool data**

| Properties              | Meaning   |
|-------------------------|---|
| Node                    | File/tool name                                  |
| Magazine                | File/tool type                                  |
| Location                | Location number                                 |
| Identifier              | Tool name                                       |
| Duplo no.               | Duplo number                                    |
| Tool type               | Tool type number                                |
| Number of cutting edges | Specifies the number of cutting-edges           |
| Size in half locations  | Half location size: Left, right, top and bottom |
| Tool status             | Status of the tool                              |
| Monitoring              | Specification of the monitoring                 |



### Cutting-edge data

The following data can be displayed and in some cases changed for each cutting edge:

| Properties   | Meaning   |
|--------------|---|
| Compensation | Tool length compensation - can be changed.  |
| Geometry     | Geometry data - cannot be changed.  |
| Wear         | Wear data - can be changed.   |
| Monitoring   | Monitoring data (unit quantity/tool life) - can be changed.<br>Residual value<br>Setpoint<br>Prewarning limit |

### Procedure

1. Position the cursor on the file or directory whose properties you wish to display or change.
2. Press the "Details" softkey.
 

Details

A scroll bar may appear depending on the number of data items.  
The "Tool Actual Data - Tool Data Details" window opens and you obtain additional information on the tool data - or you can change some of the data.
3. Press the "Tool +" softkey to switch directly to the next tool.
 

Tool +

- OR -

Press the "Tool -" softkey to switch directly to the previous tool.

Tool -
4. Press the "Cutting edge +" softkey to switch to the next cutting edge.
 

Edge +

- OR -

Press the "Cutting edge -" softkey to switch to the previous cutting edge.


Edge -
5. Press the "Change tool type" softkey.
 

Change tool type

A selection of all tool types will be displayed.
6. Press the "Change state" softkey.
 


Change status

All states will be displayed for selection in a window.
7. Press the "OK" softkey to save changes.
 



- OR -

Press the "Cancel" softkey to reject any changes that you have made and to return to the overview of the tool data.



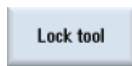
### 3.13.3.5 Lock/unlock tool

You have the option to lock a tool so that it cannot be used anymore - and also to unlock it again.

#### Requirement

- Check the tool before you lock it or unlock it.
- You require the access rights: Protection level 1 (password: machine manufacturer).

#### Procedure



1. Position the cursor on the tool to be locked or unlocked.
2. Press the "Lock tool" softkey if you want to lock the tool.

You receive a confirmation prompt whether you really wish to lock the tool.

- OR -



Press the "Unlock tool" softkey if you want to use the tool again.

You receive a confirmation prompt whether you really wish to unlock the tool.

### 3.13.3.6 Changing the tool life

You have the option to increase the life of a tool selected in the list by a certain percentage.

#### Precondition

Check the tool before you increase its tool life.

#### Procedure



1. Position the cursor on the tool in the tool list.
2. Press the "Tool life +10%" softkey.

The tool life is increased by 10% each time the softkey is pressed up to a maximum of 100%.

You can also customize the percentage of increase for the tool lifetime. To do this, contact your local Siemens sales representative.

### 3.13.4 Importing/exporting tool data

#### 3.13.4.1 Setting import and export properties

In the "Import / export settings" window, enter specific default settings, which become automatically effective for import or export.

#### Import

| Setting             | Meaning   |
|---------------------|---|
| Default directory   | Define an import directory, so that for each import you do not have to search in the directories for an import directory.<br>Enter the complete path in the correct syntax.<br><br>Note:<br>It is possible to select any directory, also when specifying a preselected directory.   |
| Forcing a Duplo No. | When importing tools a duplo number is automatically added. Starting from 1, the next available duplo number is automatically assigned.<br><br>Note:<br>Older tools can also have a higher duplo number<br>When importing, the already defined duplo number is transferred into the import tool data set. An error message is output if this already exists for the tool. |
| Forcing a T number  | Each tool requires a tool name for identification purposes. In the tool management, in addition a locally unique T number is allocated.<br><br>During import the T number that has already been defined is accepted in the import - tool data set. An error message is output if this already exists for a tool.  |

#### Export

| Setting                | Meaning   |
|------------------------|---|
| Default directory      | Define an export directory, so that for each export you do not have to search in the directories for an export directory.<br>Enter the complete path in the correct syntax.<br><br>Note:<br>It is possible to select any directory, also when specifying a preselected directory. |
| Allocating a file name | The file name is assigned automatically and displayed if no individual file name for the exported tool data is entered.   |
|                        | Format<br>Select a tool data format from a selection window. <ul style="list-style-type: none"> <li>• to-ini format (.to)</li> <li>• xml format (.xml)</li> <li>• json format (.json)</li> </ul>  |

| Setting                          | Meaning   |
|----------------------------------|---|
| Exporting and unloading          | Copy tool data and simultaneously remove from the source directory.   |
| File transfer into the tool list | Select file transfer into the tool list if the check box "Exporting and unloading" is selected. The tool data lose their magazine location reference; however they can still be used. |

**Procedure**



1. The "Tool actual data" window is open.  
Press the "Settings" softkey.  
The "Import / export settings" window is opened.



2. Select the corresponding check box to activate the desired default setting.
3. Press the "OK" softkey to save the setting.



**3.13.4.2 Importing tool data**

From the user interface, you have the option of importing tool data from a drive directory into the central database.

**Requirement**

Only formats are imported that are supported by Manage MyTools.

## Procedure



1. The "Tool Actual Data" window is open and the overview of the tool data is displayed.
2. Press the "Import/export" softkey.  
The window for the import or export of tool data opens.
3. In the overview, using the cursor, select a magazine or container directory into which the data is to be imported.
4. Press the "Import from file" softkey.  
The "File Selection for Tool Import" window opens and lists all of the configured directories.

### Note

In order to read in the files, the data must correspond to defined Manage MyTools formats.

See: Operating manual, Tool Data Information System

5. Select the drive and position the cursor in the directory in which the files are located.
6. Press the "OK" softkey to start the import.

- OR -

Press the "Cancel" softkey to close the selection window. No import is started and the selection of the target directories is rejected.

7. Press the "<<" softkey in order to return to the overview of the tool data.

### 3.13.4.3 Exporting tool data

From the user interface, you can export tool data from the central Manage MyTools database to a drive directory.

## Requirement

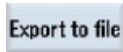
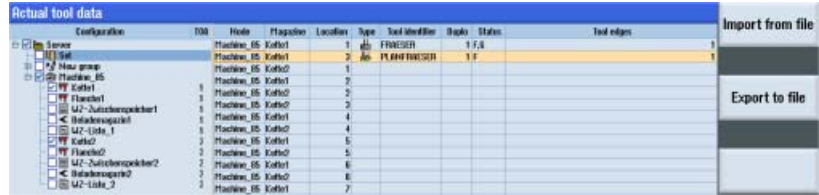
Only formats can be imported that are supported by Manage MyTools.

## Procedure

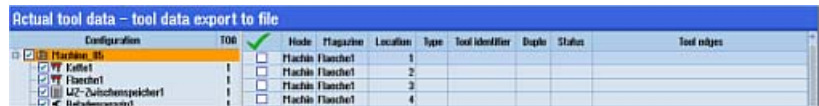


1. The "Tool Actual Data" window is open and the overview of the tool data is displayed.
2. Press the "Import/export" softkey.  
The window for the import or export of tool data opens.

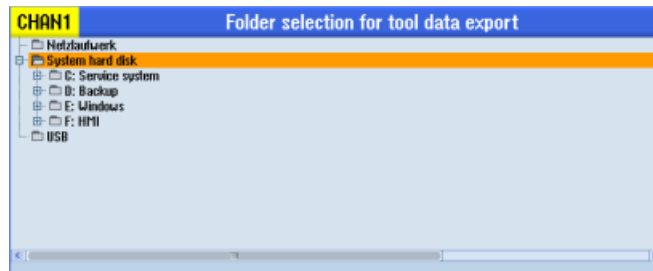
- Use the cursor to select a magazine or container directory, whereby a multiple selection is also possible.



- Press the "Export in file" softkey. The "Tool Actual Data – Tool Export in File" window opens
- Now select the required data sets in which the selected tool data is saved as file.



- Press the "Export" softkey. The "Directory Selection for Tool Export" window opens and lists all of the configured directories.



- Select the desired location for archiving and position the cursor in the directory in which you wish to export the files.

- OR -



Select the required location for archiving and press the "New directory" softkey to create a suitable subdirectory.



The "New Directory" window opens.

Enter the required name and press the "OK" softkey.

The directory is created below the selected folder.



- Press the "OK" softkey to start the export.

If the target directory does not exist, then it will be created.

If the target file already exists, then you obtain the following messages:

- Overwrite file
- OR -
- Save the file under a different name
  - From the "Type" selection field, select the required format, e.g. to-  
ini
  - Enter the new name in the "Name" field.



9. Press the "OK" softkey to start the export.



- OR -

Press the "Cancel" softkey to close the selection window. No imports are started and the selection of the target directories is rejected.



10. Press the "<<" softkey in order to return to the overview of the tool data.

## 3.13.5 Transferring tool data

### 3.13.5.1 Preparing tool data for transfer

In the "Transfer" window you obtain an accurate overview of the tools to be moved.

The window is split into two parts:

In one window area, select the tools that are to be transferred, and in the other window area, you can simultaneously identify the actual tool requirement.

- All of the higher-level tool magazines of all of the local components (operating/installation location) are displayed within the system hierarchy in the upper window area.
- The local system components are shown in the lower window area.

## Procedure



1. The "Tool actual data" window is opened and the overview of the tool data is displayed.
2. Press the "Transfer" softkey.  
The "transfer" window appears.
3. As the source, select any magazines and containers.  
Multiple selection is also possible.  
In order to obtain a better overview, the data can be displayed sorted and filtered.  
See Chapter: Switching filter on/off (Page 234)
4. Only enter one directory folder as target (magazine/container). You can also display its file contents individually filtered and sorted.
5. For each selection of the tool data sets, press the "Accept" softkey.  
The selected tool data are added to the transfer list.  
See Chapter: Editing the transfer list (Page 250)



### 3.13.5.2 Setting the transfer properties

#### Transfer settings

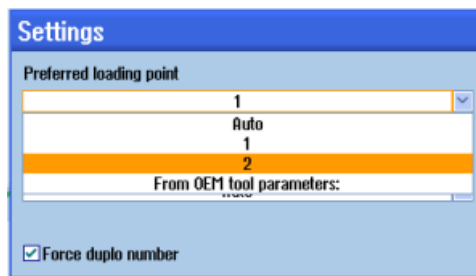
In the "Settings" window, enter the default settings that become automatically active for the transfer.



1. Press the "Settings" softkey to define the basic functions for the transfer.  
The settings for the preferred loading or unloading point depend on the machine configuration.



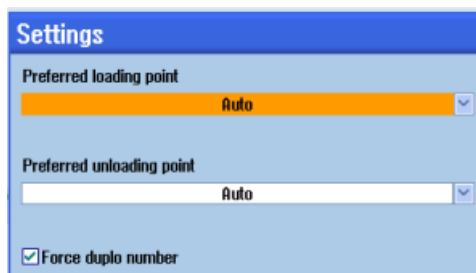
2. The "Settings" window opens.  
 Select 1 to n to manually select the preferred loading/unloading point.  
 Access is via the indices 1 - n.  
 If you activate the "Force duplo number" checkbox, the available duplo number is forced.  
 If you do not activate the checkbox, the assignment of the duplo numbers is automated. Starting from 1, the next available duplo number is automatically used.



- OR -

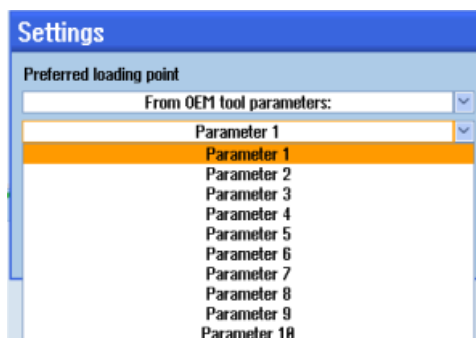
Select "Auto".

With this setting, the machine selects the preferred loading/unloading point.



- OR -

Select "From OEM tool parameter" to specify the preferred loading/unloading point tool-specifically via a certain parameter. This parameter must be specified at "Tool details" in the tool to be transferred.





3. Press the "OK" softkey to confirm your selection.

- OR -



Press the "Cancel" softkey to reject the selection and close the window.

### 3.13.5.3 Editing the transfer list

In the "transfer list" window, organize the tool data and then start the transfer.

#### Precondition

The "Transfer" window is open and you have already added tool data to the transfer list.

| Column   | Meaning  |            |
|----------|--|------------|
| Tool     | Tool identifier and duplo number of the source |            |
| Source   | Machine and magazine/container                 |            |
| Location | Location number                                |            |
| Target   | Magazine/container                             |            |
| Location | Location number                                |            |
| Status   | Finished                                       | Ready      |
|          | Started  | Started    |
|          | Canceled                                       | Canceled   |
|          | Creating                                       | Creating   |
|          | Unloading                                      | Unloading  |
|          | Loading  | Loading    |
|          | Searching                                      | Searching  |
|          | Deleting                                       | Deleting   |
|          | Relocating                                     | Relocating |

#### Organizing the transfer list



1. Press the "Transfer list" softkey.  
The transfer list window is opened and displays the transferred tool data.



2. To achieve the optimum order of execution, you can you still move the tool data sets in the transfer list.

Press the "Organize" softkey.  
An additional vertical softkey bar is opened.

3. Select the tool data set using the cursor.



4. Press the "Up" softkey to move the selected data set one position upwards.



- OR -

Press the "Down" softkey to move the selected data set one position downwards.



5. If you want to delete a tool data set from the transfer list, position the cursor on the data and press the "Delete" softkey."



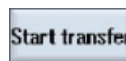
6. If you have finished editing the transfer list, press the "<<" softkey.

### 3.13.5.4 Starting the transfer

#### Requirement

The "Transfer" window is open and you have already added tool data to the transfer list.

#### Starting/canceling transfer



Press the "Start transfer" softkey.

Execution of the list is started. The tool data sets are moved from the specified source to the specified target as shown in the list.



If data transfer takes too long, press the "Cancel transfer" softkey.



Press the "<<Back" softkey to return to the "Transfer" window.

### 3.13.6 Planning tools

The "Plan tools" function can be used to adjust your tool requirement to the known tools in the tool management (the tool magazines, containers and tool lists).

The tool requirement can be entered in the following ways:

- Via top files
- Via mpf NC programs
- Manually

Three result lists are generated from the tool requirement list and the selected storage locations within the selected TOA.

- Preset new tools: Tools that are missing and that have to be provided.
- Unloading: Tools that are no longer required in the machine after being compared to the tool requirement.
- Loading: Tools that have been found in the tool lists and have to be loaded.

### 3.13.6.1 Entering the tool requirement

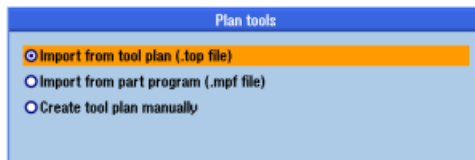
#### Importing the tool requirement from a file

To enter the tool requirement, you can use the tools from an existing tool plan or a part program.

#### Procedure



1. The "Actual Data" window is open.  
Press the "Plan tools" softkey.  
The window to enter your tool requirement opens and the "Plan tools" selection shown.  
You can now select the option with which you want to enter the tool requirement.



Importing a tool plan via a file

2. Select the option "Import from tool plan (.top file)" if you want to import the tools that are managed via a tool plan.
3. The "Select Tool Plan (.top File)" window opens and displays the drive directories of the NCU.  
Navigate in the Explorer tree to the directory in which the tool plans are stored.  
Select the required tool plan.  
The information on the tools stored in the tool plan is displayed.  
- OR -  
Select the option "Import from part program (.mpf file)" if you want to import the tools that are managed via a part programs.  
The "Select Part Program (.mpf File)" window opens and displays the drive directories of the NCU.  
Navigate in the Explorer tree to the directory in which the part programs are stored.  
Select the desired part program.  
The information on the tools stored in the part program is displayed.
4. Press the "OK" softkey to confirm your selection.  
The status message about the number of imported tools is displayed in the title bar.  
- OR -  
Press the "Cancel" softkey to reject the selection and close the window.

### Creating the tool requirement manually

You can create the tool plan manually or add imported tools.

| Display                           | Meaning   |
|-----------------------------------|---|
| Title bar                         | Number of tools entered in the tool plan.<br>If no tools have been entered, the status message is "No tools". |
| "Type" column                     | Icons of the tool types.<br>If the tool type is not known, the "+" sign is displayed.                         |
| "Tool name" column                | Identifiers of the determined tools.  |
| Displayed "New Tool - ..." window | Tool list of the available tools.   |

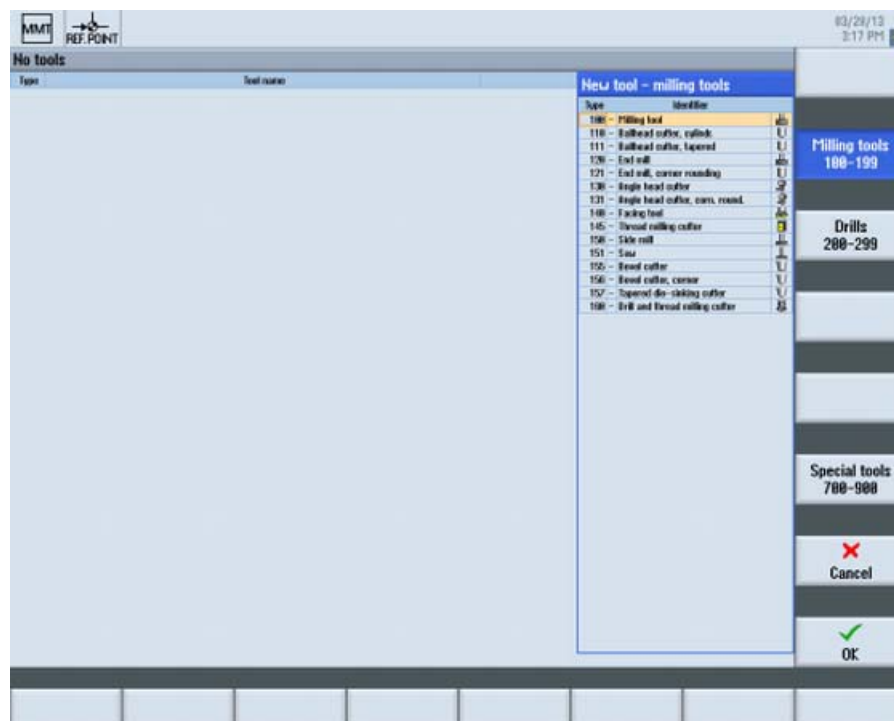
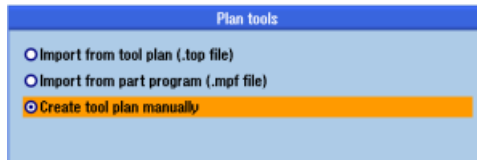


Figure 3-140 Creating a tool plan manually - milling tool selection

**Procedure**



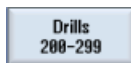
1. The "Tool Actual Data" window is open.  
Press the "Plan tools" softkey.
2. The window to enter your tool requirement opens and the "Plan tools" selection shown.  
Select the option "Create tool plan manually".



Creating the tool requirement manually



3. The softkeys or the available tool types are displayed. Press the "Mill 100-199" softkey.  
The "New Tool - Mill" selection opens and lists all the milling tools on the right in the window.



Press the "Drill 200-299" softkey.

The "New Tool - Drill" selection opens and lists all the drilling tools on the right in the window.



Press the "Special 700-799" softkey.

The "New Tool - Special" selection opens and lists all the special tools on the right in the window.



4. Select the tools by placing the cursor on the corresponding tools.

5. Press the "OK" softkey to confirm your selection.

The tools are added to the tool plan with the specified name and displayed.



- OR -

Press the "Cancel" softkey to reject the selection and close the window.

**3.13.6.2 Editing the tool plan**

Once you have determined the tool requirement, you can edit the tool plan.

| Display            | Meaning   |
|--------------------|---|
| Title bar          | Number of tools entered.  |
| "Type" column      | Icons of the tool types.<br>If the tool type is not known, the "+" sign is displayed. |
| "Tool name" column | Identifiers of the determined tools.  |

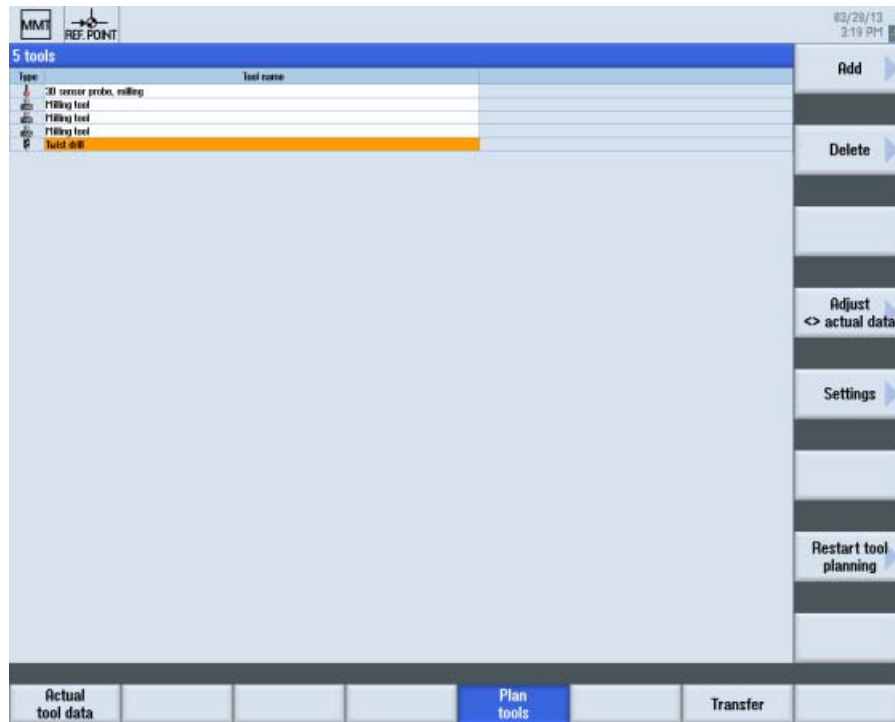


Figure 3-141 Editing the tool plan

## Procedure



If you want to add further tools, press the "Add" softkey.  
See Section: Creating the tool requirement manually (Page 253)



If you want to remove tools from the tool list, select the tools and press the "Delete" softkey.

A confirmation prompt is displayed whether you really wish to delete the selected tool.



Press the "OK" softkey to actually delete the tool.



OR -  
Press the "Cancel" softkey to reject the selection and close the window.



Then press the "Restart plan tools" softkey if you wish to create a new tool plan.

All previous entries are discarded and you start the "Plan tools" function again.

See Section: Entering the tool requirement (Page 252)

**3.13.6.3 Settings**

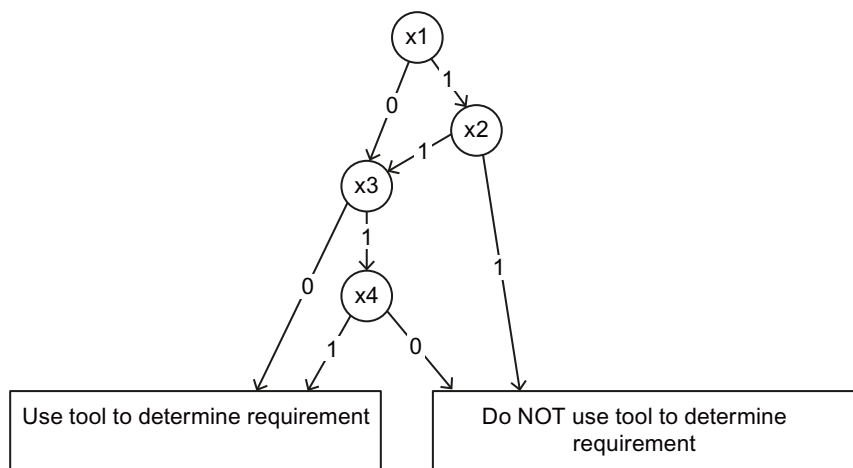
When planning the tools, default settings are made by the system that you can adapt to meet your requirements.

The following settings are possible:

| Setting                                      | Meaning   |
|--|---|
| Consider during adjustment                   | <p>All the tools that are to be considered for the adjustment of the tool inventory to the tool requirement can be selected in the accessible storage locations displayed in the tree topology.</p> <p>Multiple selection is also possible.</p> <p>This function is TOA-specific. If Manage MyTools runs on a machine with several TOAs, a selection with the available TOAs is shown next to the "Consider during adjustment" paragraph.</p>   |
| Adapt result of the tool planning            | <p>The surplus (unloading) determined during the tool planning should include the following tools:</p> <ul style="list-style-type: none"> <li>• Blocked tools</li> <li>• Tools that have reached the prewarning limit</li> <li>• Master tools</li> </ul> <p>See below: Decision diagram to determine the requirement (load tool)</p> <p>This function is protected with protection level 1 (manufacturer password).</p> <hr/> <p>The requirement determined during the tool planning (loading and preset new tools) includes the following tools:</p> <ul style="list-style-type: none"> <li>• Blocked tools</li> <li>• Tools that have reached the prewarning limit</li> </ul> <p>See below: Decision diagram for unloading tools</p> <p>This function is protected with protection level 1 (manufacturer password).</p> |
| Set automatically for the following transfer | <p>For easy specification of large tool data volumes for the transfer, the required status can be set automatically for all tools.</p> <p>Bits are set with the "Load/unload transfer" softkey.</p> <ul style="list-style-type: none"> <li>• Unloading status: Surplus tools are assigned the unload bit.</li> <li>• Loading status: Tools to be loaded are assigned the load bit.</li> </ul> <p>This function is protected with protection level 1 (manufacturer password).</p>  |
| Export of new tools for presetting to        | <p>Directory selection in the accessible file system in which tools are stored in a text file that have been determined during the tool planning as to be set.</p> <p>The directory is changed via the "Change export path" softkey.</p>  |

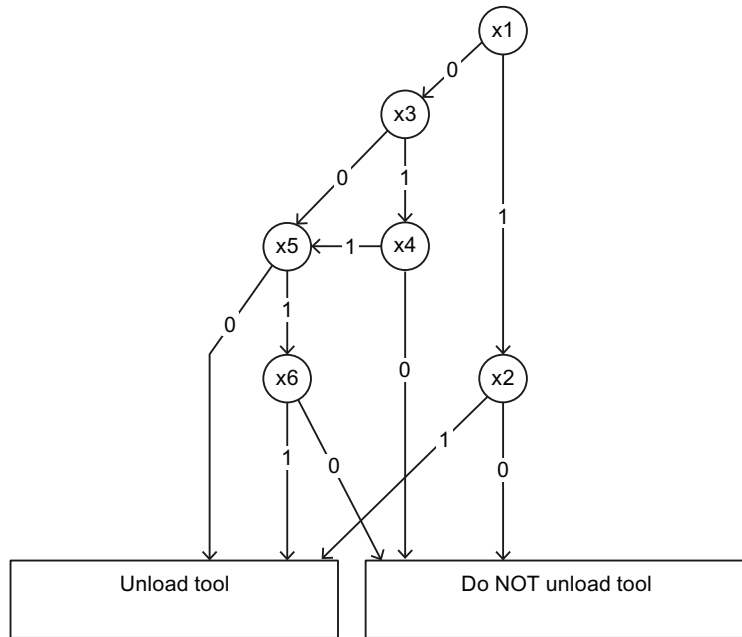


| Setting   | Meaning  |
|---|--|
| Regular expression to extract tools from the part program (.mpf file) | <p>The regular expression must be defined as follows:</p> <ul style="list-style-type: none"> <li>• Must be suitable for all lines in which the used tools are described.</li> <li>• Must contain the tool identifier in the first value in brackets. The following format can be used, for example, for further groupings: (? :Tool WZ)</li> <li>• Specifications for the syntax of the tool identifiers assigned in the part program.</li> </ul> <p>Examples:</p> <p>. : Placeholder for an arbitrary character</p> <p>* : Wildcard for n characters or no character</p> <p>You will find additional information on this topic in the Internet: Autohotkey (<a href="http://www.autohotkey.com/docs/misc/RegEx-QuickRef.htm">http://www.autohotkey.com/docs/misc/RegEx-QuickRef.htm</a>)</p> <p>This function is protected with protection level 1 (manufacturer password).</p> |



- x1 Tools blocked
- x2 Consider blocked tools when determining the requirement
- x3 Tool in the prewarning range
- x4 Consider tools in the prewarning range when determining the requirement

Figure 3-142 Decision diagram: Unloading tools



- x1 Tools blocked
- x2 Unload blocked tools
- x3 Master tool
- x4 Unload master tools
- x5 Tool in the prewarning range
- x6 Unload tools in the prewarning range
- 0 False/no
- 1 True/yes

Figure 3-143 Decision diagram: Determining the requirement (load tool)

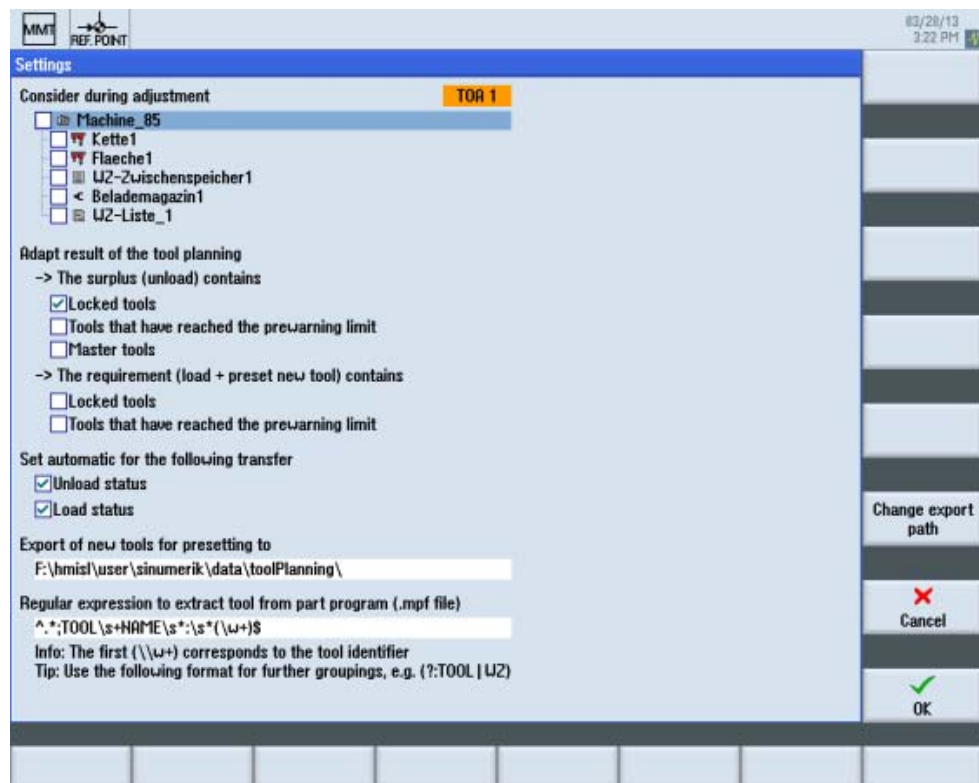


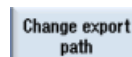
Figure 3-144 Settings

## Procedure



1. Press the "Settings" softkey in the tool list.

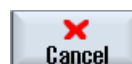
The "Settings" configuration window opens.



2. Adjust the displayed settings individually in the window.
3. Press the "Change export path" softkey if you change the storage location of the tools that have been determined as to be set.  
See Section: Changing the export path (Page 260)



4. Press the "OK" softkey to confirm the settings.



- OR -

Press the "Cancel" softkey to reject the settings and close the window.

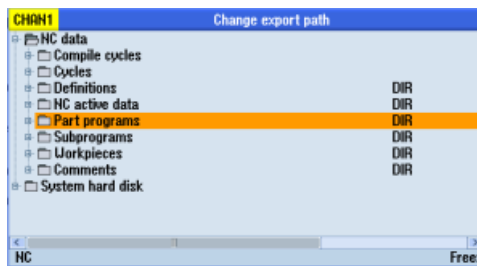
### 3.13.6.4 Changing the export path

The set export path can be changed via the available file system.

#### Procedure



1. Press the "Change export path" softkey in the "Settings" window. The "Change Export Path" window opens.



Selecting the export path



2. Navigate to the required directory in the file system.
3. Mark the required directory and press the "OK" softkey. The selected directory is accepted. The path to this directory is saved as the export path.  
If no export path is specified, you receive an appropriate error message.

### 3.13.6.5 Adjusting the actual data

Irrespective of whether the tool requirement has been specified as an imported or manually created tool plan, the adjustment is performed in the same way for all tools.

#### Procedure



1. The tool plan has been created.
2. Press the "Adjust<>act. data" softkey. The adjustment between the planned tools and the selection of storage locations specified in the settings is performed. The missing and surplus tools are displayed as the result. Based on characteristics, the selection of the tools to be included in the adjustment can be refined at "Adapt result of the tool planning" in the settings.

### 3.13.6.6 Result from the adjustment with the actual data

The result of the tool planning is displayed with the following information:

| Display                                 | Meaning  |
|---|--|
|   | Different results are displayed in columns 1, 2 and 3.   |
| Column 1:<br>Number of preset new tools | Tools that have not been found in the magazines or specified storage locations.<br>New tools must therefore be provided by the tool presetter.<br>Export is via the "Export new tool" softkey. |
| Column 2:<br>Number of unloaded tools   | Tools that are no longer required in the machine according to the specified tool plan.<br>The tools are unloaded via the "Load/unload with transfer" softkey.                                  |
| Column 3<br>Number of loaded tools      | Tools that have been found in storage locations, but are not in the accessible machine magazine.<br>The tools are loaded via the "Load/unload with transfer" softkey.                          |
| "Type" column                           | Icons of the tool types.<br>If the relevant tool type is not known, the "+" sign is displayed.   |
| "Tool name" column                      | Identifiers of the selected tools.   |
| "Location" column                       | Location of the corresponding type.  |

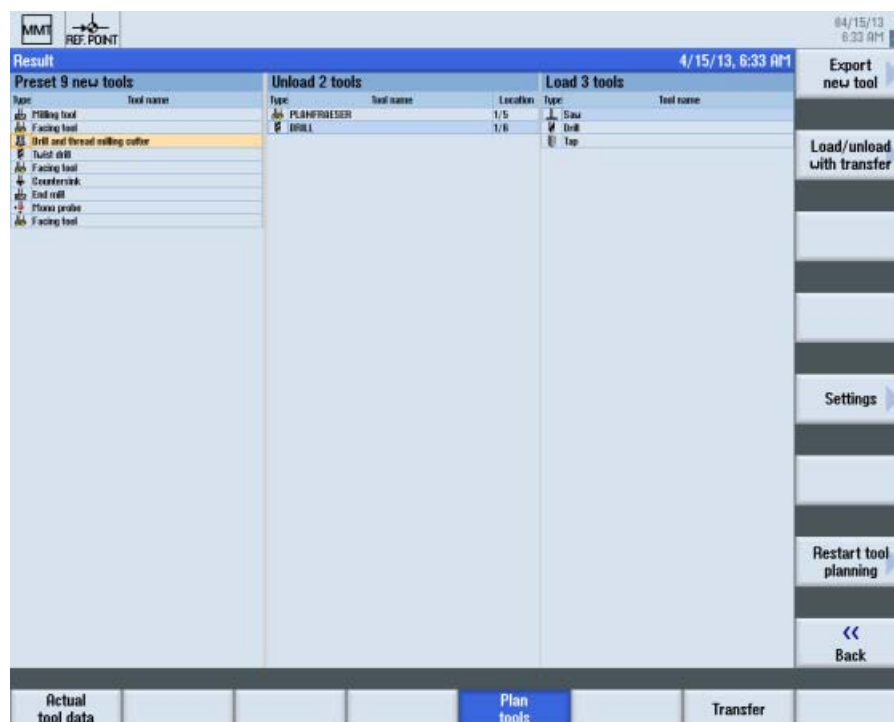


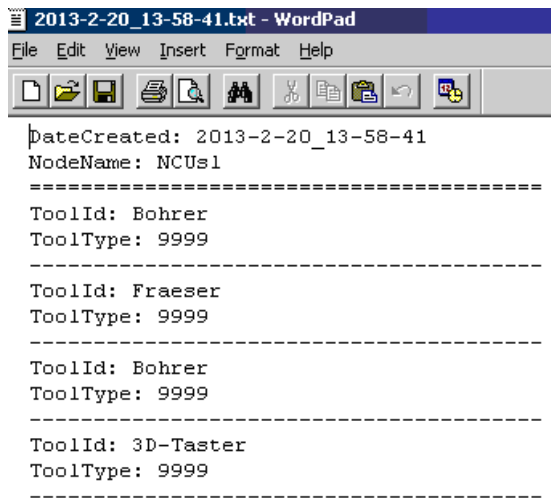
Figure 3-145 Result from tool planning

Procedure

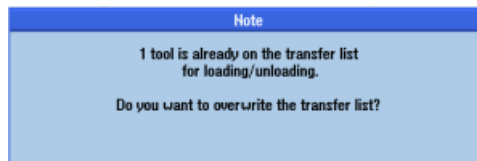


1. Press the "Export new tools" softkey.  
The selected tools are exported to a .txt file and stored in a predefined directory.
2. The file name comprises a time stamp and, if required, the tool plan identifier.

Example of a txt file:



3. Press the "Load/unload with transfer" softkey to unload the tools not required and load the required tools.  
If a transfer list already exists, an appropriate message is displayed:



Transfer list message



4. Press the "OK" softkey to start the procedure.

- OR -



Press the "Cancel" softkey to cancel the process.

# Manage MyPrograms (MMP)

## 4.1 Prerequisite

### Activating SINUMERIK Integrate

SINUMERIK Integrate must be activated in order to be able to use Manage MyPrograms.

### References

Information on the activation of the software can be found in the "SINUMERIK Integrate, MMT, MMP, AMB, AMC, AMM, AMP" Installation Manual.

### Connect machine/server

For the machine/server connection, the machines and users must have been created.

### References

The procedure is described in the "SINUMERIK Integrate, AMB, AMC, AMM" Function Manual, in Section: Management.

## 4.2 Managing program data

### Overview

You can access the Manage MyPrograms data in the "Program manager", "MMP DNC" operating area from the user interface of SINUMERIK Operate.

A transparent directory structure helps the simple management of files and programs. You can select and copy data and insert this data into other directories. Programs that you no longer require can be deleted to release storage space.

Possible storage locations are:

- NC
- Local drive
- Network drive
- USB drive
- MMP server

### Requirement

- You need the corresponding access rights if you modify, copy and delete files: The access rights are defined on the server.
- When assigning a new file name, ensure that only files with a maximum name length of 24 characters can be managed.

### Procedure



1. Select the "Program Manager" operating area.



2. Press the "MMP DNC" softkey.



3. Select the desired NC data. Single and multiple selection is possible.

4. Press the "Select" softkey.



5. Press the "Copy" softkey in order to copy the data to the buffer memory.



6. Then select the target directory and press the "Paste" softkey.

An appropriate note is displayed if this directory already includes a directory/program with the same name. You are requested to assign a new name, otherwise the directory/program is assigned a name by the system.



7. Delete programs or directories that you are no longer using in order to keep your data management transparent and clear.

Select the data and press the "Delete" softkey.

Please note when you delete a directory, that all programs, as well as subdirectories contained in this directory, are also deleted!

If data cannot be deleted, for example, because it has been enabled, information is displayed in an "Error log for deletion".



8. Changes to the directory contents are not automatically updated.

Press the "Update" softkey to reestablish the window view.



## 4.3 Calling Manage MyPrograms

### Procedure



1. The control system has booted and the operating areas are displayed.
2. Select the "Program manager" operating area.
3. Press the "MMP DNC" softkey.  
The "Manage MyPrograms" window opens and displays an overview of the NC program data.

## 4.4 Overview of the program data

### Overview

An overview of the plant configuration is displayed in the "Manage MyPrograms" window.

---

#### Note

You can individually configure the sequence and selection of the columns to be displayed on the server.

---

The system structure together with the directories is displayed in the left-hand window area.  
The contents of the directories are displayed in the right-hand window area.

| Column            | Meaning  |
|-------------------|--|
| Name              | Name of folders, NC programs, workpieces, NC packages                  |
| Type              | File/program type  |
| Version           | Version identifier   |
| Release ID        | Released NC program with version number                                |
| Trial cut ID      | Trial cut ID - the program is only enabled for trial machining         |
| Length            | Length of the NC program in bytes                                      |
| Modification date | Time of change   |
| Archive           | Designation of the NC archive  |
| Workpiece         | Designates a group of NC programs to be used for machining a workpiece |

### Managing the file system

The following functions are available for you to manage data:

- Switching filter on/off (Page 267)
- Transferring NC programs between the source and target.  
See reference: Function Manual NC Program Management DNC Machine
- Selecting, copying, pasting directories.  
See Section: Managing program data (Page 263)
- Updating the directory structure.  
See Section: Managing program data (Page 263)
- Sorting NC programs.  
See Section: Sorting NC programs (Page 268)
- Displaying the program content in the preview window.  
See Section: Preview (Page 269)
- Searching for specific files.  
See Section: Search function (Page 270)
- Creating filters.  
See Section: Filter settings (Page 270)
- Displaying data activities using a logbook.  
See Section: Display logbook (Page 276)
- Displaying management properties.  
See Section: Showing properties (Page 277)
- Deleting data.  
See Section: Managing program data (Page 263)

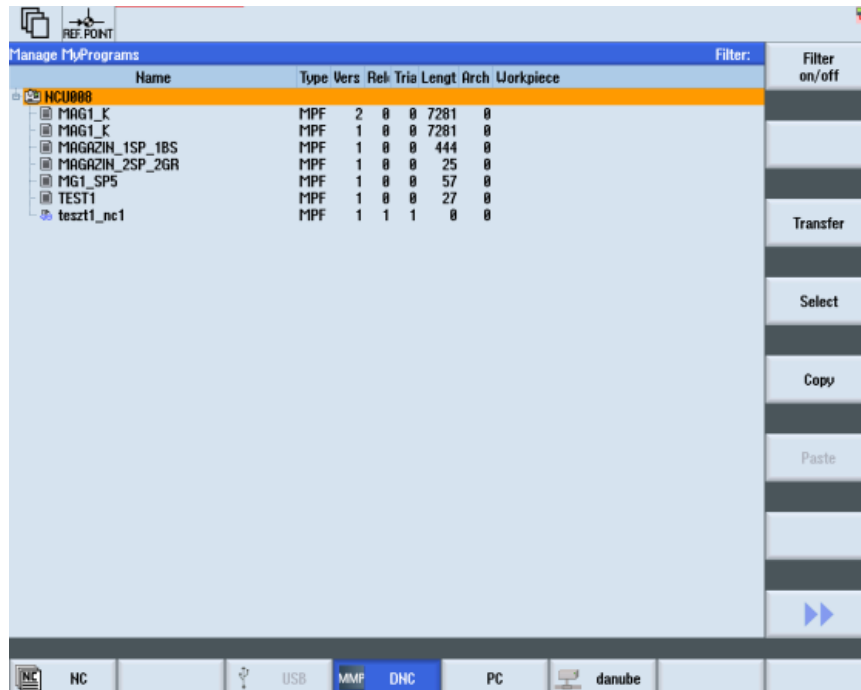


Figure 4-1 Manage MyPrograms overview

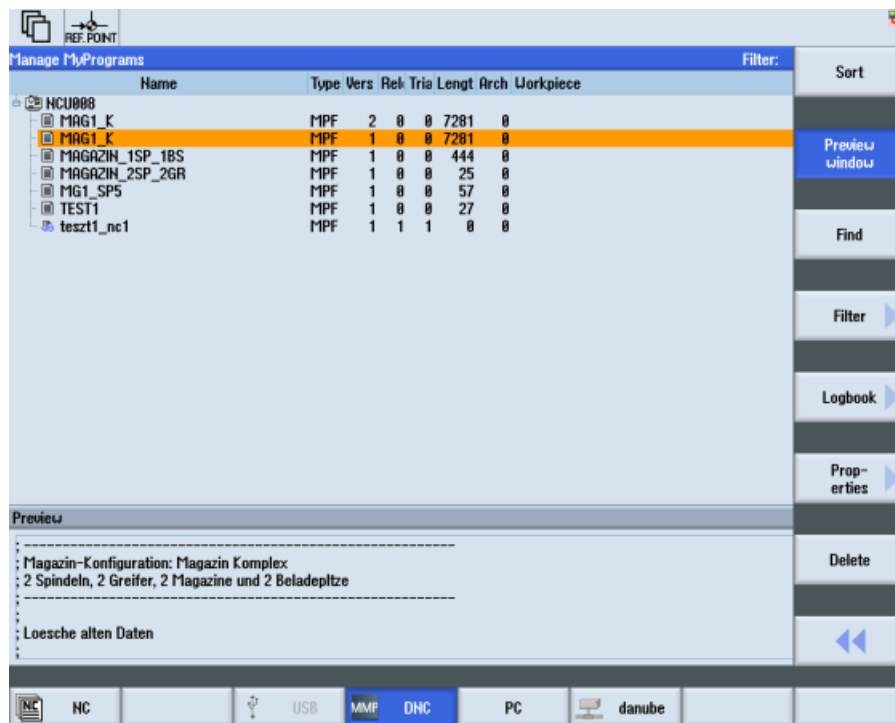


Figure 4-2 Manage MyPrograms overview extension

#### 4.4.1 Switching filter on/off

You have the option of influencing the program list display by applying filter conditions therefore restricting the selection of visible directories/programs.

#### Requirement

Filter settings have already been defined.

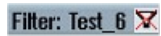
#### See also:

- Filter settings (Page 270)
- Save filter (Page 273)
- Edit filters (Page 274)
- Setting a classic filter (Page 275)

### Procedure



1. The "Manage MyPrograms" window is open.  
The filter name and a filter symbol are displayed in the status display.
2. Press the "Filter on/off" softkey to activate or deactivate the selected filter.  
If, for example, the filter is deactivated, then a crossed-out filter symbol is displayed.



### 4.4.2 Sorting NC programs

You have the option to display the NC programs sorted individually. The criteria for sorting can be defined via the user interface.

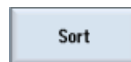
### Criteria

- Up to three sorting criteria can be defined.
- The criteria are selected via a drop-down list. The drop-down lists include the column designations of the NC program list.
- The priority of the sorting order is from the upper, to the medium and the bottom criterion.
- You can select via an option field whether the sorting is to be executed in ascending or descending order.

### Procedure



1. Press the ">>" softkey.  
Additional softkeys are displayed on the vertical bar.



2. Press the "Sort" softkey.  
The "Sorting Settings" window opens.



3. Select the desired sort criteria according to which you wish to display the NC programs.



4. Press the "OK" softkey.  
The programs are displayed and sorted according to the specified criteria.

- OR -



- Press the "Cancel" softkey if you want to make no sorting. The window closes.

### 4.4.3 Preview

You have the option of displaying a preview of the program content.

#### Procedure



1. Place the cursor on the desired program.
2. Press the ">>" softkey.  
Additional softkeys are displayed on the vertical bar.



3. Press the "Preview window" softkey.  
The "Preview" area is displayed in the lower window together with the file content.



4. Press the "Preview window" softkey again to close the window area.

### 4.4.4 Search function

You have the option for searching for specific entries using the search function. The search function is a partial text search and is executed across all columns.

#### Procedure



1. If you press the ">>" softkey, further softkeys are displayed on the vertical bar.



2. Press the "Search" softkey. The "Search" window opens.



3. Enter the term to be found in the "Text" entry field or click "Search text" and select one of the offered terms.
  - The text can be up to 256 characters long.
  - Use the asterisk ("\*") as wildcard for any character string.
  - Use the question mark ("?") as wildcard for a single character.



4. Press the "OK" softkey to start the search. The search starts from the current cursor position. The next hit is the new cursor position. This means that the search can be continued from the actual position - and if required can also be started from the beginning again.

- OR -



- Press the "Cancel" softkey to stop the search.

### 4.4.5 Configuring filters

#### 4.4.5.1 Filter settings

You can influence the program list display using filter conditions and therefore restrict the selection of visible directories/programs.

You have the option of using each column in the displayed program list as filter criterion.

The following options are offered depending on the column type:

- Selecting or deselecting using a checkbox
- Detailed information

## Filter processing

- Save filter (Page 273)
- Edit filters (Page 274)
- Setting a classic filter (Page 275)

## Filter criteria

| Filter criterion  | Description   |
|-------------------|---|
| Program name      | Name of the program with a maximum of 255 characters.   |
| Program type      | The following program types are available for selection: <ul style="list-style-type: none"> <li>• MPF for main programs</li> <li>• SPF for subprograms</li> <li>• TXT, PDF, ... for text files</li> <li>• JPG, PNG; ... for graphic files</li> <li>• Freely editable data that you can save on the server in the program type table.</li> </ul>   |
| Release ID        | Selection of: <ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul> The release identifier acts only on NC programs for execution in the NC. Programs with the same name can only be allocated a "YES" release once.  |
| Trial cut ID      | Selection of: <ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul> The trial cut ID acts only on NC programs for execution in the NC.  |
| Modification date | Limit the change date of NC data by entering "from" / "to".<br>Specify the date as a contiguous number: <ul style="list-style-type: none"> <li>• Year (Y): Four-digit</li> <li>• Month (M): Two-digit</li> <li>• Day (T): Two-digit</li> <li>• Time of day: Hour (H), minute (M):second (S)</li> </ul> The date entry fields are language-specific, e.g. for German DD/MM/YYYY HH:MM:SSS. |
| Length            | Limit the length of NC data in bytes by entering "from" / "to".   |

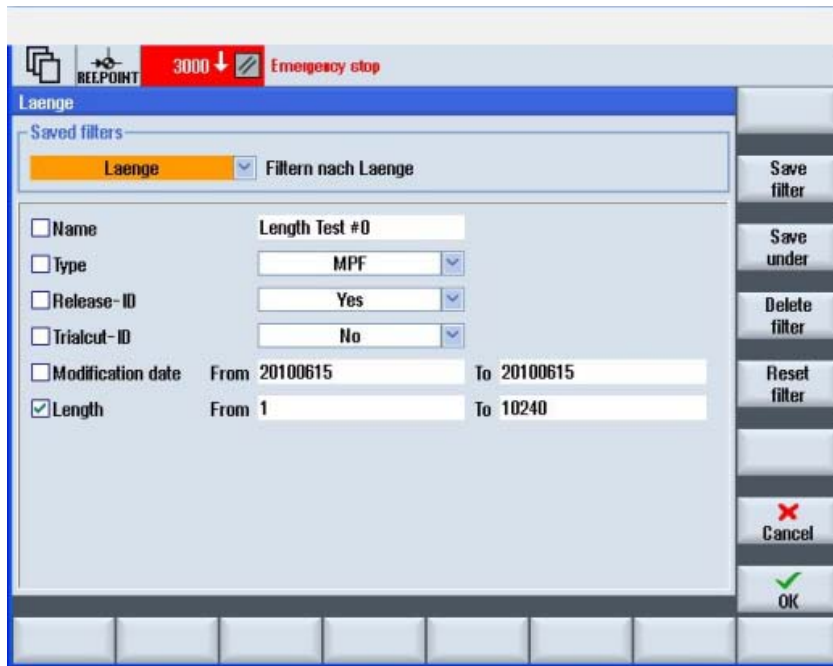




Figure 4-3 Manage MyPrograms filter settings

#### 4.4.5.2 Activate filter

##### Procedure

1. The "Manage MyPrograms" window is open.
2. If you press the ">>" softkey, further softkeys are displayed on the vertical bar.  

3. Press the "Filter >" softkey. The "Saved Filters" window opens.  

4. Already defined filter settings can be selected via the selection field. In addition to the filter designation, the associated comments are also displayed.



### 4.4.5.3 Save filter

You can save any individually set filter.

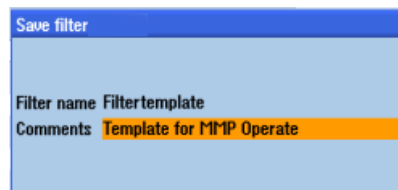
#### Saving a filter

| Display     | Description  |   |
|-------------|--|---|
| Filter name | Any filter name with a maximum of 40 characters.   |   |
| Comment     | Freely selectable text as a comment to a filter setting.<br>See Section: Entering a comment (Page 279) Enter comment |   |
| Application | Global   | Filter can be used in the entire system.                                      |
|             | Local  | A filter can only be used on the machine for which it was originally created. |
|             | User defined   | A filter can only be used by the user who created it.                         |

#### Procedure



1. You have selected the filter criteria and wish to save these settings.
2. Press the "Save filter" softkey.  
The "Save Filter" window opens.



3. Enter the filter name in the "Filter name" entry field.  
You receive a confirmation prompt if you use an existing name.  
Confirm the query in order to overwrite the name.  
- OR -  
Cancel the action in order to change the name.  
Enter the new name and optionally a comment in the entry field.
4. Press the "OK" softkey to save the filter.



- OR -



- Press the "Cancel" softkey to reject the settings.

#### 4.4.5.4 Edit filters

You have the option of recalling already saved filter settings in order to use them for filtering or to edit the filter settings.

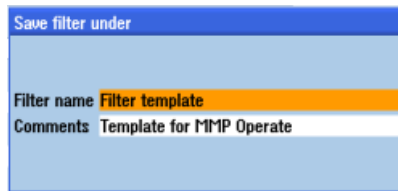
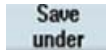
#### Select filter

1. The "Saved Filters" window is open.
2. In the selection box, you can display the existing filters in alphabetical order.
3. Select the desired filter using the cursor and click the "OK" softkey. The filter settings are displayed.



#### Saving the filter under a different name

1. If you changed the settings of a filter that has been saved, then save the filter under a different name. Press the "Save as" softkey. The "Save Filter As" window opens.



2. Enter the new filter name and optionally a new comment.
3. Press the "OK" softkey to confirm your entry. The filter settings are applied and activated as a temporary filter.



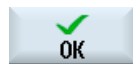
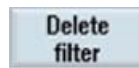
#### Resetting a filter

Press the "Reset filter" softkey to reset the filter criteria that were individually set.



If you saved the filter that was reset under the same name, then the conditions are retained.

### Deleting a filter



1. Use the cursor to select the filter to be deleted in the filter list.
2. Press the "Delete filter" softkey.  
You receive a confirmation prompt as to whether the filter should be deleted.
3. Press the "OK" softkey.  
The filter is removed from the list.  
- OR -  
Press the "Cancel" softkey to cancel the deletion operation.

#### 4.4.5.5 Setting a classic filter

In addition to the option of directly defining the filter at the control using SINUMERIK Operate, there are filter links that are created at the server. The display of such filter configurations are the classic filters. The variables are only displayed, but cannot be modified.

For a detailed description of the filters created on the server, please refer to the following description:

### References

Function Manual NC Program Management DNC; view filter

### Use

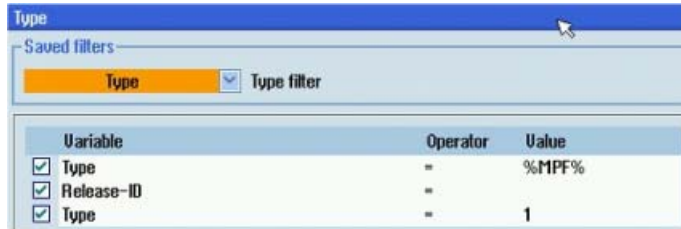
| Column   | Meaning  |
|----------|--|
| Variable | Individually set-up variable.  |
| Operator | Specifies how the variable is linked with the value to the filter condition. |
| Value    | Specifies what the variable is processed with as filter condition.           |

### Classic filter upload

1. The "Saved Filters" window is open.  
In the selection box, you can select the desired filter.  
The saved filters are displayed in alphabetical order.
2. Select the required filters, e.g. "classic1".  
The associated comments are displayed next to the filter designation.



3. Press the "OK" softkey.  
The variables that have been created are displayed.
4. Activate the checkbox of the variables to enable the filter condition.



### 4.4.6 Display logbook

#### Use

The logbook contains all the messages and error messages that were displayed in the message line with date and time. In this way, procedures such as transfer, delete, etc. and errors that have occurred can be traced.

Each entry is marked with M (message) or E (error message) for the type of message. This is followed by the date and time when the message occurred, the message number and the message text.

As an option, the user that executed the action can also be recorded.

The archiving time for the data that has been recorded can be permanently set, in order, when required, to fulfill the obligation of guaranteeing proof over a lifetime (traceability).

#### Procedure



1. Press the ">>" softkey.  
The expanded menu is displayed.



2. Press the "Logbook" softkey.  
The "Logbook" window opens and displays all of the information in conjunction with how MMP handled NC program data at the machine.

## Example

| Type | Date                | Number | Message text                                 |
|------|---------------------|--------|--|
| M    | 17.09.2010 14:49:54 | 0      | KHBTEST.MPF downloaded                       |
| M    | 16.09.2010 13:39:45 | 0      | MYTEST043.MPF downloaded                     |
| M    | 16.09.2010 13:38:53 | 0      | FACE_MILLING_3.MPF downloaded                |
| M    | 15.09.2010 08:19:47 | 0      | HGFGH.SPF uploaded                           |
| M    | 14.09.2010 15:56:59 | 0      | test.MPF uploaded                            |
| E    | 14.09.2010 15:56:58 | 0      | Invalid uploadtarget-NodeID: 7 changed to: 4 |

**Type M** indicates that the activity was manually executed with the NC data.

**Type E** indicates that the activity was automatically executed with the NC data.

Overview of the program data (Page 265)

## 4.4.7 File properties

### 4.4.7.1 Showing properties

#### Use

You can display additional information for a program data file selected from the list. In addition to the standard details, such as the name and type, all management data, such as creator, creation date and the date of the last change can be displayed.

With the exception of setting and resetting the trial cut and release ID, the data cannot be changed.

---

#### Note

You can individually configure the sequence and selection of the columns to be displayed on the server.

---

## Properties

| Properties   | Meaning  |
|--------------|--|
| Name         | Name of folders, NC programs, workpieces, NC packages              |
| Type         | File/program type  |
| Version      | Version identifier   |
| Workpiece    | Workpiece  |
| Release ID   | Released NC program with version number                            |
| Trial cut ID | To run-in an NC program with version number that has been released |
| Length       | Length of the NC program in bytes                                  |

4.4 Overview of the program data

| Properties          | Meaning                                      |
|---------------------|--|
| Archive ID          | Designation of the NC archive                |
| Issued by           | Name of the creator                          |
| Creation date       | Date and time of creation                    |
| Modified by         | Name of the person that made the last change |
| Modification date   | Date and time of last change                 |
| Number of accesses  | Number of accesses                           |
| Last access         | Date and time of the last access             |
| Administrator       | Name of the administrator.                   |
| Administration date | Date and time of the administration          |

Procedure

1. Position the cursor on the file or directory whose properties you wish to display.
2. Press the ">>" and "Properties" softkeys.  
The "Manage MyPrograms Properties" window opens and displays the stored properties.



| Manage MyPrograms Properties |                          |
|------------------------------|--------------------------|
| Name                         | MAG1_K                   |
| Type                         | MPF                      |
| Version                      | 1                        |
| Workpiece                    |                          |
| Release- ID                  | <input type="checkbox"/> |
| Trialcut- ID                 | <input type="checkbox"/> |
| Length                       | 7281                     |
| Archiv                       | 0                        |
| Develname                    | NCU008                   |
| Develdate                    | 2013-04-05 19:15:24      |
| Modname                      |                          |
| Moddate                      | 2013-04-05 19:15:24      |
| Loadcounter                  | 0                        |
| Lastload                     |                          |
| Adminname                    | NCU008                   |
| Admindate                    | 2013-04-12 13:53:56      |

Displaying properties

#### 4.4.7.2 Entering a comment

For every file saved in the program system, you can enter a comment as a remark.

#### Requirement

To enter a comment, you need the corresponding access rights.  
The access rights are defined on the server.

#### Procedure



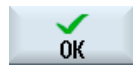
1. Position the cursor on the file and press the ">>" softkey.



2. Press the "Properties" softkey to open the input window.



3. Now press the "Comment" softkey and enter a unique text.



4. Press the "OK" softkey to save the comment together with the program data.

The comment window is closed again.

- OR -



Press the "Cancel" softkey to close the input window without saving.

#### 4.4.7.3 Display attachments

For each file to be stored in the program system, additional files can be assigned as so-called "Attachments".

You can view the files if an appropriate editor has been implemented.

The following files are possible as attachments:

- Text files
- PDF files
- Graphics
- SVG

| Column | Meaning                           |
|--------|-----------------------------------|
| Name   | Name of the attachment            |
| Size   | File size                         |
| Type   | File type                         |
| Date   | Time stamp with the date and time |

**Procedure**

1. Place the cursor on the desired program.  
The "Attachments>" softkey can be selected if additional files have been assigned to the program file.



2. Press the "Attachments>" softkey.  
A window opens in which the stored files are listed. In addition, a new vertical softkey bar is displayed.

The following softkeys can only be selected if the appropriate file is selected.

3. Press the "Display text file" softkey in order to view the text file.



- OR / AND -

Press the "Display PDF file" softkey to display the PDF file.



- OR / AND -

Press the "Display picture" softkey in order to view the picture file.



- OR / AND -

Press the "Display SVG" softkey in order to view the graphic file.





#### 4.4.7.4 Displaying a graphic

You have the option of displaying graphics on the user interface.

The following formats are supported:

- .bmp
- .jpg
- .tif

#### Procedure



Position the cursor on the graphic file and press the ">>" softkey.

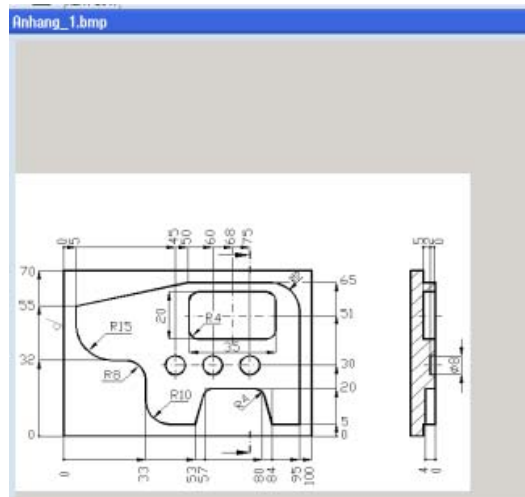


Press the "Properties" softkey.

The system detects the graphic format and the "Display graphic" softkey can be selected.



2. Press the "Display graphic" softkey to open the file and display it.



3. Press the "Back" softkey to close the graphic.

Note:

You can only select and open one file at a time!

### 4.4.7.5 Adding attachments

You can add arbitrary files as attachments to any file stored in the program system.  
All formats are supported, but only the defined formats are displayed.

#### Requirement

You require access rights to add attachments. The access rights are stored on the server.  
The attachments must not exceed 10 MB.

#### Procedure



1. Press the "Add attachments" softkey.  
The Explorer tree opens and displays the NCU directories.  
Select the required files.

| Name    | Size   | Type | Date                 |
|---------|--------|------|----------------------|
| DHC.bmp | 648856 | .bmp | 4/12/2013 2:05:50 PM |



2. Press the "OK" softkey to add the attachments to the file.  
- OR -



3. Press the "Cancel" softkey to reject the action and return to the previous window.

## Analyze MyCondition (AMC)

### 5.1 Introduction

#### Analyze MyCondition (AMC)

The current machine status is acquired and documented on the basis of predefined, standardized tests and continuous recording of status parameters (traverse path, traverse time and traverse operations for one axis). The test parameters can be defined centrally and configured with appropriate warning limits. Using series of measurements, it is also possible to identify trends and apply them as a basis for optimizing maintenance and service activities.

The machine operator can then carry out these predefined tests quickly and easily and without additional test equipment.

The following tests and monitors are available:

- Circularity test
- Equability axis test
- Universal axis test
- NC monitor
- Variable monitor

#### References

Please refer to the following documentation for a description of the individual AMC functions:  
Function Manual, SINUMERIK Integrate AMB/AMC/AMM

### 5.2 Function overview for MOs

#### Machine operator (MO)

The individual functions and procedures for the machine operator group (MO) are described in the following.

**Menu structure**

The overview tree displays the SINUMERIK Integrate menu structure on the control. The SINUMERIK Integrate functions for the MO which are only activated after logging on ("Online Services") are displayed in the dashed frame.

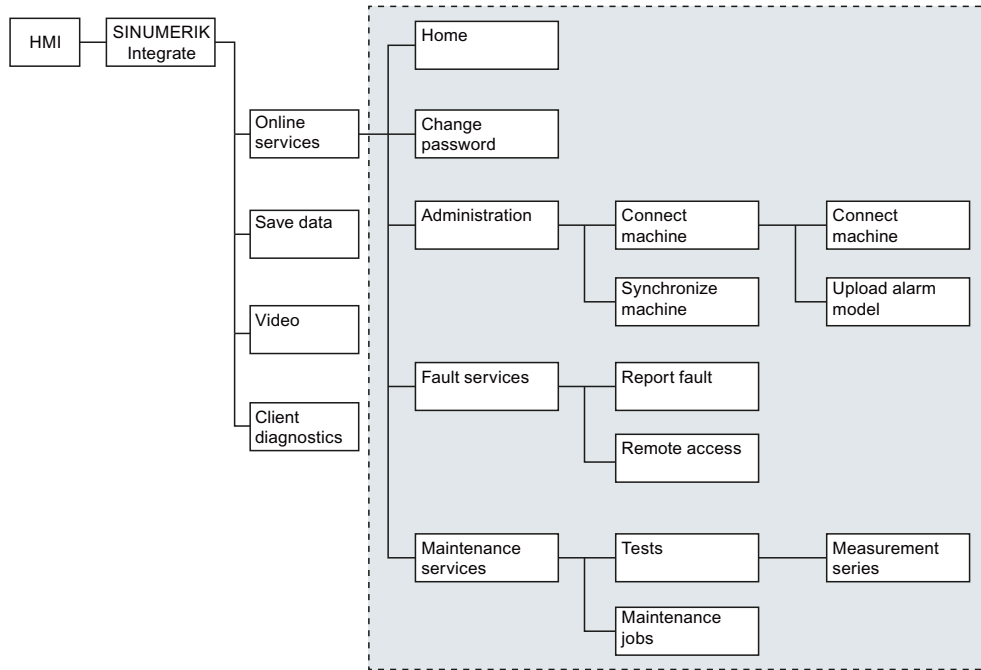


Figure 5-1 Menu structure on the control

Overview of functions on the PC:

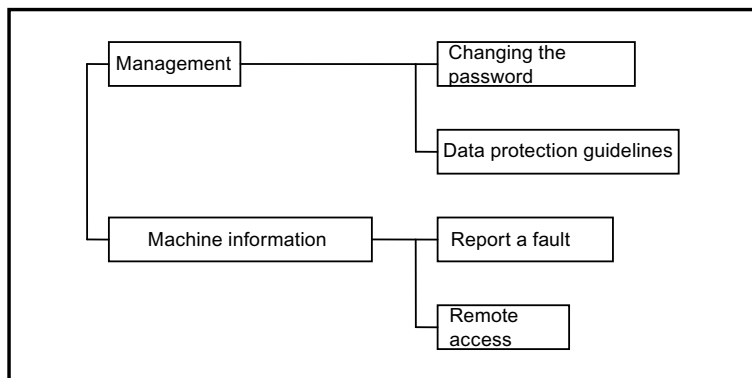


Figure 5-2 Menu structure on the PC

**References**

Please refer to the following documentation for a description of the individual AMC functions: Function Manual, SINUMERIK Integrate AMB, AMC, AMM

## Access MyMachine (AMM)

### 6.1 Overview

If a connection already exists to the machine, then the system automatically identifies which remote access has been installed.

#### Options

- Access MyMachine (AMM)
  - Control with SINUMERIK Operate, see Section: Establishing a session with SINUMERIK Operate (Page 289)
  - PCU 50 control with HMI-Advanced, Windows NT 4.0 or Windows XP operating system, see Section: Establishing a session with HMI-Advanced (Page 292)

#### Overview

- On controls with SINUMERIK Operate, you can participate in a session via AMM for the remote access.
- On controls with PCU 50 and HMI-Advanced, you can participate in a session via AMM with Windows XP or Windows NT 4.0.

---

#### Note

##### For HMI-Advanced

If there is no current client installed, you must install or update the client via the "Update teleservice" softkey before participating in a session. After the installation or the update, the control must be restarted.

---

### 6.2 AMM remote access

#### 6.2.1 Setting up a session on the PC

##### Requirement

- The necessary client software has already been installed on the PCU or the PC. See Installation Manual, SINUMERIK Integrate MMT, MMP, AMB, AMC, AMM, AMP
- The connection to the machine has been established.

### Participation

You can participate in a session with the following roles:




- As active service engineer leading the session
- As observing service engineer

### Overview

Table 6- 1 Executing remote access

|                        | Meaning   |
|------------------------|---|
| <b>Session</b>         |   |
| Session number         | Shows the session number of the conference.<br>The service engineer transfers the number to all those who want to participate in the conference<br>Notification of the session number is via phone, SMS, e-mail, etc. |
| Duration               | Shows the duration of the conference in minutes.  |
| Actions<br>End session | Ends the session.<br>The service engineer ends the session and disconnects all participants from the conference.  |
| Status                 | Displays current information for the session.   |
| <b>Participants</b>    |   |
| Name                   | Shows the names of the participants as configured in SINUMERIK Integrate.   |
|                        | The icon shows the role of the participant.<br>See Section: User roles (Page 296)   |
| Machine ID             | Shows the machine ID as configured in SINUMERIK Integrate.  |
| Organization           | Shows the organization of the current user.   |
| Desktop sharing        | Is only displayed for the machine operator.   |
| File transfer          | Is only displayed for the machine operator.   |
| Remote STEP 7          | Is only displayed for the machine operator.   |
| Transfer of leadership | Is only displayed for the observing service engineer.   |

Table 6- 2 Icon

| Icon  | Meaning  |
|---|--|
|  | Desktop sharing - is only active on the control. |
|  | File transfer - is only active on the control.   |
|  | Remote STEP 7 - is only active on the control.   |

The role of the participant is displayed by an icon.

## Starting remote access as session leader

1. Under "Remote access", select the "Start remote access" function.

The "Start Remote Access" window opens. The "Via Access MyMachine" option is active per default.

2. Select the "Execute remote access" function to start the conference as session leader.

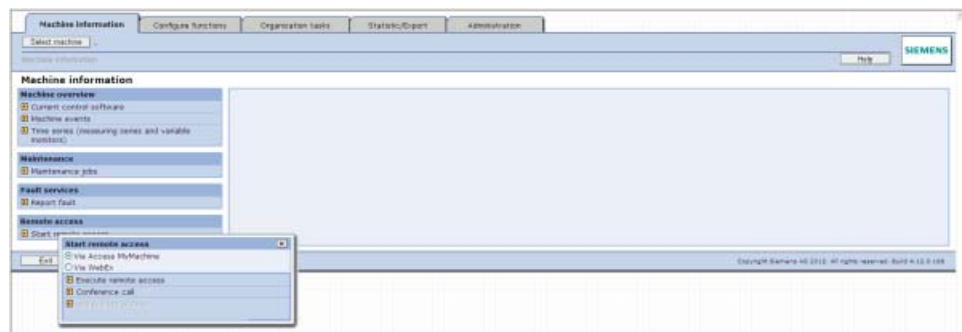


Figure 6-1 Selecting remote access

3. "Remote Access - Windows Internet Explorer" opens and the "Execute Remote Access" window displayed.

The session is established.



Figure 6-2 Executing remote access

4. After the session has been successfully established, inform the other participants (machine operators, service engineers) about the session number so that they can participate in the conference.

When the session establishment is completed and further participants have joined the session, the session data and information on the participants is displayed.

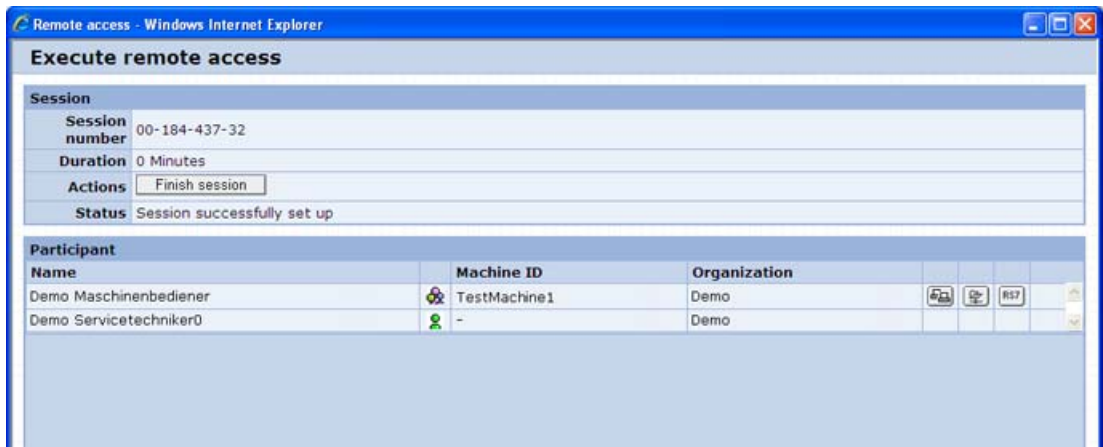


Figure 6-3 Executing remote access

### Observing participation

As an observing participant, you can only log on when a service engineer is already leading the session on a PC and the machine operator is participating on the control.

1. Under "Remote access", select the "Start remote access" function.

The "Start Remote Access" window opens. The "Via Access MyMachine" option is active per default.

2. Select the "Conference call" function.

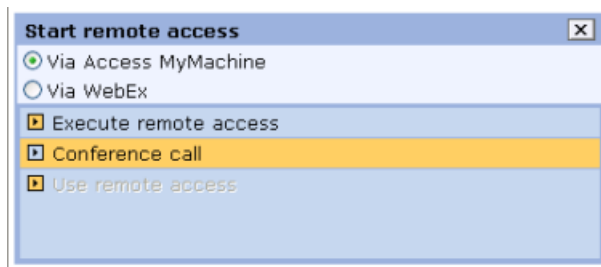


Figure 6-4 Conference call

3. In the following window, enter the session number that you have received from the service engineer leading the conference.

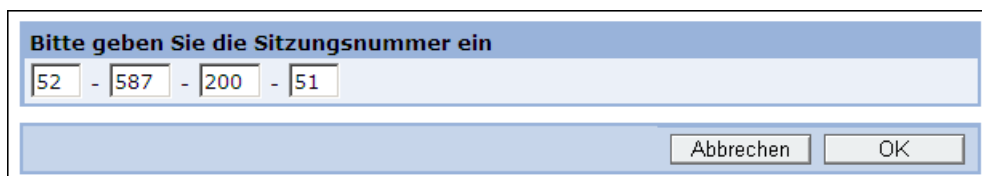


Figure 6-5 Entering the session number

4. Click the "OK" button to confirm the input.

If you click the "Cancel" button, the previous window is displayed.

The "Execute Remote Access" window opens and the session is established.



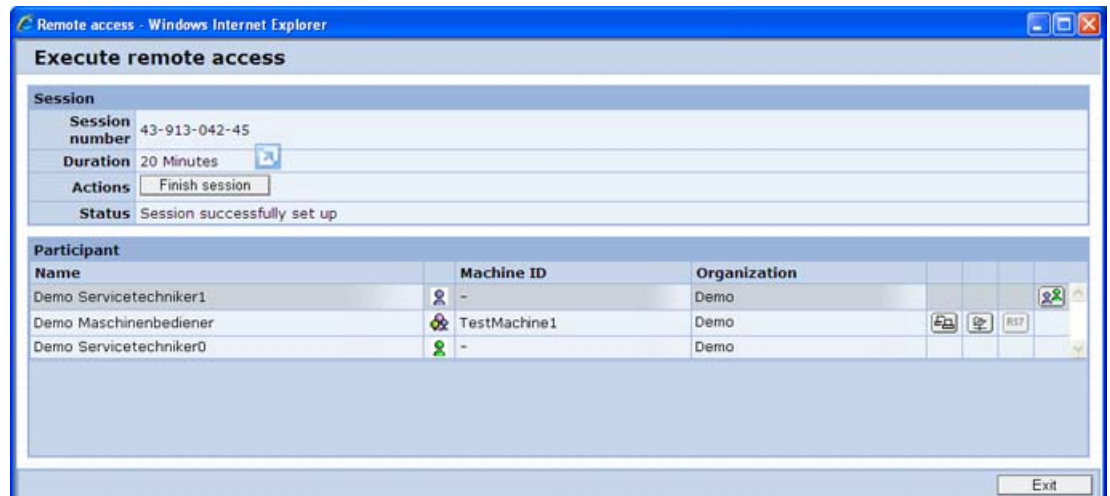


Figure 6-6 Remote access conference call

Contrary to the conference leader, as observing participant you cannot call individual functions or end the session. For this reason, the relevant buttons and icons are not active in the window.

#### Failed logon attempt

If a machine operator has not logged on to the control, you receive the following error message:

The service engineer or the machine operator is currently not present! Please try again later!

The logon window closes.

1. Inform the service engineer leading the conference about the error message.
2. Try to establish a connection later.

## 6.2.2 Establishing a session with SINUMERIK Operate

### Procedure

1. Start "SINUMERIK Integrate" on the control.
2. In the "Fault services" section, press the "Select" softkey.  
The "Fault Services" window opens.

3. In the "Remote access" section, press the "Select" softkey.

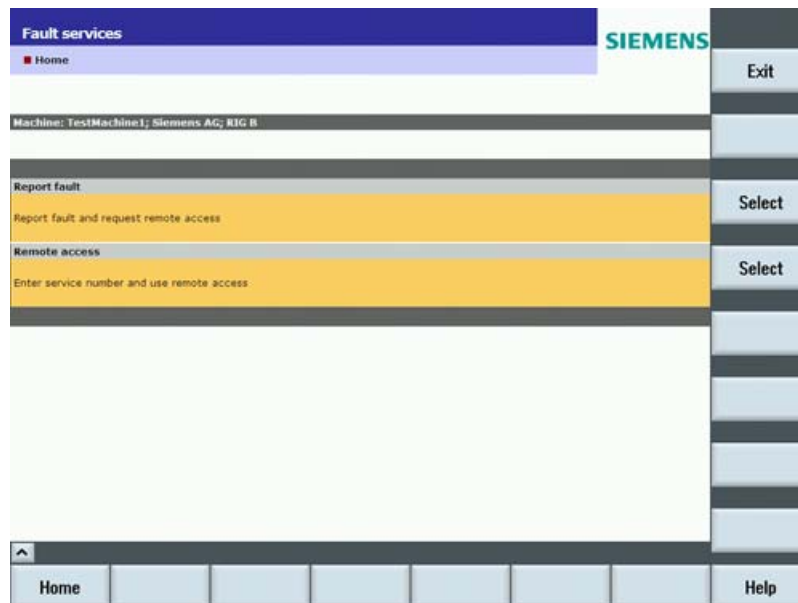


Figure 6-7 Setting-up remote access with SINUMERIK Operate

4. The "SINUMERIK Integrate - Access MyMachine" window opens. In the "Session number" field, enter the number provided by the service engineer on the PC, e.g. per phone. Press the "OK" softkey to confirm your entry.

The session is established.

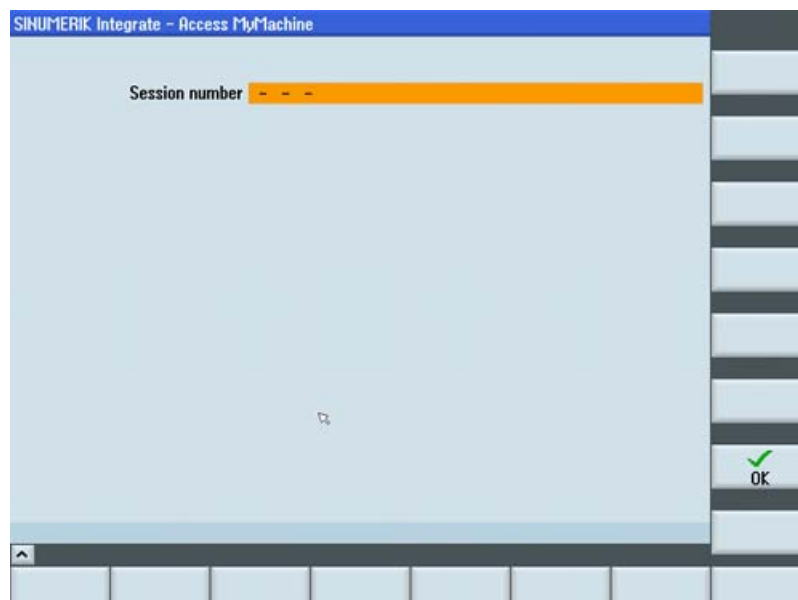


Figure 6-8 Entering the session number

5. Once the session between the PC and SINUMERIK Operate has been successfully set up, the participants are shown.
  - Press the "Leave session" softkey to end access to the control.
 

As long as the session is not closed from the PC, you can participate in a session as often as required using the same session number.
  - Press the "File exchange" softkey to view any files that were exchanged.

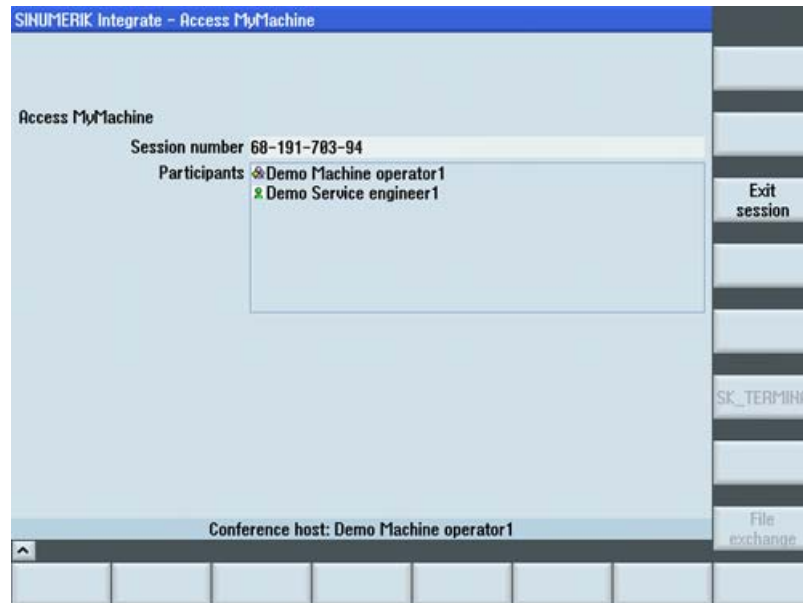


Figure 6-9 Remote access active

## Result

After the participants have registered at the control, they are also displayed on the PC. You can also use the "File transfer" and "Desktop sharing" functions on the PC. Remote STEP 7 (RS7) is only available on SINUMERIK Operate under Linux.

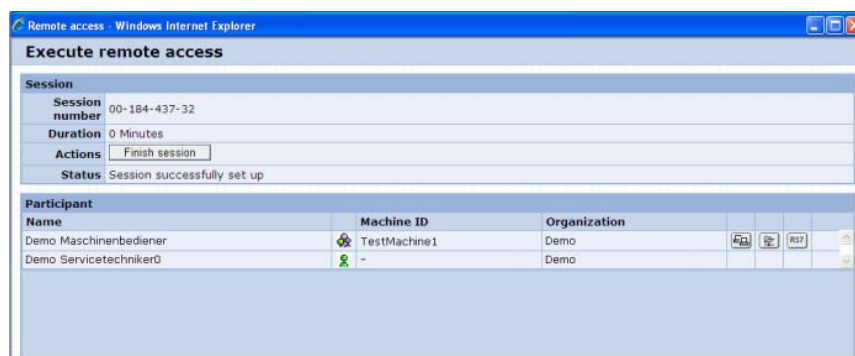


Figure 6-10 Remote access active on the PC

### 6.2.3 Establishing a session with HMI-Advanced

#### Procedure

1. Start "SINUMERIK Integrate" on the control.
2. In the "Fault services" section, press the "Select" softkey.  
The "Fault Services" window opens.
3. In the "Remote access" section, press the "Select" softkey.

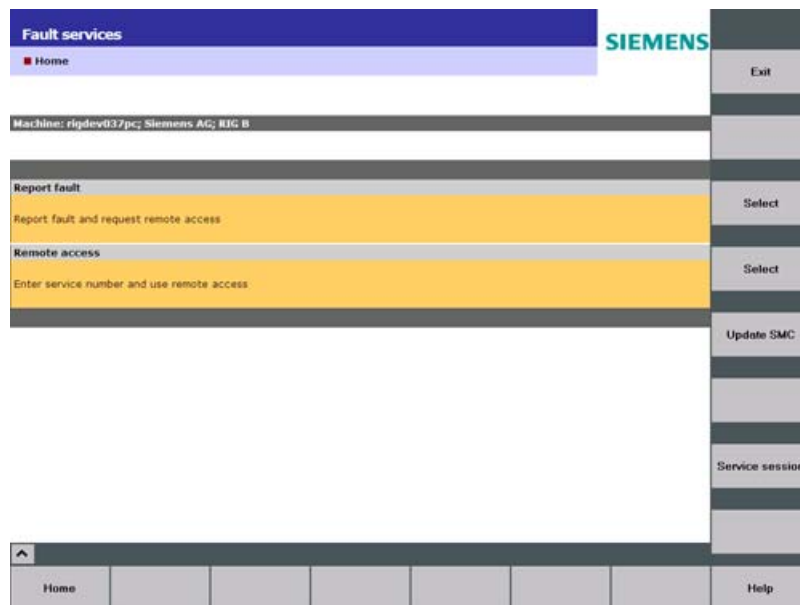


Figure 6-11 HMI-Advanced remote access

- The "SINUMERIK Integrate – Access MyMachine" window opens and signals the session preparation.

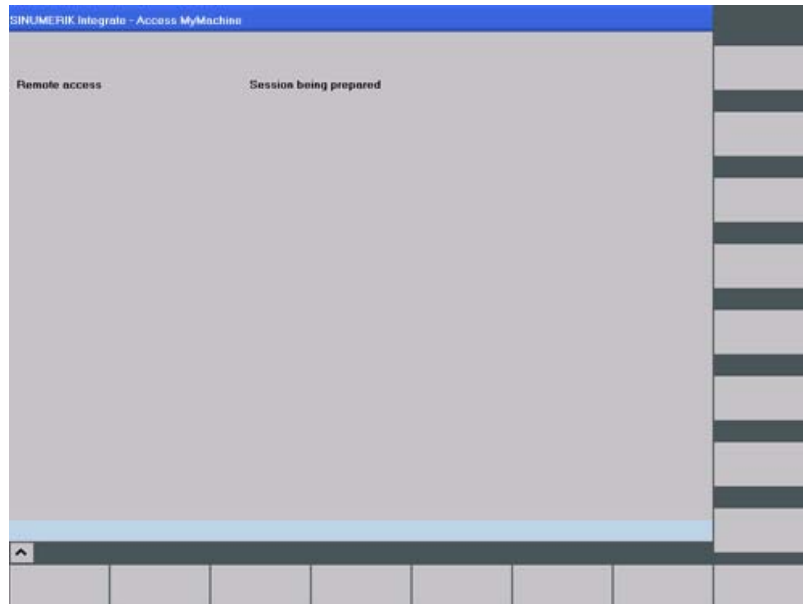


Figure 6-12 Connection buildup starts

- When the preparations are completed, the "Session number" entry field is displayed. In the "Session number" field, enter the number provided by the service engineer on the PC, e.g. per phone. Press the "OK" softkey to confirm your entry.

The session is established.

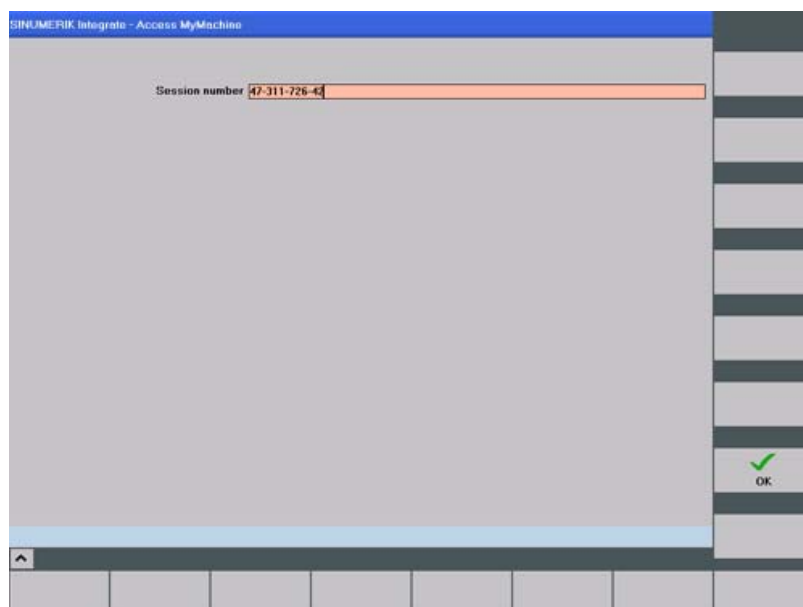


Figure 6-13 Entering the session number

- 6. Once the session between the PC and the control has been successfully established, the participants are displayed.
  - Access to the control is exited by pressing the "Leave session" softkey. As long as the session was not closed from the PC, participation in a session is possible as often as required using the same session number.

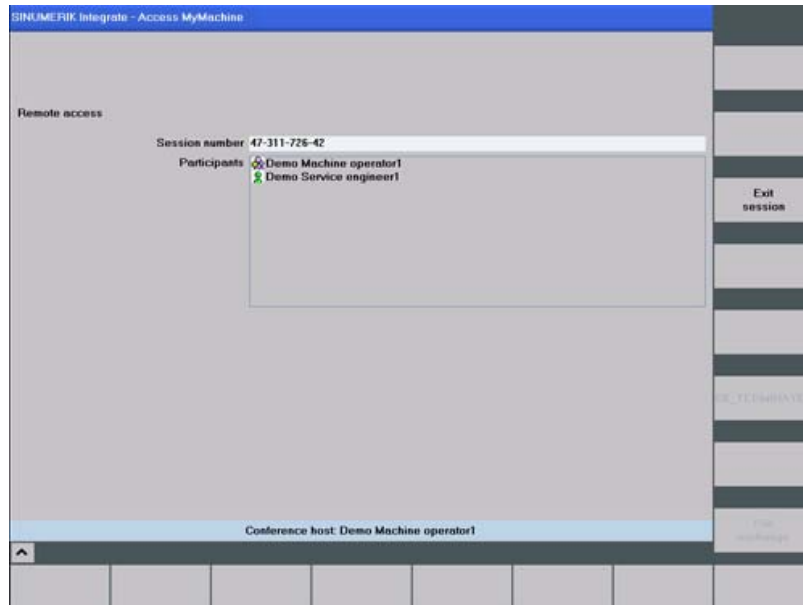


Figure 6-14 Remote access active

## Result

After the participants have registered at the control, they are also displayed on the PC. You can also use the "File transfer" and "Desktop sharing" functions on the PC.

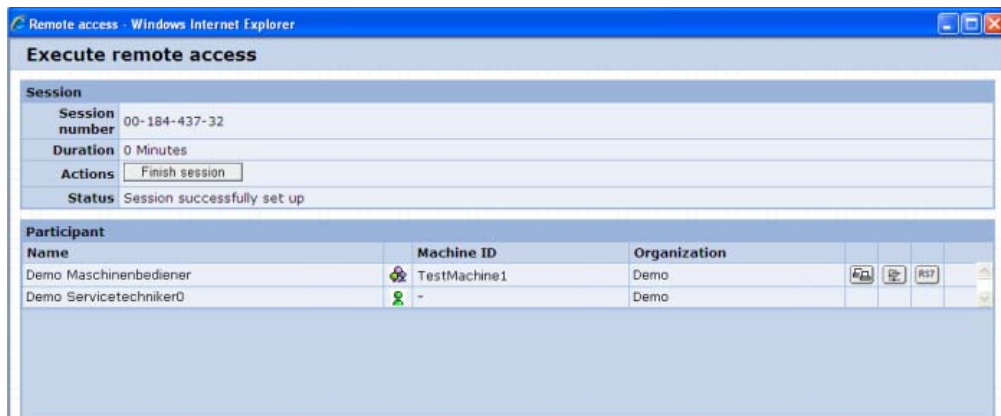


Figure 6-15 Remote access active on the PC

## 6.2.4 Functions

### 6.2.4.1 Overview of the functions

These functions enable diagnostics to be performed and faults to be corrected via the control. It is usually up to the service engineer to execute the functions for all problems via remote access on a PC with a mouse and keyboard.

So that you can use the actions, you must activate the functions in AMM.

### Functions

| Function                           | Description   |
|------------------------------------|---|
| Desktop sharing                    | Permits the display and remote operation of a control. For safety reasons, however, it is not possible to initiate machine movements or to start NC programs.<br>See Section: Screen enable (Page 297)  |
| File transfer                      | Enables the transfer of one or more files or directories. Transfer can be from the workplace PC to the control or vice versa. This allows, for example, patches to be imported for the error correction. The control can also be updated quickly. Even complex NC programs can be transferred to the service engineer for offline testing or for modification via file transfer.<br>See Section: Data transfer (Page 301) |
| Remote STEP 7                      | With STEP 7, the control tasks can be implemented based on the SIMATIC S7 automation systems.<br>See Section: Remote STEP 7 via the Internet (Page 305)   |
| Conference call                    | Allows several service engineers to participate in a conference. You participate either in an observing role or as leader of the conference.<br>See Section: Transferring the conference leadership (Page 312)  |
| Automatic recording of the meeting | Enables the session to be recorded and stored on the server as an event entry.<br>See Section: Automatic recording (Page 308)   |

### See also








User roles (Page 296)

6.2.4.2 User roles

There are three user roles in Access MyMachine:

1. Conference owner (SE, service engineer)
2. Machine operator (MO, SINUMERIK Operate, HMI-Advanced)
3. Observing service engineer in the conference (SE, service engineer)

These user roles can have different states. These states are defined on the user interface with various icons:

| Icon  | No. | Role                       | Status  |
|---|-----|----------------------------|---|
|    | 1   | Owner                      | The conference owner participates actively in the session.                                |
|    | 2   | Owner                      | The conference owner is active and leads the session (desktop sharing).                   |
|    | 3   | Machine operator           | The machine operator participates actively in the conference.                             |
|    | 4   | Machine operator           | The machine operator leads the conference. The owner does not control the remote desktop. |
|   | 5   | Machine operator           | The machine operator was at the conference, but is currently not present.                 |
|  | 6   | Observing service engineer | The observing service engineer participates actively in the session.                      |
|  | 7   | Observing service engineer | The observing service engineer was at the conference, but is currently not present.       |

The "Desktop sharing" and "File transfer" functions are separate applications that exist between the session leader and the machine operator.

Observing participants cannot participate actively in the actions.

To use the remote access functions, you must make settings in Access MyMachine in the "Remote access via Access MyMachine / settings" area.

The following functions can be activated via checkboxes:

- Screen enable
- File transfer
- STEP 7 via the Internet
- Automatic recording of the meeting



## Procedure

1. Open the "Administration" tab and click "Organization data".
2. The "Organization Data" window opens.  
You can switch the individual functions on and off via the checkboxes at "Remote access via Access MyMachine / settings".

**Organisationsdaten**

**- Integration**

|   |   |
|---|---|
| Organization password                         | <input type="text"/>  |
| Software version                              | 4   |
| Remote access via Access MyMachine / settings | <input checked="" type="checkbox"/> Screen release<br><input checked="" type="checkbox"/> File transfer<br><input checked="" type="checkbox"/> Step7 via Internet<br><input type="text" value="10"/> Seconds<br>Waiting time until being informed that establishment of the connection has failed.<br><input type="checkbox"/> Automatic recording of session |

Figure 6-16 Organization data

3. Click "OK" to confirm the settings.

### 6.2.4.3 Screen enable

As conference owner, you can use the desktop sharing to control the display and remote control of a control from the PC.

Observing participants cannot participate actively in the actions.

## Requirements

- The connection between the PC and the control has been established.
- The machine operator participates actively in the session.

**Procedure**

1. Click the "Desktop sharing" icon to remotely access HMI-Advanced.

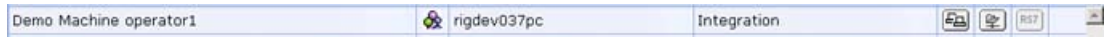


Figure 6-17 Starting desktop sharing

The option settings for HMI-Advanced can be used to regulate that remote access to the control is only permitted with confirmation by the machine operator. If remote access is restricted in this way, the machine operator receives the following message:

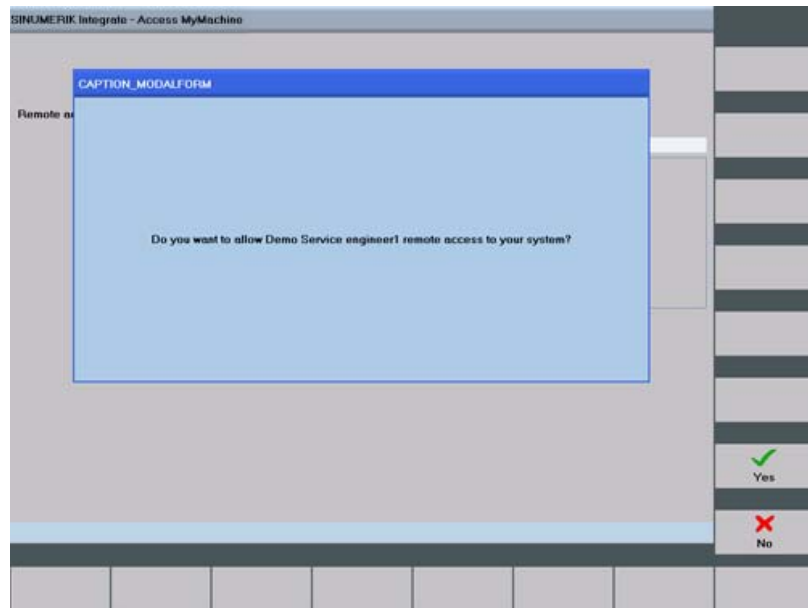


Figure 6-18 Granting permission

2. The machine operator clicks "No" to deny access.

The remote user cannot control until the machine operator allows access.

As long as there is no access permission, the remote user is shown the following symbol:



Figure 6-19 Waiting for confirmation

3. Once permission has been granted, the user interface of SINUMERIK Operate or HMI-Advanced is displayed on the PC. It is now possible to work on the control via remote access.

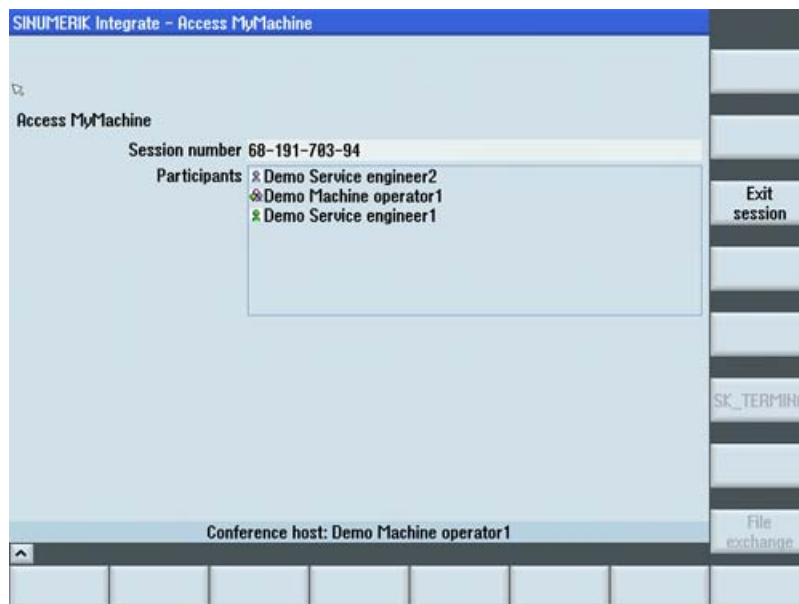


Figure 6-20 Desktop sharing on the PC

### Note

If remote control is already active, a second desktop sharing cannot be started on the same machine within the existing session.

## Ending the session

The session can be ended by the various participants in different ways:

- If the session leader ends the session, all participants receive the following message: "Desktop sharing has been switched off by the owner!"  
The session is ended for all participants.
- If an observing participant ends the session, the session remains active and only the observer's window closes. The participant can join the active session again at any time.
- If the machine operator on the control leaves the session, the session remains active for all other participants. Only the remote control functions are deactivated.

### Ending the session from the PC

1. As remote user, click the red Close icon to end the session.  
- OR -
2. Select the "End session" function in the "Actions" selection box.  
A confirmation prompt is displayed.
  - Click the "No" button if you do not want to end the conference.
  - Click the "Yes" button if you want to leave the conference.

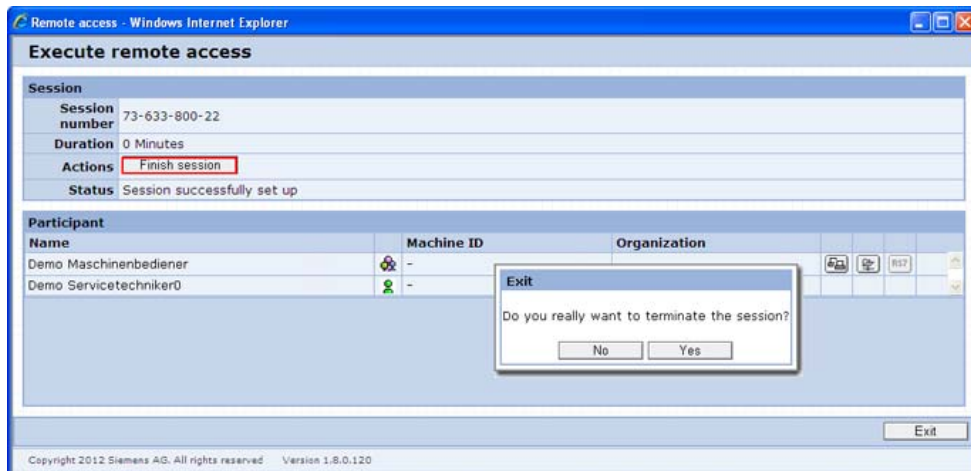


Figure 6-21 Ending the session

### Leaving the session from the control

1. Press the "Leave session" softkey to end access to the control.  
As long as the session has not been closed from the PC, you can participate in a session as often as required using the same session number.

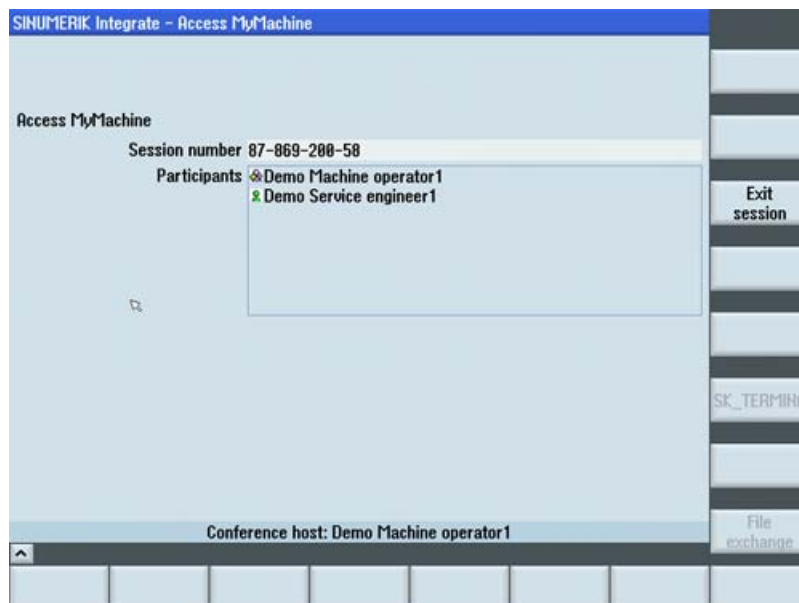


Figure 6-22 Leaving the session

---

### Note

Only the service engineer at the PC can close the session.

---




#### 6.2.4.4 Data transfer

You can use the file transfer to transfer files or file directories between the PC and the control.

#### Requirement

- The connection between the PC and the control has been established.
- The machine operator participates actively in a session.

#### Important icons

| Icon  | Meaning   |
|---|---|
|    | Opens the higher level in the directory tree.   |
|    | Updates the view of the directory tree.<br>The directory list is only updated when other actions, such as navigation, copying, renaming or deleting, have been performed.<br>If the machine operator makes changes to the directory tree outside of the remote access, the session leader must update the view. |
|  | Creates a new subdirectory in the selected directory level.   |

#### Procedure

1. Click the "File transfer" icon to start the data exchange.



Figure 6-23 Starting the file transfer

The "File Transfer" window is displayed once the data transfer has been established. You can now transfer files from your PC (local file system) to another PC (remote file system) or vice versa.

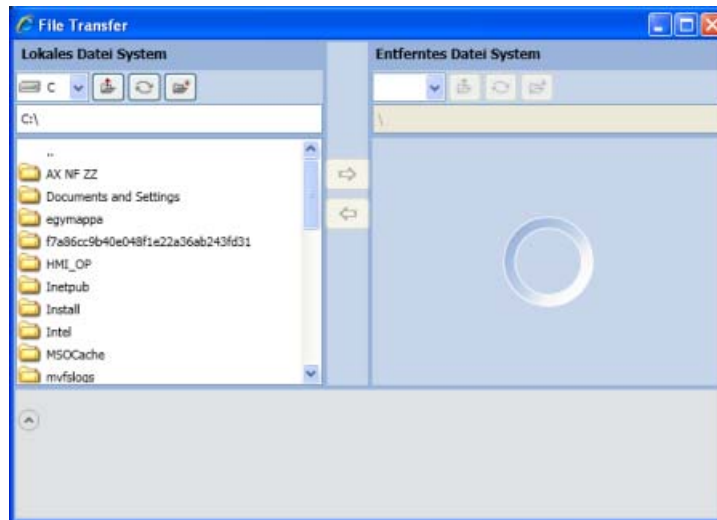


Figure 6-24 File transfer

2. Use the icons to navigate to the required files.

Some directories and files are protected. If you do not have sufficient access rights, the message "Access denied" is displayed.

3. Select the required files or directories, e.g. locally on your PC or on the file system of another, remote PC.

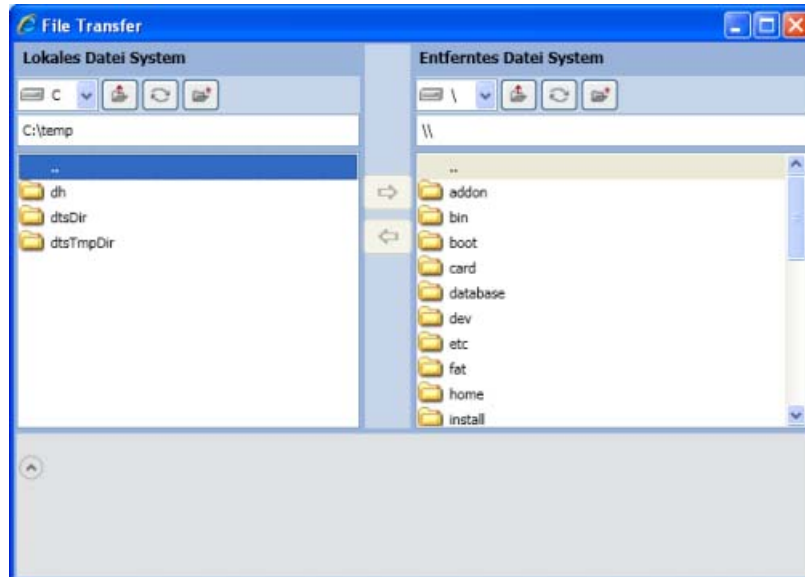




Figure 6-25 File transfer

4. Copy the selection via the  /  icons or with drag and drop to the appropriate directory.

No other actions can be performed during the copying procedure.

#### Note

The data transfer can be aborted by the machine operator. In this case, the message "File transfer aborted!" is displayed.

#### Note

If a directory or a file already exists in the target system, the following prompt is displayed: "Remote path already exists! Do you want to overwrite it?" The source and target directories are also displayed. Confirm this message with "OK".

If you no longer want to receive such messages, activate the "Use on all in the operation!" checkbox before confirming.

The operation is displayed on a progress indicator.

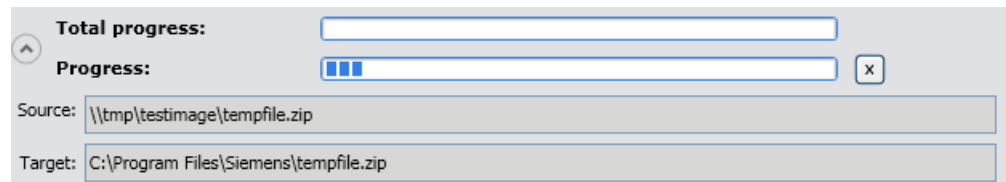


Figure 6-26 Progress indicator

5. The machine operator must now grant permission for the file transfer on the control. The machine operator can also grant permission for all further actions on the control during the current session. The "Grant permission for all actions during this session" checkbox must be activated.
- File transfer is permitted by pressing the "OK" softkey.
  - The transfer is rejected by pressing the "No" softkey.

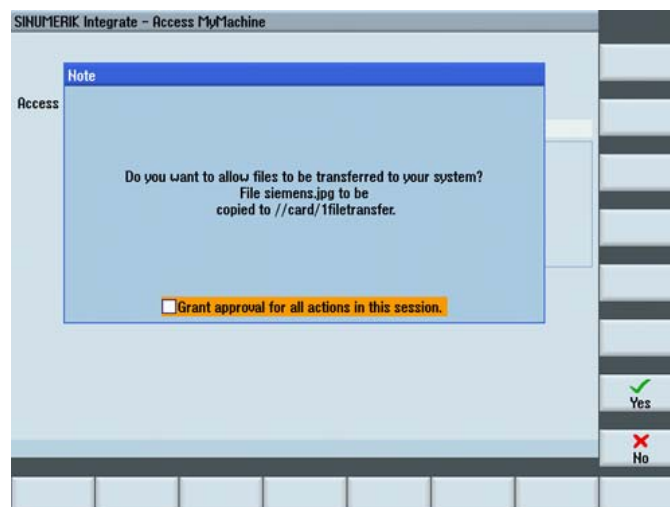


Figure 6-27 Granting permission for the data transfer

## Deleting files

1. Select the directories or files to be deleted.
2. With the right mouse button, select the shortcut menu "Delete file".

---

### Note

If a directory or a file with write protection is to be deleted, the following prompt is displayed: "File is write-protected, do you still want to delete it?"

- Click "OK" to delete this message.
  - If you no longer want to receive such messages, activate the "Use on all in the operation!" checkbox before confirming.
- 

No other actions can be performed during the deleting procedure.

## Assigning attributes

As a remote user, you can change the attributes of transferred files or directories:

1. Select the appropriate file or directory.
2. Call the "Set attribute" shortcut menu.

The setting dialog then opens for the attributes of the selected element (file or directory).




Figure 6-28 Dialog\_Attributes

3. Set the required attributes via the checkboxes.
4. Click "OK" to confirm the settings.

## Creating a new directory

You can create new directories on your PC or on a remote system in the same way using the "File Transfer" dialog.

1. Navigate to the required directory level.
2. Click the  icon (new directory).
3. Assign a name to the new directory.



## Ending the file transfer

The file transfer can be ended in several ways:

- The conference owner closes the file transfer via the red Close icon.
- The owner closes the file transfer and ends the conference.  
Result: The file transfer and any running operations are terminated.
- The machine operator leaves the conference.  
Result: The File Transfer window is closed.

### 6.2.4.5 Remote STEP 7 via the Internet

With the aid of the Remote STEP 7 function, you, as remote user, can execute all functions in the SIMATIC Manager.

Remote STEP 7 is available on SINUMERIK Operate under Linux.

## Requirements

- The SIMATIC Manager (supported versions 5.4 and 5.5) must be installed on the local PC.
- The Service Engineer Client must be installed before the installation of the SIMATIC Manager.
- The "Commissioning engineer" or "Service engineer" must be assigned.
- The client on the machine operator side must support Remote STEP 7.
- The network interface of the SIMATIC Manager on the PC must be adapted.

## Changing the network interface of the SIMATIC Manager

The network interface of the SIMATIC Manager must be changed before the "Remote STEP 7" function can be used.

1. Call the menu "Tools > Set PG/PC interface ..." in the SIMATIC Manager.

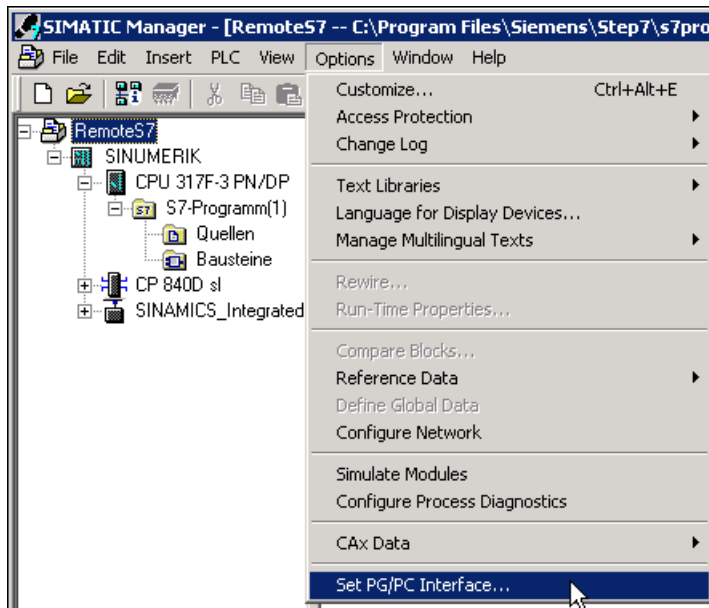


Figure 6-29 Set PG/PC interface

2. The "Set PG/PC Interface" dialog opens.  
Activate the "Access path" tab.  
In the "Interface Parameter Assignment Used" list, navigate to the "RemoteS7" interface parameter assignment and select the appropriate entry.  
You can test the selected interface parameter assignment.  
Click the "Diagnostics..." button for the test.

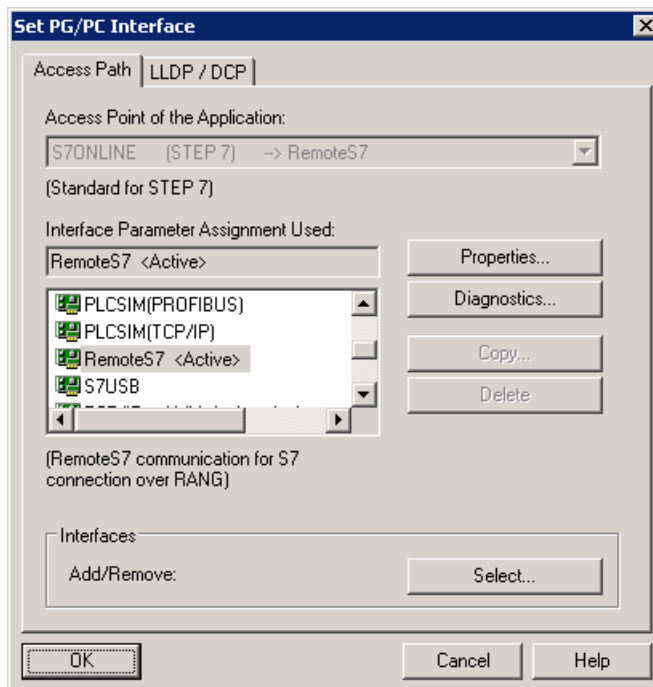


Figure 6-30 RS7 access path

- The diagnostics dialog then opens.  
Click the "Test" button. The result is displayed in the diagnostics dialog.  
Click "OK" in both dialogs.

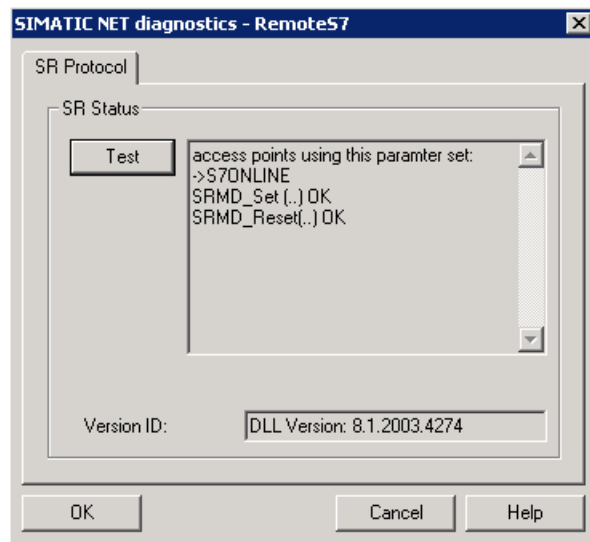


Figure 6-31 Diagnostics result

## Starting remote STEP 7

- Click the "RS7" icon to remotely access the control.



Figure 6-32 Remote STEP 7

- The function start depends on the default setting:
  - Autogrant is activated in the server for the organization.  
Result: Remote STEP 7 is active after a short time.
  - Autogrant is deactivated.  
Result: The machine operator must grant access for the function to be started.

If the machine operator presses the "Yes" softkey, access is permitted.

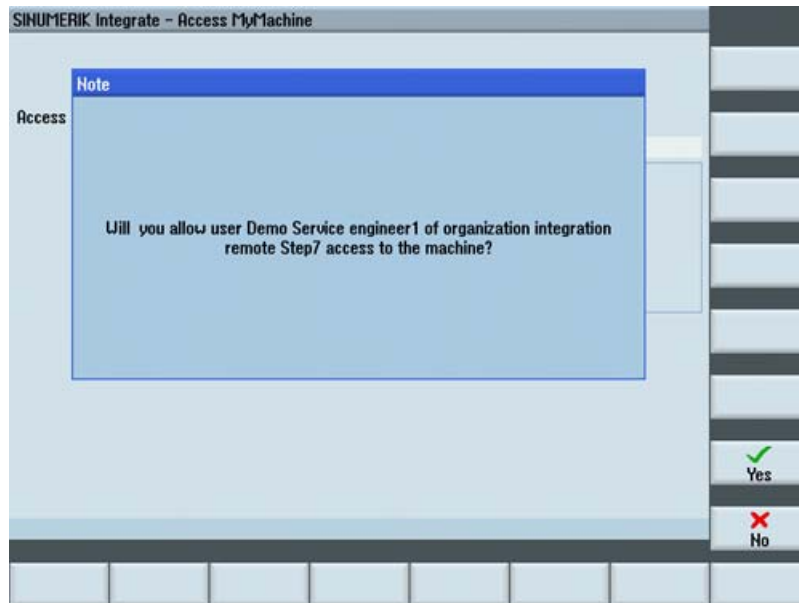


Figure 6-33 Granting permission, autogrant on

3. If the machine operator presses the "No" softkey, access is denied for the remote user. The remote user receives the following message:

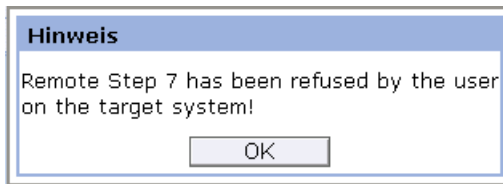


Figure 6-34 Remote STEP 7 rejected

### Closing remote STEP 7

1. Check that no operations are in progress in the SIMATIC Manager.
2. Click the "Remote Step7" icon again to end the remote access.
3. Confirm the prompt with "Yes" if you really want to terminate the function.

#### 6.2.4.6 Automatic recording

The administrator of an organization can specify in the configuration whether a remote desktop session is to be saved. The recording is then stored on the server as an event entry. In this way, you can download and view the recorded session at a later point in time.

## Session recording

If you generally want to record all sessions, make the following setting:

1. Select the required machine.
2. Open the "Organization data" on the "Administration" tab.

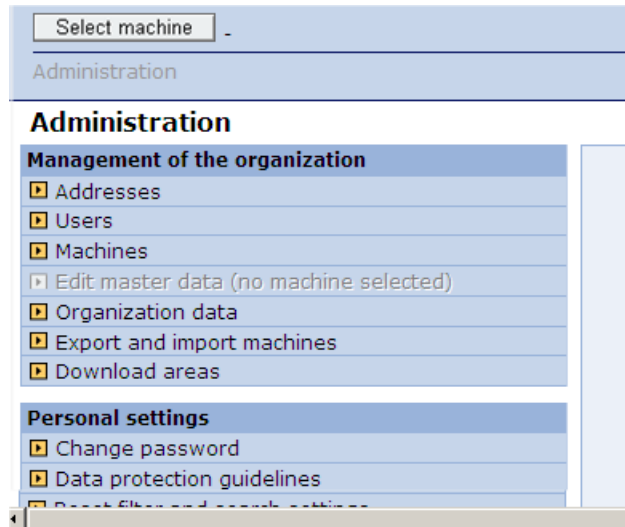


Figure 6-35 Administration of the organization data

3. Check the "Automatic recording of the meeting" option in the "Remote access via Access MyMachine / settings" area.

If this option is not activated, click the checkbox.  
Click "OK" to confirm the settings.



Figure 6-36 Automatic recording of the organization data

### Downloading the session recording

If you want to download a session recording, proceed as follows:

1. Select the "Machine events" entry on the "Machine information" tab.

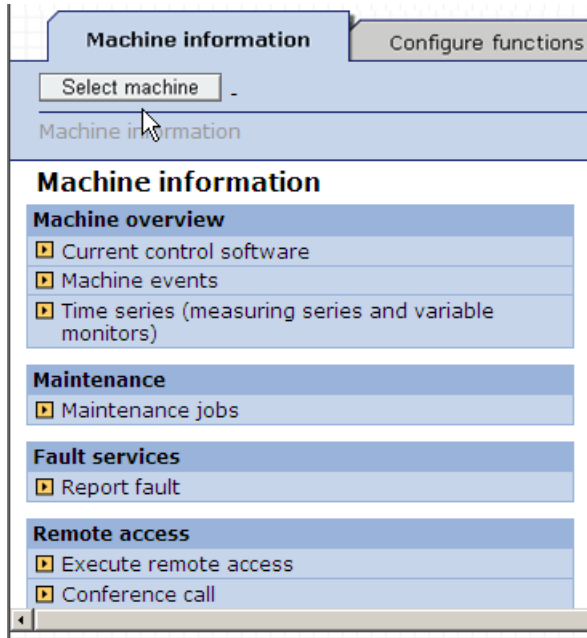


Figure 6-37 Machine events

2. The filter area of the machine events is displayed. Make the required filter settings and click "Filter". Detailed information on the filter settings can be found in the Function Manual, SINUMERIK Integrate AMB/AMC/AMM.

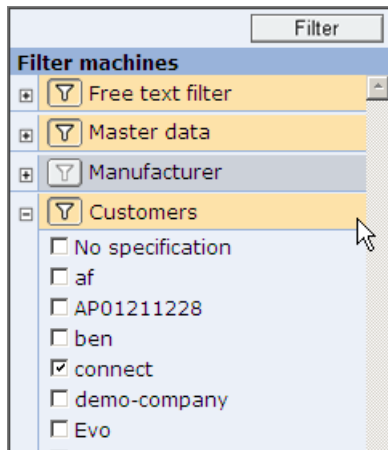



Figure 6-38 Machine events filter

3. After filtering, all those machine events are listed that match the filter settings.  
Search for machine events of the "Session recording" type.

| Datum                | Steuerungsmonitor/Ereignis   |
|----------------------|--|
| 12/02/2013; 14:30:21 | Konferenz - Startzeit: 2/12/2013 1:30:06 PM (UTC), Teilnehmer: te0, te1                              |
| 12/02/2013; 13:29:52 | Konferenz - Startzeit: 2/12/2013 12:29:21 PM (UTC), Teilnehmer: te0, te1                             |
| 12/02/2013; 13:26:48 | Konferenz - Startzeit: 2/12/2013 12:26:09 PM (UTC), Teilnehmer: te0, te1                             |
| 12/02/2013; 13:24:14 | Konferenz - Startzeit: 2/12/2013 12:23:39 PM (UTC), Teilnehmer: te0, te1                             |
| 12/02/2013; 13:15:54 | Konferenz - Startzeit: 2/12/2013 12:13:39 PM (UTC), Teilnehmer: te0, te1                             |
| 12/02/2013; 12:57:01 | Sitzungsaufzeichnung - Startzeit: 2/12/2013 11:56:44 AM (UTC), Dauer: 00:00:16, Teilnehmer: t10, t32 |
| 12/02/2013; 12:56:39 | Konferenz - Startzeit: 2/12/2013 11:56:33 AM (UTC), Teilnehmer: t10, t32                             |
| 12/02/2013; 12:53:04 | Konferenz - Startzeit: 2/12/2013 11:52:34 AM (UTC), Teilnehmer: te0, te1                             |

Figure 6-39 Machine events list

4. Click the Open icon  in the line of the required session recording.  
The session recording data is displayed.

The following formats are supported:

- MPEG
- AVI
- MWV
- FLV
- Original (RFB)

If you want to download the session recording locally, click "Download".  
Set the local directory in which you want to store the session recording.  
You can play the recording with the media player installed on your PC.

| Sitzungsaufzeichnung mit Access MyMachine |  |
|---|--|
| <b>Konferenz</b>                          |  |
| Sitzungsnummer                            | 32-752-174-13                            |
| Startzeit                                 | 12/02/2013 12:56:33                      |
| <b>Aufzeichnung</b>                       |  |
| Startzeit                                 | 12/02/2013 12:56:44                      |
| Endzeit                                   | 12/02/2013 12:57:00                      |
| <b>Teilnehmer</b>                         |  |
| Teilnehmer                                | 18 t (rang-dev\t18), 32 t (rang-dev\t32) |
| <b>Herunterladen</b>                      |  |
| Format                                    | MPEG                                     |
| <a href="#">Herunterladen</a>             |  |

Figure 6-40 Session recording, data display

### Deleting the session recording

1. Select the "Machine events" entry on the "Machine information" tab.  
 All the machine events are then displayed in a list.

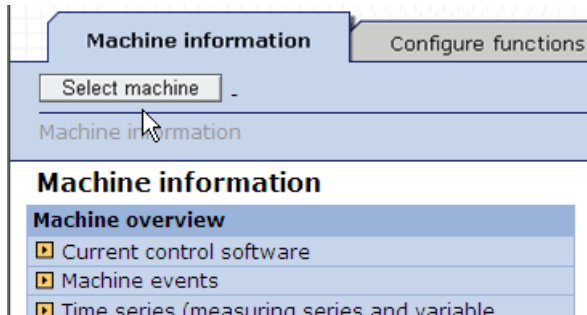


Figure 6-41 Machine events

2. Search for machine events of the "Session recording" type.
3. Click the icon in the line of the required session recording.

|  |  |   |                  |
|--|--|---|------------------|
|  |  | Sitzungsaufzeichnung - Startzeit: 2/12/2013 11:56:44 AM (UTC), Dauer: 00:00:16, Dateigröße: 0 |                  |
|  |  | Konferenz - Startzeit: 2/12/2013 11:56:33 AM (UTC), Teilnehmer: t18, t32                      | Ereignis löschen |
|  |  | Konferenz - Startzeit: 2/12/2013 11:52:34 AM (UTC), Teilnehmer: te0, te1                      |                  |

Figure 6-42 Deleting the session recording

The recording is deleted.

### 6.2.5 Transferring the conference leadership

As conference owner, you can transfer the conference leadership to another, observing service engineer. The owner role therefore switches to another operator.

#### Procedure

1. As conference owner, click the "Leadership transfer" icon in the line of the service engineer to whom you want to transfer the leadership.



Figure 6-43 Transfer of leadership

After calling the function, the following message appears on your PC:

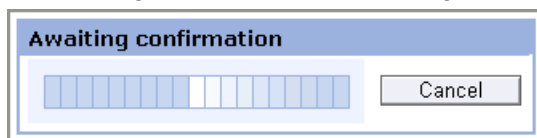


Figure 6-44 Waiting for confirmation



The following query appears on the PC of the selected service engineer:

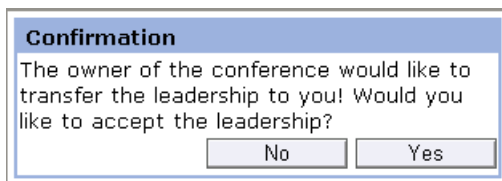


Figure 6-45 Confirmation

2. The observing service engineer must click "Yes" to take over the conference leadership.

---

**Note**

If the observing service engineer rejects the transfer of leadership with "No", an appropriate message appears on the PC.

---

3. As former conference leader, you must then confirm the transfer.

If the "Autogrant" function is not active, the machine operator must also confirm the transfer of leadership. The message "Waiting for confirmation from the machine operator!" appears on your PC and the PC of the future conference leader.

4. The machine operator agrees to the transfer of leadership.

The conference leadership is then transferred to the desired observing service engineer. The changed user roles are updated accordingly in the list of participants.

---

**Note**

If the machine operator rejects the transfer, you and the observing service engineer receive the following message: "The transfer of leadership has been rejected by the machine operator!"

---

## 6.3 AMM SMC remote access

### 6.3.1 Overview

The user interface of the control can be remotely controlled and monitored with Access MyMachine Service Mode Client (AMM SMC). The user interface is then not only available to the machine operator, but also to a service engineer anywhere.

The following functions are available within an Access MyMachine conference:

- Remote access (desktop control)
- Functions for file transfer and manipulation
- Participation of others in the role of a service engineer

### 6.3.2 Setting up a session

To participate in a conference, the operator on the machine (PCU 50) must perform the following steps:

1. Start the PCU 50 in service mode
2. Start Access MyMachine Service Mode Client (AMM)
3. Log on for the conference
4. Permit or reject the actions of the service engineer during the conference

#### Starting AMM

AMM SMC can be started as follows:

1. In service mode via the Windows Start menu: "Start" > "Programs" > "Siemens" > "SINUMERIK Integrate" > Access MyMachine Service Mode Client.  
- OR -
2. Via the desktop link by double-clicking the following symbol.



#### Log on for the conference

The Welcome window is displayed after the start of AMM SM.

1. Enter the "User name", "Password" and "Organization" to log on to the conference. If the access data has already been specified, also enter the conference session number. As machine operator, you obtain the session number from the service engineer. Click "OK" to start the session set-up.

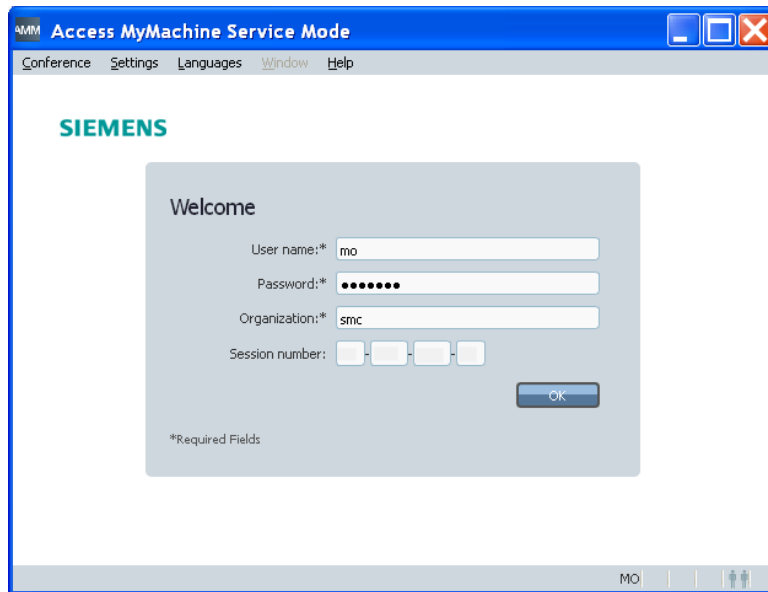


Figure 6-46 Welcome window

You can specify the access data in the "Login Settings" window, see Section: Setting the log-on data (Page 316).

2. The "Access MyMachine Service Mode" window then opens:

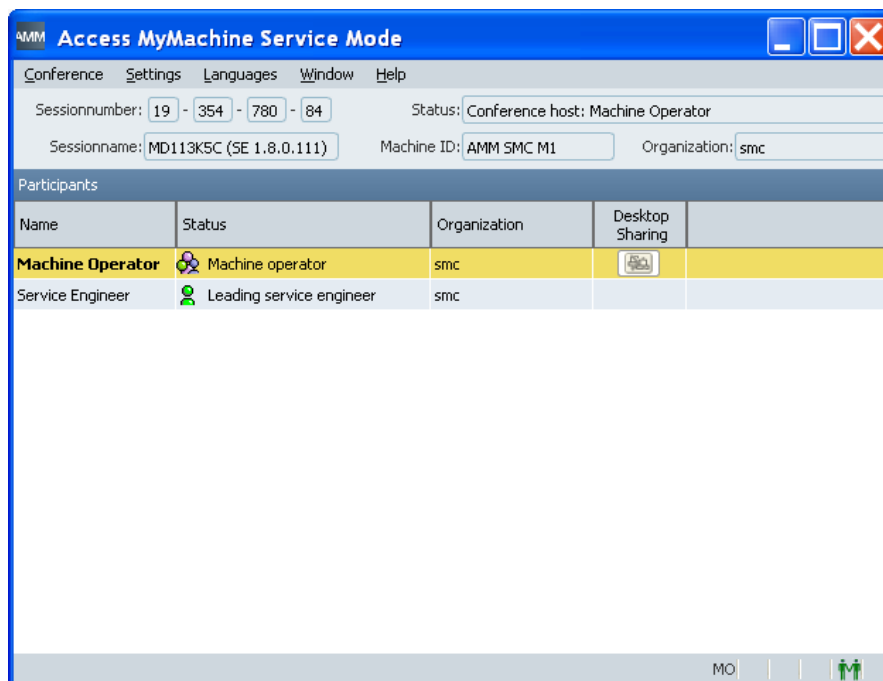


Figure 6-47 Logged on to the conference

If you want to participate in a session in progress, proceed as described in Section Performing a session (Page 325).

### 6.3.3 Configuring AMM SMC

#### 6.3.3.1 Overview

You change the following settings of AccessMy Machine via the "Settings" menu:

- Log-on..., see Section: Setting the log-on data (Page 316).
- File transfer..., see Section: Setting the file transfer (Page 317).
- Proxy..., see Section: Entering the address of a proxy server (Page 319).
- Language..., see Section: Setting/changing the language (Page 321).
- Logging..., see Section: Setting the log file (Page 322).

#### 6.3.3.2 Setting the log-on data

You can register your log-on data in AMM. Your data is then automatically set when logging on.

Table 6- 3 Log-on settings

| Settings  | Meaning   |
|---|---|
| <b>Server selection</b>                                     |   |
| AMM server  | Address of the Access MyMachine server  |
| <b>Log-on data</b>  |   |
| User name   | User data to log on to SINUMERIK Integrate  |
| Password  |   |
| Organization  |   |
| Note password   | If the function is activated, the password is stored in encoded form in the system.                       |
| <b>Session number</b>                                       |   |
| Display entry field for the session number when logging on. | If the function is activated, the entry fields for the session number are displayed in the log-on window. |

**Procedure**

1. Call the "Settings > Log-on..." menu in the "Access MyMachine Service Mode" dialog.  
 The "Log-on Settings" window opens.
2. Enter your required data.  
 Click "OK" to save the settings.  
 - OR -  
 Click "Cancel" to reject the settings.



Figure 6-48 Log-on settings

**6.3.3.3 Setting the file transfer**

You can log the actions in a file during a remote access. You specify the settings of the log file in the "File Transfer Settings" window.

Table 6- 4 File transfer settings

| Settings                     | Meaning   |
|------------------------------|---|
| <b>Log</b>                   |   |
| Log directory                | Specify the directory or create a new directory in which the log files will be stored<br>The directory selection is made in the "Find Directory" window.                        |
| Maximum number of log files  | Specify the maximum number of log files.<br>If "0" is entered, no log files are written. When the maximum number of files is reached, the oldest log file is deleted.           |
| <b>Supported drive types</b> |   |
|                              | The machine operator specifies which drive types the service engineer may access. If no drive type is selected, the service engineer may only access the available hard drives. |

## Procedure

1. Call the "Settings > File transfer..." menu in the "Access MyMachine Service Mode" dialog.

The "File Transfer Settings" window opens.

A default path is specified for the log directory. If you want to use another directory as log directory, you can specify that here.

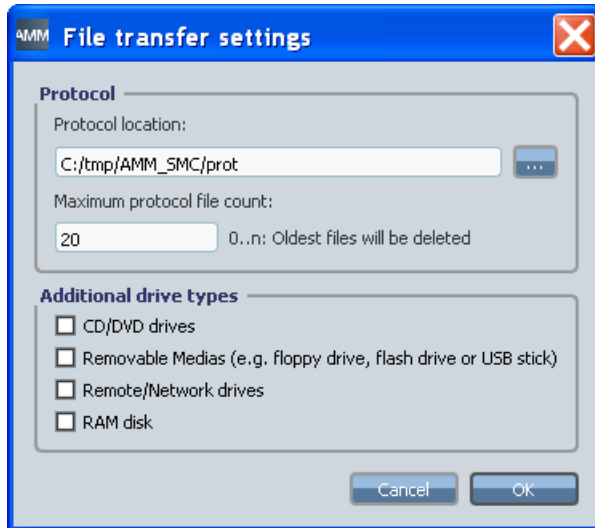


Figure 6-49 File transfer settings

2. Click the "..." button at Log directory.

The "Find Directory" window opens.

Select an existing directory or create a new directory via the "Create new directory" button. Click "OK" to save the settings.

- OR -

Click "Cancel" to reject the settings.

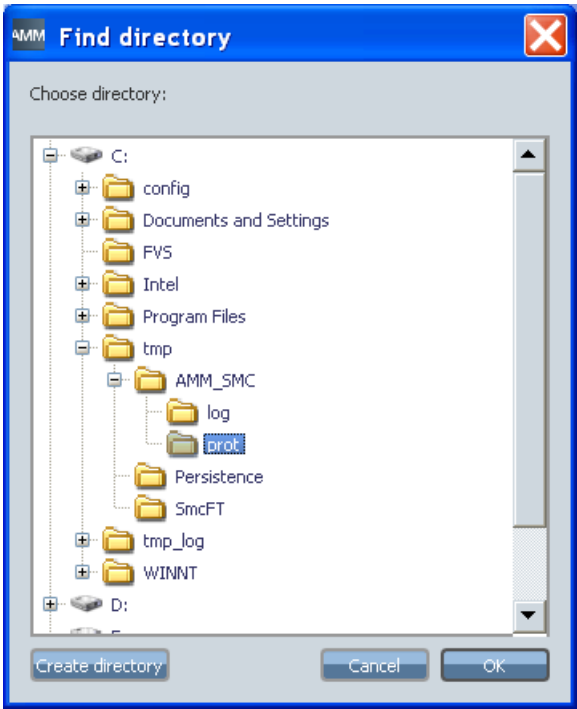


Figure 6-50 Find directory

3. Specify the maximum number of log files that can be saved in the log directory.  
 Then you can define which drive types are to be supported for the file transfer.
4. Activate the corresponding checkbox for each drive type that is to be supported.
5. Click "OK" to save the settings.  
 - OR -  
 Click "Cancel" to reject the settings.

**6.3.3.4 Entering the address of a proxy server**

If access to the Internet is to be via a proxy server, you can select the desired method via the proxy settings.

Table 6- 5 Proxy settings

| Settings  | Meaning   |
|---|---|
| Do not use proxy                                    | AMM SMC tries to establish a direct connection to the Internet.   |
| Automatic proxy detection                           | AMM SMC automatically tries to determine the address of a proxy server for access to the Internet from the network. |
| Use Internet Explorer proxy settings                | AMM SMC uses the Internet Explorer settings for connection to the Internet.   |
| Use proxy settings from the Manufacturing IT Client | AMM SMC uses the Manufacturing IT Client settings for access to the Internet.                                       |
| Use automatic configuration script                  | Input of a proxy server address from which AMM SMC downloads the proxy script.                                      |

| Settings                   | Meaning   |
|----------------------------|---|
| Use this proxy setting     | Input of the address and port of a specific proxy server.                                       |
| Use this proxy log-on data | Input of the access data if the proxy server requires a log-on.                                 |
| Note log-on data           | The access data is stored retentively in the system.<br>The password is stored in encoded form. |

**Procedure**

Call the "Settings > Proxy..." menu in the "Access MyMachine Service Mode" dialog.

The "Proxy Settings" window opens.

Select the required proxy setting.

If you are using your own proxy log-on data, activate the "Use this proxy log-on data" checkbox.

Then enter your user name and password. If this log-on data is to be stored permanently, activate the "Note log-on data" checkbox.

Click "OK" to save the settings.

- OR -

Click "Cancel" to reject the settings.

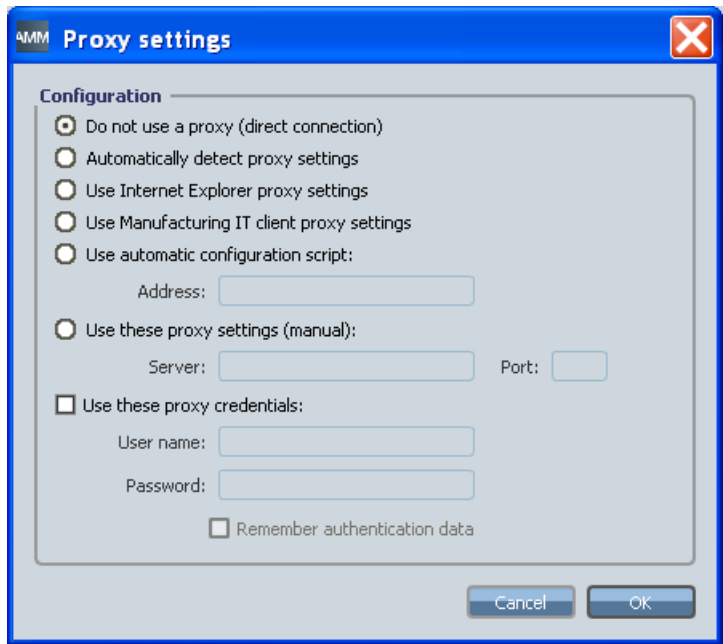


Figure 6-51 Proxy settings



### 6.3.3.5 Setting/changing the language

The displayed language can be changed during a session in two different ways.

- You can set the required language directly via the "Languages" menu.
- You can switch between two preset languages with the key combination <Ctrl+L>. However, the two languages must have been preset (see below).

### Changing the language

You can change the currently displayed language of AMM SMC.

1. Open the "Languages" menu.

All the available languages are displayed. The current language is marked.

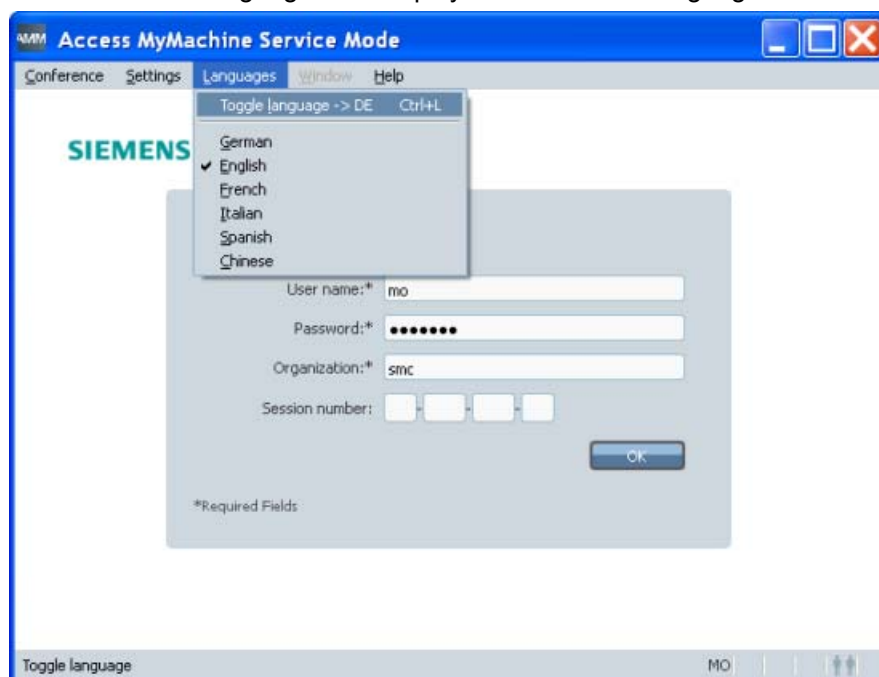


Figure 6-52 Language selection

2. Check the required language.

The user interface is changed and displays the texts in the corresponding language.

### Setting the language changeover

So that you can quickly change to a second language during a session using the key combination <Ctrl+L>, you must first specify the two languages.

1. Call the "Settings > Language..." menu in the "Access MyMachine Service Mode" dialog.

The following window opens.



Figure 6-53 Setting the language selection

2. Activate the checkboxes of the two languages.
3. Click "OK" to save the settings.  
- OR -  
Click "Cancel" to reject the settings.

### 6.3.3.6 Setting the log file

A log file is frequently required for diagnostic purposes. You can activate the creation of a log file and make further settings for the file.

Table 6- 6 Logging settings

|                              | Meaning  |  |
|------------------------------|--|--|
| Activate logging             | Switches the log functionality on/off.   |  |
| Activate diagnostics logging | Performs the logging with an increased log level and a greater maximum file size. More data is therefore available for diagnostic purposes. In this mode, the user cannot specify the maximum file size or a log level, because these values are specified by AMM. |  |
| Directory                    | Specification of a directory or creation of a new directory in which the log files are stored. The directory is created in the "Find Directory" window.  |  |
| Max. file size [KB]          | Specification of the maximum file size in KB. AMM specifies a maximum of two log files. As soon as the first file reaches the maximum size, a new log file is created. If an older file is already available, it is overwritten.                                   |  |
| Log level                    | Specifies which data is to be logged.  |  |
|                              | None   | Do not log any data.                                     |
|                              | Fatal  | Fatal error that prevents the further program execution. |

|  |         | Meaning  |
|--|---------|--|
|  | Error   | Simpler errors that occur during the program execution, but that do not prevent further execution. |
|  | Warning | Warnings that may indicate problems.   |
|  | Info    | Information that indicates irregularities in the execution.  |
|  | DebugN  | Logging of the program execution. N specifies the level of detail.                                 |

## Procedure

1. Call the "Settings > Logging..." menu in the "Access MyMachine Service Mode" dialog.

The following window opens:

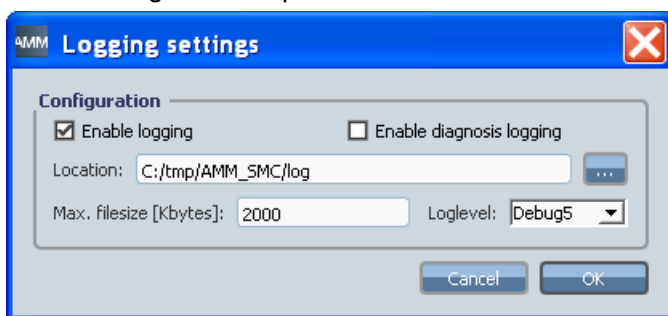


Figure 6-54 Logging settings

2. Activate the "Activate logging" checkbox.

This activates the creation of a log file. The log files can be created with the default settings displayed in the dialog. If required, you can make fine settings for the logging.

3. Click the "..." button.

The "Find Directory" window opens.

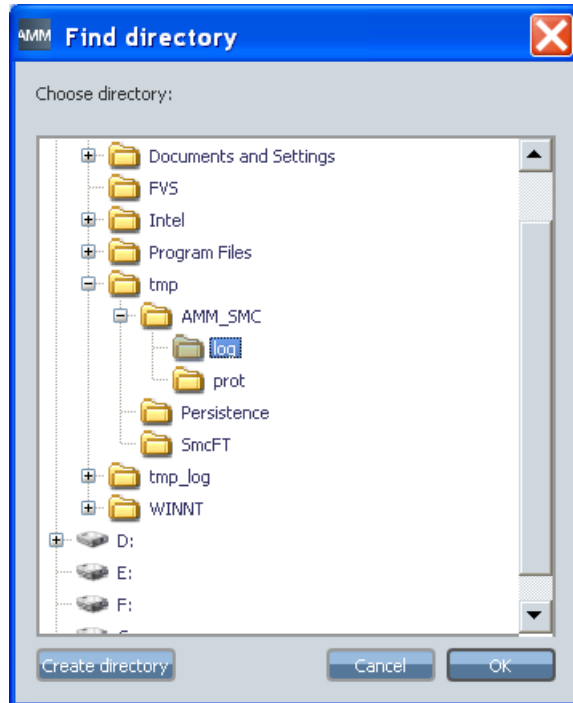


Figure 6-55 Find directory

4. Select an existing directory or create a new directory via the "Create new directory" button.
5. Click "OK" to save the settings.  
- OR -  
Click "Cancel" to reject the settings.

The selected directory is entered in the "Directory" field in the "Logging Settings" dialog.

6. If you want an extended log file, activate the "Activate diagnostics logging" checkbox.  
However, you can then no longer manually define the maximum file size and the log level.

Alternatively, you can set the maximum file size and the log level.

The settings have to be saved after all settings have been completed.

7. Click "OK" to save the settings.  
- OR -  
Click "Cancel" to reject the settings.

6.3.4 Performing a session

The session is established and the "Access MyMachine Service Mode" window displayed.

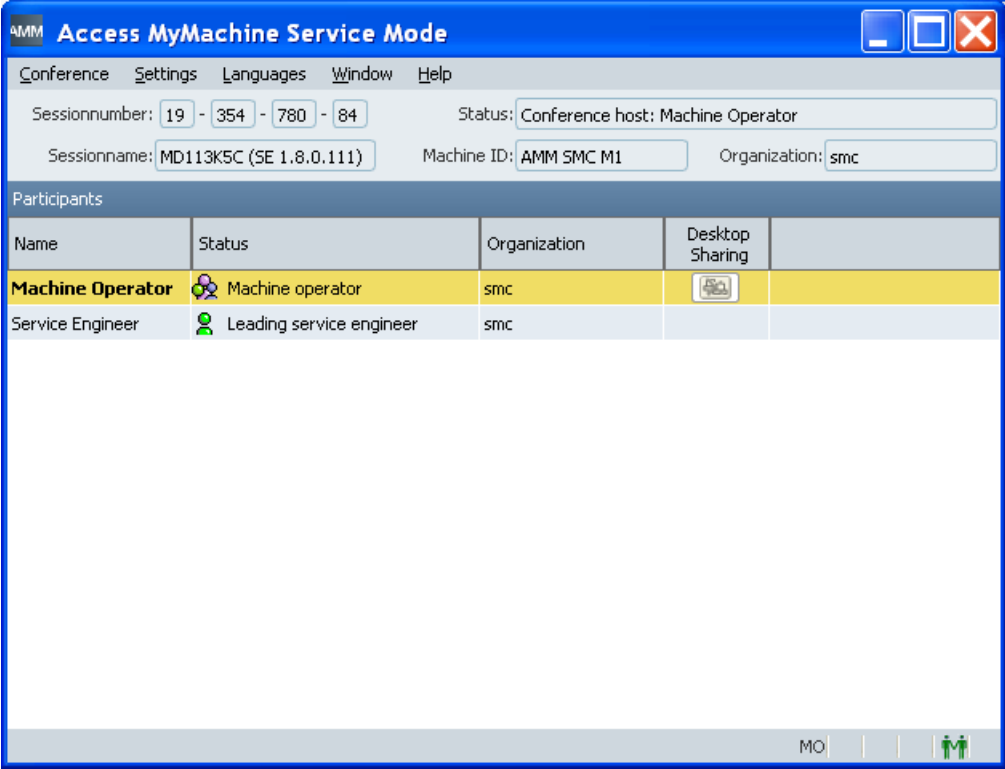


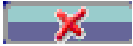


Figure 6-56 AMM SMC window after being called

Overview








Table 6- 7 Window: Access MyMachine Service Mode

|                        | Meaning   |
|------------------------|---|
| <b>Conference data</b> |   |
| Session number         | The number identifies the conference.   |
| Session name           | Name of the session.<br>The session name is specified by the service engineer.      |
| Status                 | Status information of the session.  |
| Machine ID             | Name of the machine.<br>The name is assigned if the PCU 50 is connected as machine. |
| Organization           | Name of the organization of the connected machine.                                  |
| <b>Participants</b>    |   |
| Name                   | Shows the participants of a session.<br>See Section: User roles (Page 296)          |
| Status                 | Shows the role of the participant.  |
| Desktop sharing        | Remote access can be activated or ended via the icons.                              |

|  |  | Meaning   |
|--|--|---|
|  |   | Shows that the function to end remote access is not available because desktop sharing has not been started. In this state, no function can be performed at the SMC via the button.  |
|  |   | Ends the participant access.  |
| <b>Log window of the file transfer</b> |  |   |
| File                                   |  | The log window of the file transfer opens automatically when the service engineer performs an action.<br>The window can also be shown or hidden via the "Conference > File Transfer Log" window.<br>The directory and the name of the file to which the actions performed by the service engineer refer, are displayed in the window<br>The log settings can be specified, see Section: Setting the file transfer (Page 317). |
| Action                                 |  | Shows the type of action.   |
| Status                                 |  | Shows the current status of the action.   |
| Sequence                               |  | Shows the progress as a percentage and a progress bar. A progress bar and percentage is also shown in the lower part of the window.   |
| Cancel                                 |  | The machine operator can cancel the action via the icon.  |

The status bar displays the following symbols.

Table 6- 8 Status bar

| Symbol  | Meaning   |
|---|---|
|  | Operating mode of the application - currently only the machine operator (MO). |
|  | Remote access active.   |
|  | File transfer active.   |
|  | The session is being recorded.  |
|  | No participation yet in a conference.   |
|  | Participation in a conference has been performed.                             |
|  | The conference has been interrupted because of a network error.               |

**Participating in a session in progress**

You can participate in a session in progress via the "Access MyMachine Service Mode" dialog:

- 1. Call the "Conference > Participate" menu.  
The "Participate in a Session" window opens.
- 2. Enter the session number at "Session number". You obtain the session number via e-mail/phone from the service engineer who leads the session.  
Click "OK" to start the session set-up.

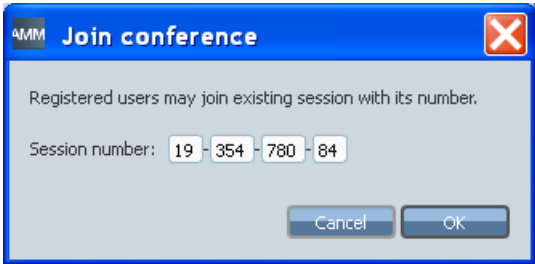


Figure 6-57 Entering the session number

**Alternative call**

As an alternative to the way described above, you can also start the participation in a session by directly entering the session number:

Enter the session number directly in the empty "Session number:" entry fields in the "Access MyMachine Service Mode" window.

Confirm the input with <Return> to start the session set-up.

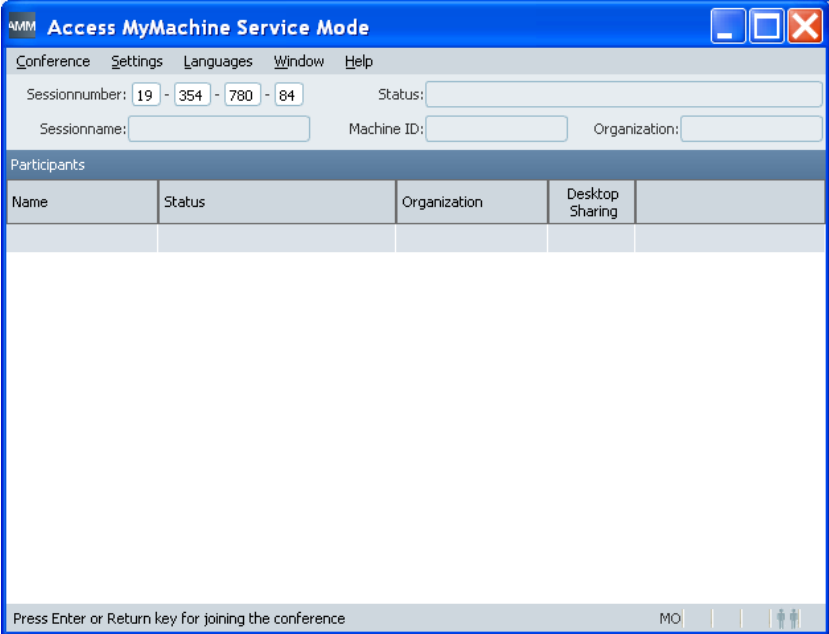


Figure 6-58 Entering the session number directly

### Leaving the session

Call the "Conference > Leave" menu to leave a session in progress.

As long as the session is still in progress, you can log on and participate at any time with the same session number.

### Opening/closing the file transfer log

The file transfer log is shown automatically when the service engineer starts the file transfer. Irrespective of this, as machine operator you can open and close the file transfer log manually.

1. Call the "Conference > File transfer log" menu to open the file transfer log.

The file transfer log is shown in the lower window and displays the current status.

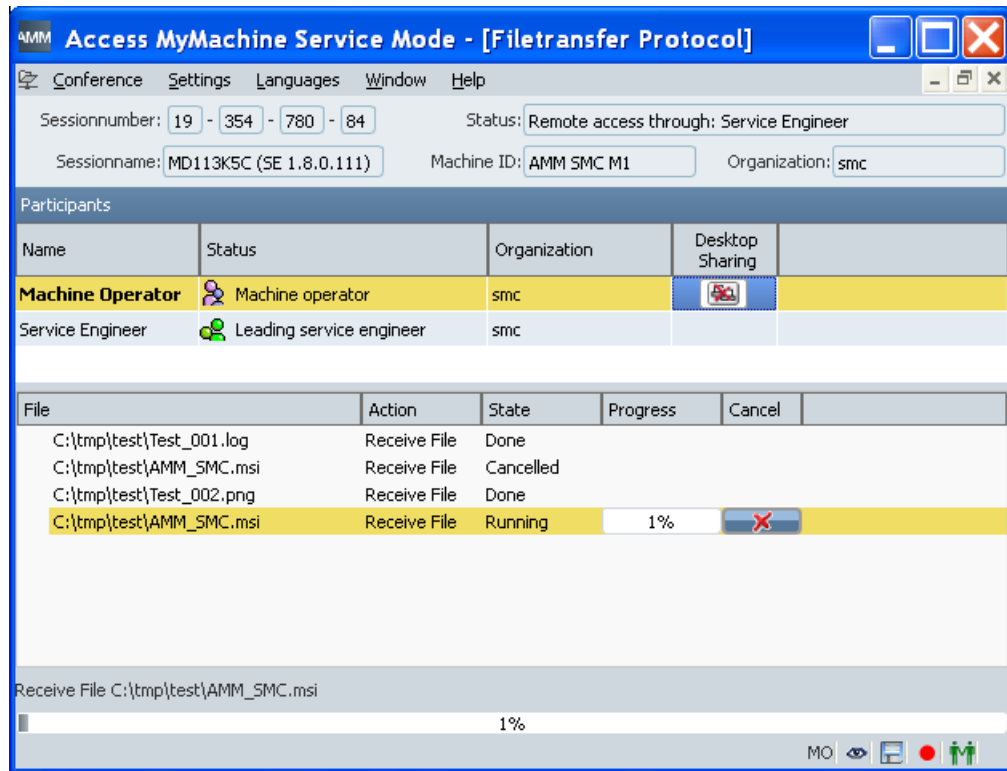


Figure 6-59 File transfer log opened

2. You can also close the file transfer log with the same menu command as for the call. See Section: Performing a file transfer (Page 331).



## 6.3.5 Transferring the session leadership

### Procedure

In a conference with more than two participants, the service engineer who is currently leading the session can transfer the session leadership to another service engineer.

1. The leader of the session clicks the icon of the service engineer to whom the session leadership is to be transferred, in the "Status" column of the list of participants.
2. The machine operator receives a message and must permit the transfer of session leadership.

If the session leadership is to apply for the whole session, the machine operator activates the "Use this decision for the entire session" checkbox before permitting the transfer of the session leadership with "Yes".

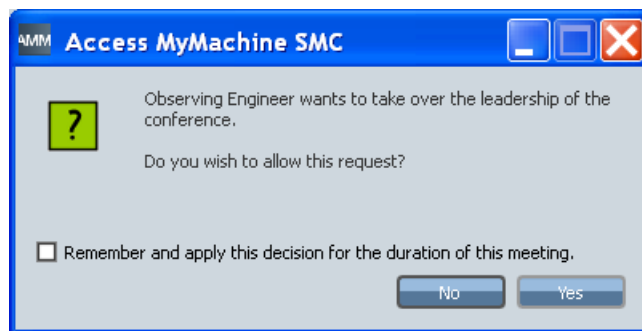



Figure 6-60 Transferring the session leadership

### 6.3.6 Remote access

#### Starting remote access

1. To start remote access, the service engineer clicks the  icon at the machine operator in the list of participants.

The machine operator is then requested to grant permission.  
The following message is displayed:

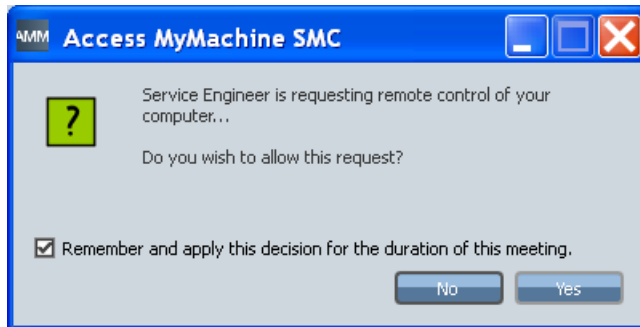


Figure 6-61 Permitting remote access

2. The machine operator clicks "Yes" to permit desktop access to the service engineer. If the remote access is to apply for the whole session, the machine operator activates the "Use this decision for the entire session" checkbox before permitting remote access with "Yes".

---

#### Note

##### No permission for the entire session


If the machine operator does not permit actions for the entire session from the start, the service engineer has no remote access during the time when the confirmation prompts are displayed on the machine. The service engineer can see the desktop of the machine operator during this time, but cannot perform any operations.

---

After confirmation by the machine operator, the service engineer can see and remotely control the desktop of the machine.

#### Ending remote access

During remote access, an icon is activated in the "Remote access" column in the line of the machine operator in the list of participants.

Remote access can be terminated by the service engineer and by the machine operator via the  icon in the "Remote access" column.

| Participants            |                          |              |                 |  |
|-------------------------|--------------------------|--------------|-----------------|--|
| Name                    | Status                   | Organization | Desktop Sharing |  |
| <b>Machine Operator</b> | Machine operator         | smc          |                 |  |
| Service Engineer        | Leading service engineer | smc          |                 |  |

Figure 6-62 Ending remote access

A confirmation prompt is displayed when the machine operator clicks the icon. To withdraw the remote access from the service engineer, the machine operator clicks "Yes".

Remote access is then terminated.

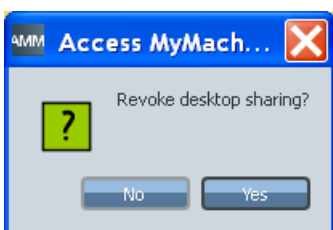


Figure 6-63 Withdrawing remote access

### 6.3.7 Performing a file transfer

#### Confirming file transfers

If the "Use this decision for the entire session" checkbox has not been activated by the machine operator during the access confirmation, the service engineer requires confirmation from the machine operator for each individual requested file function (e.g. transfer of files).

If, for example, the service engineer wants to copy a file from the system of the machine operator, the following window is displayed:

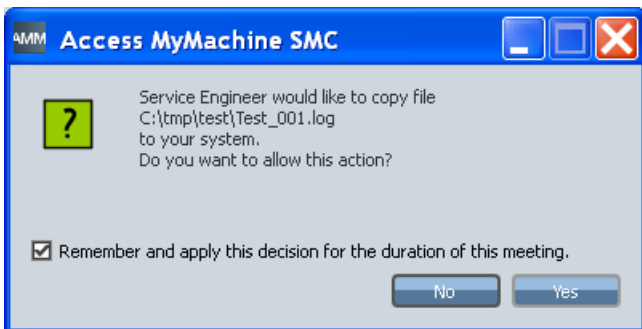


Figure 6-64 Copying files

The further procedure corresponds to that for the initial access attempt to a directory; see above.

### Display of the file transfer in the file transfer log

The actions performed by the service engineer are shown in the dialog below the list of participants in the file transfer log.

See also Performing a session (Page 325).

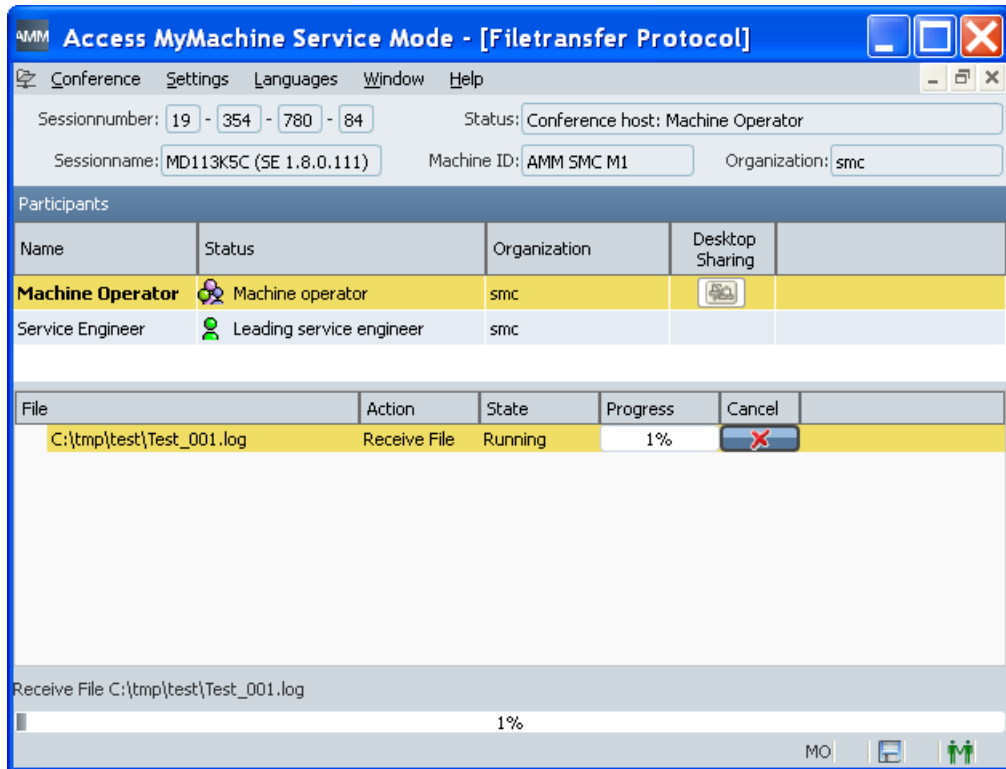



Figure 6-65 File transfer display

During the file transfer, in addition to the name of the current file, the performed actions, the status, a progress indicator and an icon to cancel the file transfer are also displayed in the file transfer log window.

#### Note

In the file transfer settings, you can also specify whether the file functions performed during a session are also to be written to a log file.

### Canceling the file transfer

1. Click the  icon to cancel a running file transfer.

The following confirmation prompt then opens:

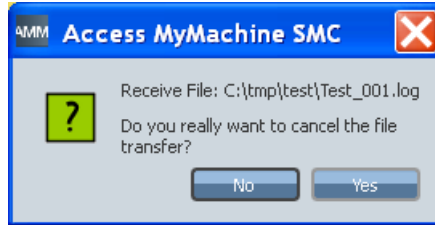


Figure 6-66 Cancel confirmation

2. Click "OK" to cancel the file transfer.

### 6.3.8 Network interruption

If a network interruption occurs during an active conference, this is indicated by a status text in the status line.

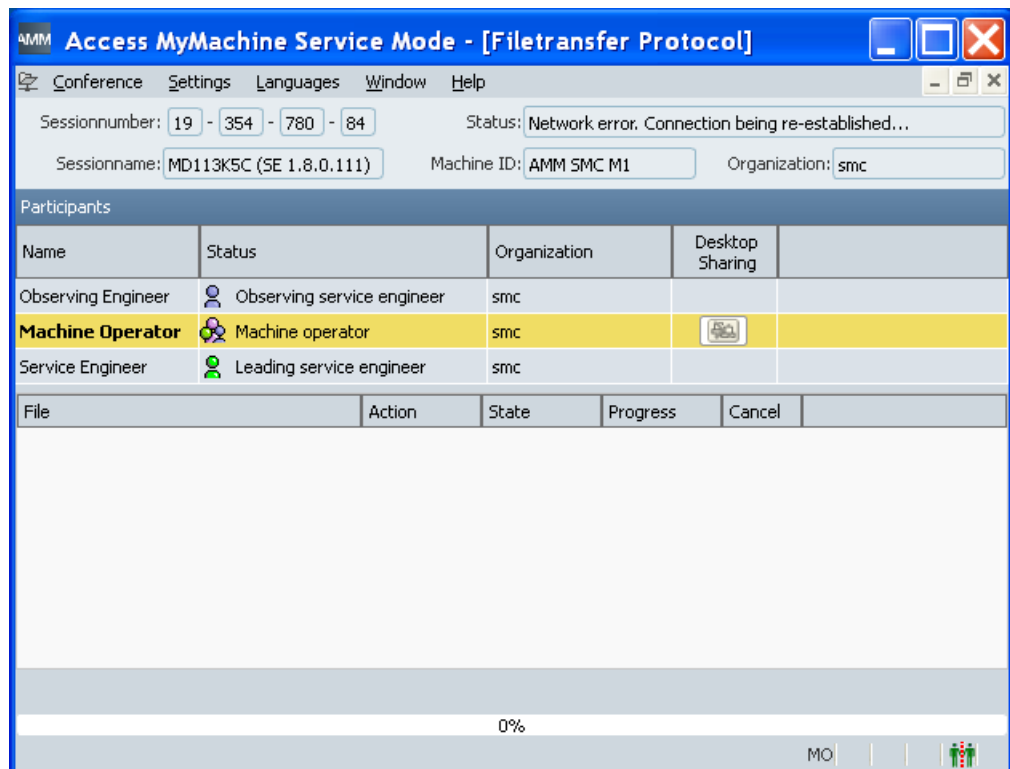


Figure 6-67 Display of the interrupted network connection

AMM SMC terminates all the active functions internally and makes cyclic attempts to participate in the conference again.

### 6.3.9 Window display

After logging on, the "Window" menu is activated and provides the following options.

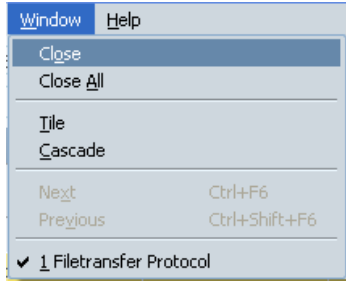


Figure 6-68 Editing the window

### Overview

Table 6- 9 Editing the window

| Action            | Meaning  |
|-------------------|--|
| Close             | Closes the window that has just been selected.                                 |
| Close all windows | Closes all open windows.   |
| Split             | Adjusts the size of the opened windows so that they share the available space. |
| Cascade           | Displays the opened windows one behind the other.                              |
| Next              | Changes to the next open window.   |
| Previous          | Changes to the previous open window.   |
| n <window name>   | Changes to the open window with <window name>.                                 |

### 6.3.10 Calling the help function

AMM SMC provides two help functions:

- About AMM SMC: You obtain information about the AMM SMC application.
- Softkeys, function keys: Shows the assignment of the horizontal/vertical softkeys (HSK/ VSK) and function keys (F).

### Assignment of the softkeys and function keys

| Softkey | Softkey | Meaning   |
|---------|---------|---|
| F1      | HSK1    | Call the softkeys and function keys help function |
| F2      | HSK2    | Participate in a conference                       |
| F3      | HSK3    | Leave conference                                  |
| F4      | HSK4    | Exit AMM SMC                                      |
| F5      | HSK5    | Open log-on settings                              |

| Softkey  | Softkey | Meaning   |
|----------|---------|---|
| F6       | HSK6    | Open file transfer settings   |
| F7       | HSK7    | Open proxy settings   |
| F8       | HSK8    | Open logging settings   |
| SHIFT+F1 | VSK1    | End remote access   |
| SHIFT+F2 | VSK2    | Cancel file transfer  |
| SHIFT+F3 | VSK3    | Switch language   |
| SHIFT+F4 | VSK4    | Show/hide file transfer log   |
| SHIFT+F5 | VSK5    |   |
| SHIFT+F6 | VSK6    | Switch checkbox states in confirmation prompts                        |
| SHIFT+F7 | VSK7    | Actuation of "Cancel"/"No" (only for dialogs with one or two buttons) |
| SHIFT+F8 | VSK8    | Actuation of "OK"/"Yes" (only for dialogs with one or two buttons)    |

## About AMM SMC

1. Call the "Help" > "About AMM SMC" menu.

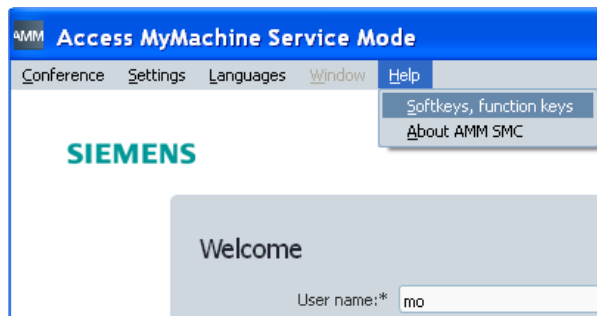


Figure 6-69 Calling the help function

The following window opens and displays information about AMM SMC.

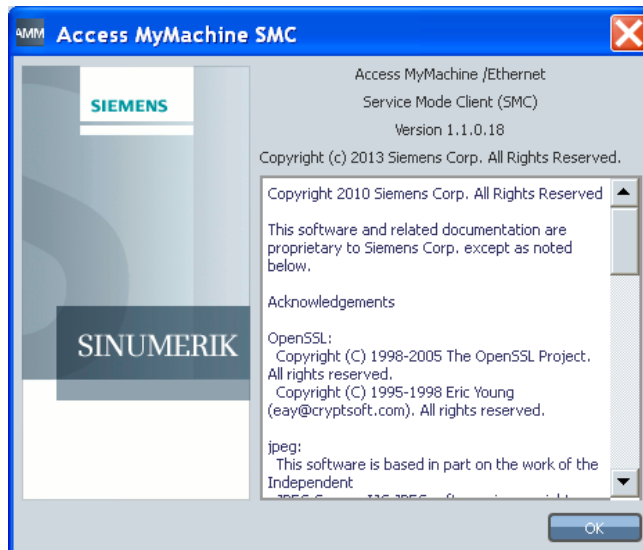


Figure 6-70 AMM SMC help window

### Displaying the assignment of the softkeys and function keys

**Note**

**Use of the softkeys and function keys**

In order that AMM SMC can be operated via softkeys and function keys, HMI-Advanced must not be started in parallel in the service mode on a PCU 50. Otherwise the presses of a button are processed by the active area application of HMI-Advanced.

1. Call the "Help > Softkeys, function keys" menu.

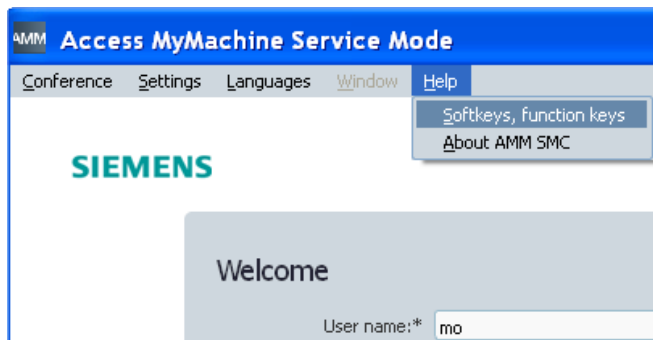


Figure 6-71 Calling the help function

The following window opens and displays the information available for the softkeys and function keys:

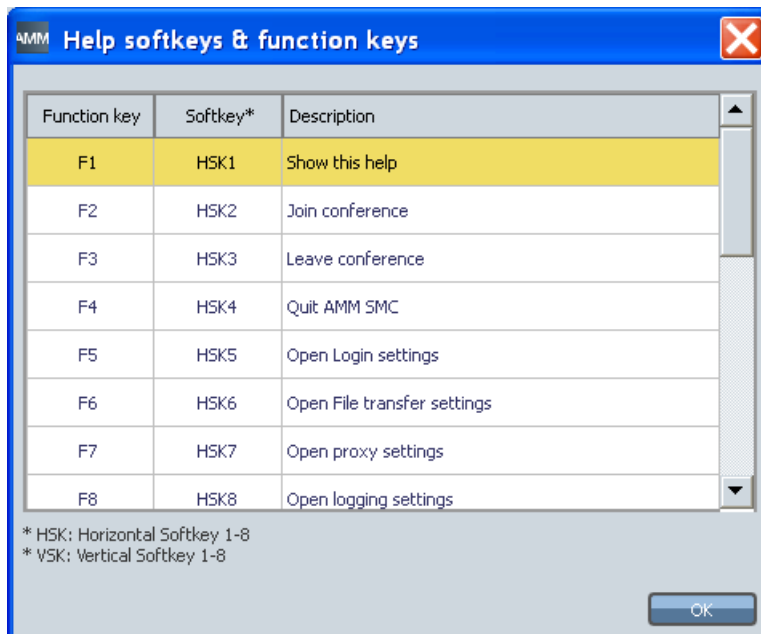


Figure 6-72 Assignment

2. Close the window by clicking "OK".



## 6.3.11 Ending the session

### Procedure

1. Call the "Conference > Exit" menu to close a session.

If actions of the service engineer are still active when leaving the session, the following messages are displayed.

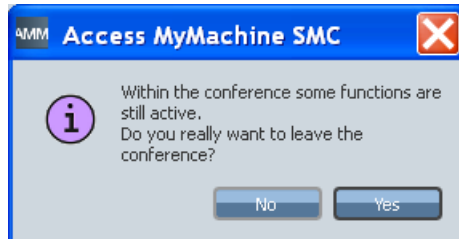


Figure 6-73 Warning

- OR -

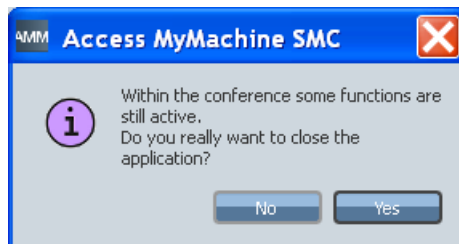


Figure 6-74 Warning

2. Click "Yes" if you want to end the remote access.

The functions or applications in progress are aborted.

- OR -

Click "No" if you do not want to not end the remote access.



# Analyze MyPerformance (AMP)

## 7.1 Introduction

### Product overview

Analyze MyPerformance (AMP) is a solution in which a higher-level master computer and several controls work together.

The data acquired on the controls is transferred to the server and then fetched via the AMP server so that central evaluations can be performed there.

### References

Refer to the "AMP Configuration" description for the configuration of AMP. You will find the description on the installation CD.

## 7.2 AMP under HMI-Advanced

### 7.2.1 Starting AMP (HMI-Advanced)

Analyze MyPerformance for SINUMERIK powerline with HMI-Advanced is integrated in SINUMERIK Integrate Analyze MyCondition via the user interface.

1. Select "MDI" and press the "Select" softkey to change to the Analyze MyPerformance window.

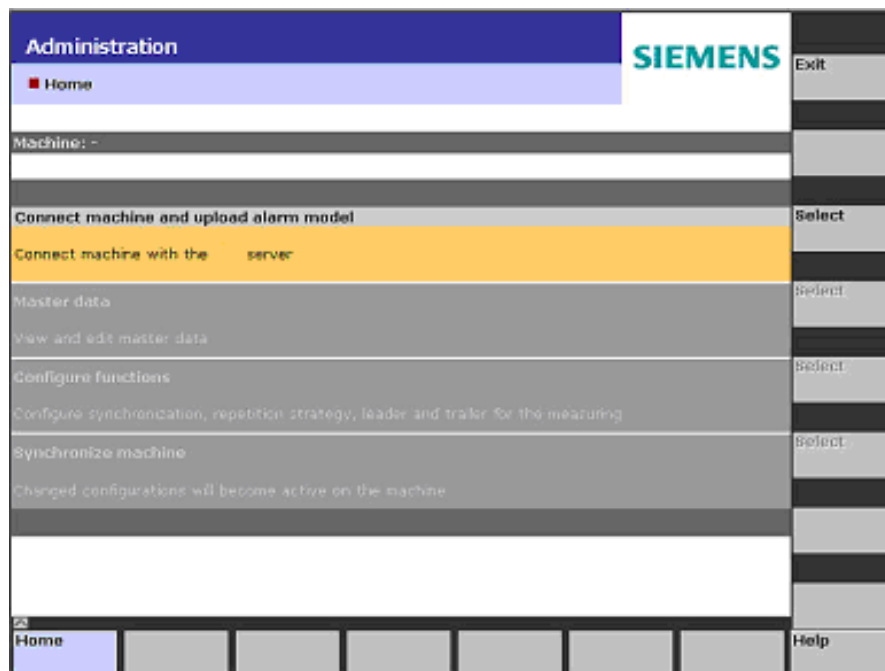


Figure 7-1 AMP access, SINUMERIK powerline with HMI-Advanced

2. The "Analyze MyPerformance" window opens and provides the following options:
  - Select the "States" area and press the "Select" softkey to receive information on the server.
  - Select the "Part type list" area and press the "Select" softkey to open the list with the part type data.
  - Select the "SINUMERIK Integrate" area and press the "Select" softkey to return to the "Home" window of Analyze MyCondition, see Section: AMP user interface (HMI-Advanced) (Page 342).

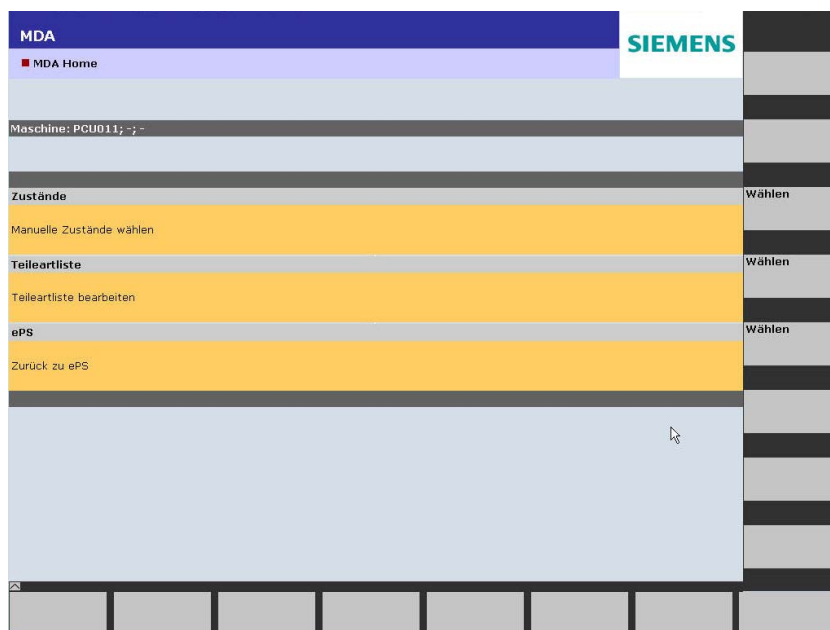


Figure 7-2 Analyze MyPerformance user interface

## 7.2.2 AMP user interface (HMI-Advanced)

### Overview screen of the part type list (jobs)

Via the "States" and "Part type list" selection, further details can be displayed through customer-specific configurations.

The structure of the horizontal and vertical softkey bars is described via a customer-specific configuration file. The layout is permanently specified.

Examples of a customer-specific configuration are shown below.

### Example: "Manual states" overview

You can display the manually acquired machine states and faults in the "States" window. The softkeys can be configured customer-specifically.

| Function              | Description   |
|-----------------------|---|
| Machine status:       | Shows the current machine status, e.g. production, standstill, etc.   |
| Booked manual status: | Shows the manual status currently being acquired by the AMP server.   |
| Manual status:        | Shows the status currently selected on the user interface that has not yet been acquired by the server.<br><br>This function provides the operator with information, for example, that a key that has just been pressed on the user interface has been accepted by the system.<br><br>When the manual status is acquired by the AMP server, the data is registered as "Booked manual status". |

The "States" window is open and displays the softkeys configured by the customer.

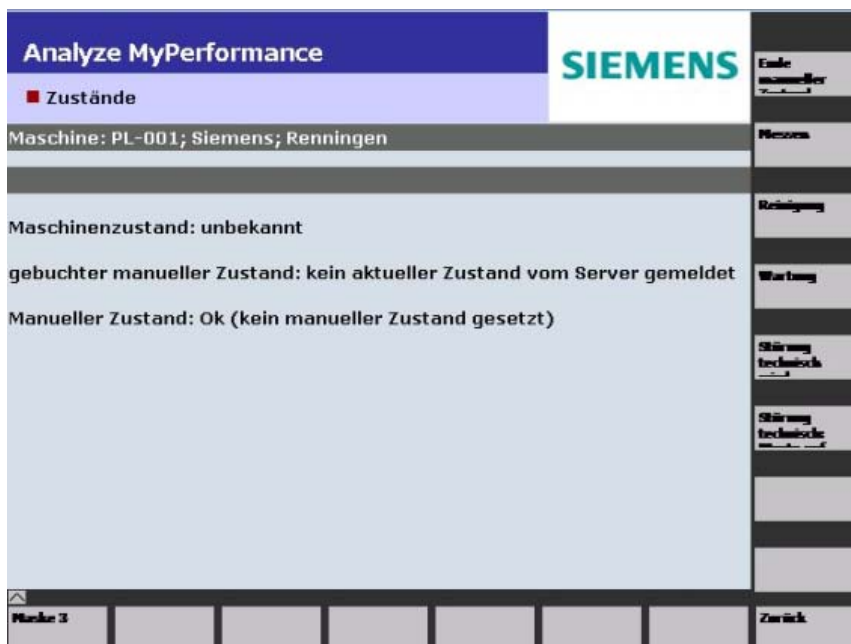


Figure 7-3 05\_States

**Example: Overview of the part type list (jobs)**

1. The "Part Type List" window is open.
2. Select a part type for machining.
3. Press the "OK" softkey to confirm the selection.  
The selected part type is then displayed in the "Current part type" section.  
The selected part type is assigned the automatically acquired states.
4. Press the "Update list" softkey to update the part type list.
5. Press the "Back" softkey to return to the "Home" start window.

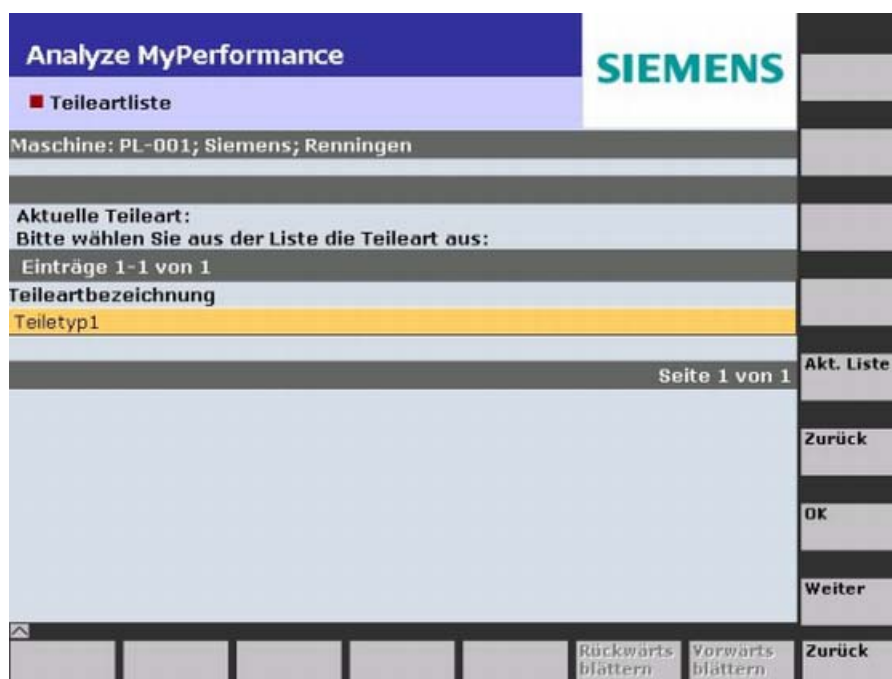


Figure 7-4 Part type list

## 7.3 AMP under SINUMERIK Operate

### 7.3.1 Starting AMP (SINUMERIK Operate)

#### Requirement

SINUMERIK Integrate must be activated in order to be able to use Analyze MyPerformance.

#### References

Information on the activation of the software can be found in the "SINUMERIK Integrate, MMT, MMP, AMB, AMC, AMM, AMP" Installation Manual.

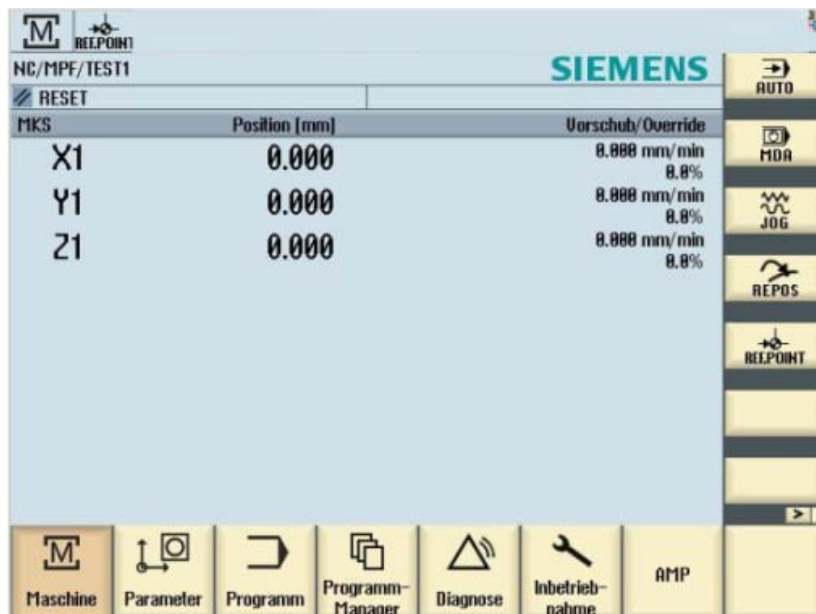
#### Overview

Information on the server is displayed in the "Siemens Client MDI" window.

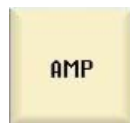
| Display                  | Meaning  |
|--------------------------|--|
| Server data              | Overview of the configured connection to the server. |
| Version                  | Version number of the server.                        |
| Date                     | Current date.  |
| Connection to the server |  |
| Active                   | There is an online connection to the server.         |
| Inactive                 | There is no connection to the server.                |

#### Procedure

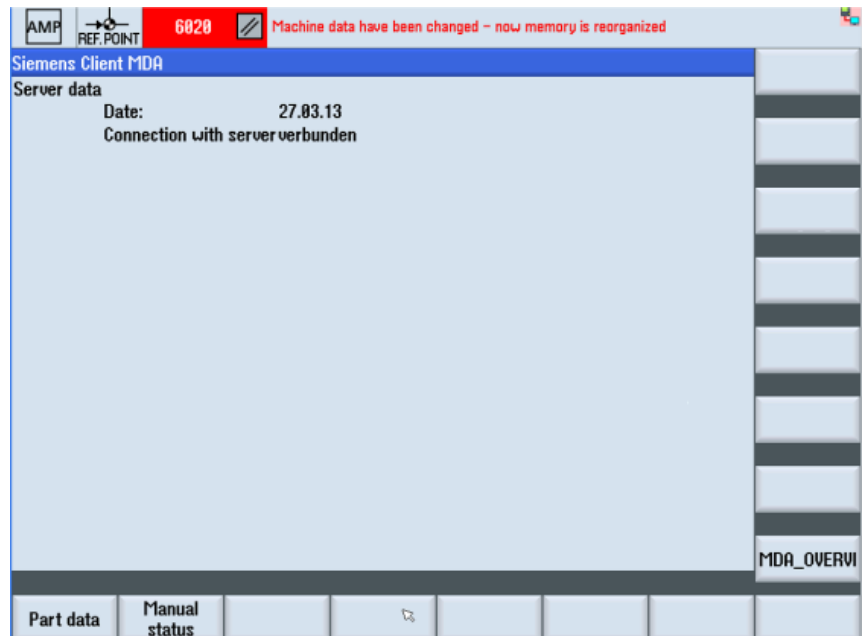
1. The control system has booted and the operating areas are displayed.







2. Press the "AMP" softkey.  
The "Siemens Client MDI" window opens.



You can view further data through customer-specific configurations via the "Part data" and "Man. status" softkeys, see Section: AMP user interface (SINUMERIK Operate) (Page 345).

## 7.3.2 AMP user interface (SINUMERIK Operate)

### Overview screen of the part type list (jobs)

Further data can be displayed through customer-specific configurations via the configured "Part data" and "Man. status" softkeys.

The structure of the following horizontal and vertical softkey bars is described in a customer-specific configuration file. The layout is permanently specified.

Examples of a customer-specific configuration are shown below.

### Example: Overview of the part type list (jobs)

1. The "Siemens Client MDI" window is open.  
Press the "Part data" softkey to display the list of part types.
2. Select a part type for machining.

3. Press the "OK" softkey to confirm the selection.  
The selected part type is then displayed in the "Current part type" section.  
The selected part type is assigned the automatically acquired states.
4. Press the "Update list" softkey to update the part type list.

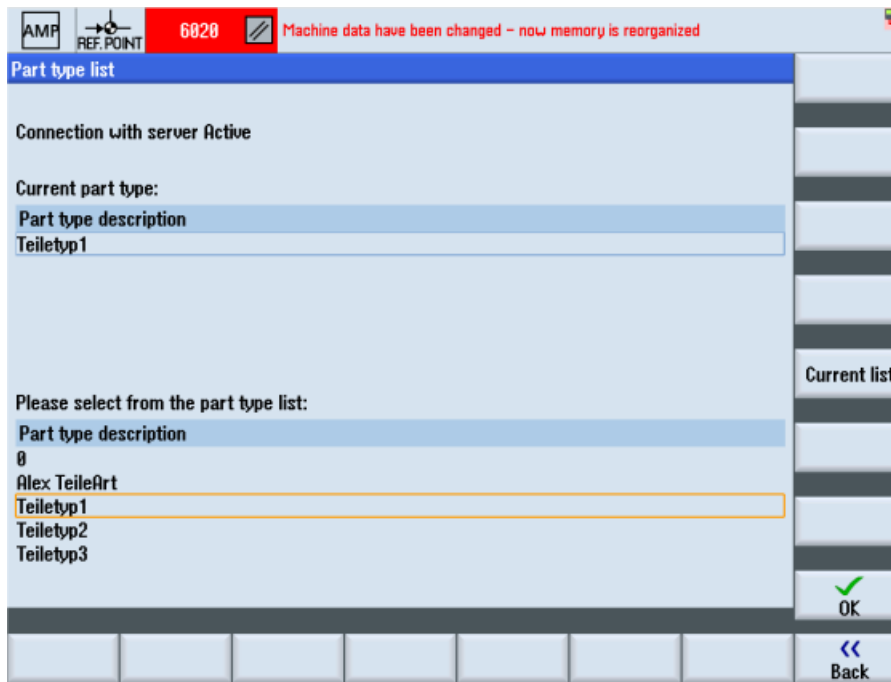


Figure 7-5 Part type list

**Example: "Manual states" overview**

The manually acquired machine states and faults are displayed in the customer-specific "Maintenance" window.  
The softkeys can be configured customer-specifically.

| Display  | Meaning  |
|--|--|
| MDI machine account:   | The current machine status, e.g. production, standstill, etc.  |
| Booked manual status:  | The manual status currently being acquired by the AMP server.  |
| Selected manual status:  | This function provides the operator with information, for example, that a key that has just been pressed on the user interface has been accepted by the system. This action must not have arrived at the server yet. |
| If the "Selected manual status" has arrived at the server, the server sends "Booked manual status" back. |  |

- The "Maintenance" window is open.  
Press the "End manual status" softkey to end an active manual status and return to the automatic machine status.
- Press the "Maintenance" softkey to set the manual "Maintenance" machine status.

- Press the "Maintenance (autoreset)" softkey to set the manual "Maintenance (autoreset)" machine status.
- Press the "Update" softkey to update the displayed data.

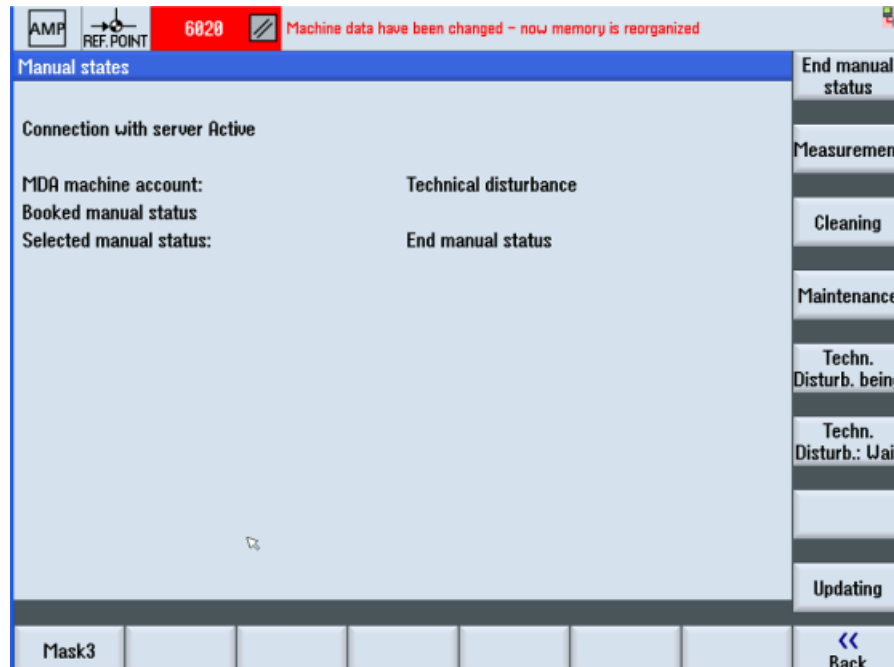


Figure 7-6 "Manual status", example 1

### Example: "Manual states" overview

- Press the "Setup" softkey to set the manual "Maintenance (autoreset)" machine status. In this example, you can see that the selected manual status has been booked on the AMP server (Booked manual status) and resulted in the machine status with the highest priority (MDI machine account).

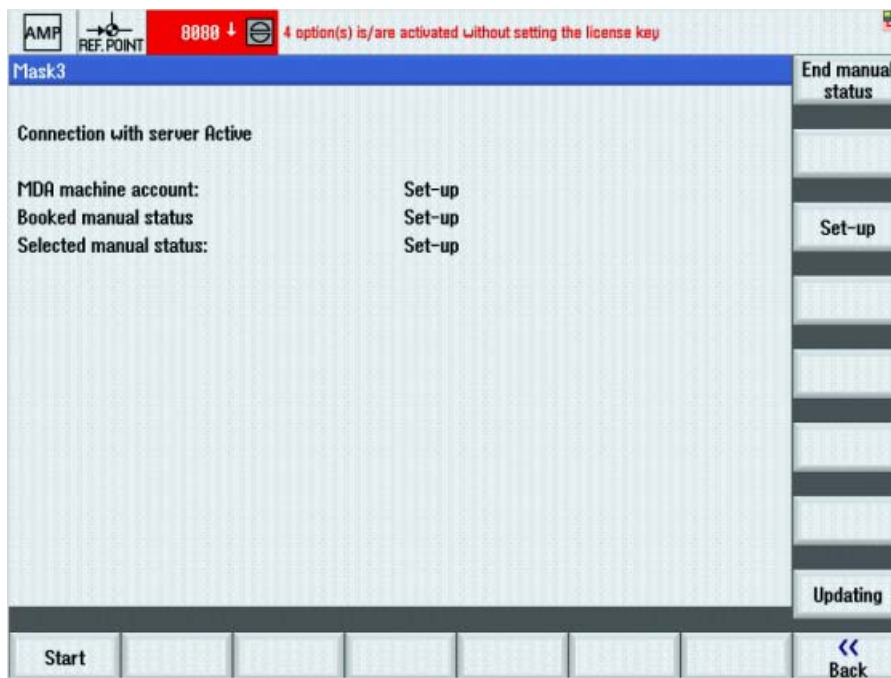


Figure 7-7 "Manual status", example 2

## Appendix

### A.1 Formats of the tool actual data for the cutting device

The tool actual data contained in the file must be transferred from the tool setting station to the MMT in accordance with the following scheme:

#### Overview

| Command lines                            | Description   | Optional |
|--|---|----------|
| \$TDI_MACHINE="Machine1"                 | Machine name for assignment of tools  | X        |
| \$TDI_SETNAME[1] ="1234"                 | Name of tool set  | X        |
| \$TDI_SETDATE[1] =<br>"2001/01/14 15:49" | Time of request (optional, only relevant for planning in conjunction with the setting list)   | X        |
| \$TDI HOLDER="8446"                      | Holder number for unambiguous identification of the tool within a plant (inventory number)  | X        |
| \$TC_TP1[1] =000                         | Duplo number; 3-digit; Duplo_Default: 000   |          |
| \$TC_TP2[1] ="12345"                     | Tool identifier (32 characters).  |          |
| \$TC_TP3[1] =1                           | Size on left<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location type)   |          |
| \$TC_TP4[1] =1                           | Size on right<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location type)  |          |
| \$TC_TP5[1] =1                           | Size above<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location type)   |          |
| \$TC_TP6[1] =1                           | Size below<br>Normal: 1 Large: 2 (as for \$TC_TP7 magazine location type)   |          |
| \$TC_TP7[1] =1                           | Magazine location type<br>Note: The magazine location type must match the magazine location type created in the target machine.<br>If tools from several machines are used, the magazine location types must be the same across all machines, e.g.1=small; 2=average; 3=large |          |
| \$TC_TP8[1] =10                          | Status default: 10<br>The tool status results, for example, as follows:<br>2 = tool enabled +<br>8 = tool calibration<br>=10  |          |

## A.1 Formats of the tool actual data for the cutting device

| Command lines      | Description   | Optional |
|--------------------|---|----------|
| \$TC_TP9[1] =0     | Tool monitoring method<br>Possible values, e.g.<br>0 = no tool monitoring<br>1 = tool life<br>2 = unit quantity<br>...<br>For further methods, see Description of Functions for Tool Management       |          |
| \$TC_TP10[1] =2    | Replacement strategy<br>Possible values, e.g.<br>0 = no strategy<br>1 = next duplo no.<br>2 = shortest path<br>...<br>Others: See Description of Functions for Tool Management                        |          |
| \$TC_TP11[1] =0    | Tool information not used, default: 0   |          |
| \$TC_TPC1[1] =1    | Loading/unloading identifier for MMT default: 0<br>Note:<br>If the standard data "Load /unload identifier" is not used, OEM data can be used instead. MMT automatically uses the first free OEM data. |          |
| \$TC_TPC2-10[1] =0 | Possible OEM data   |          |
| \$TC_DP1[1,1] =0   | Tool type   |          |
| \$TC_DP2[1,1] =0   | Cutting edge position   |          |
| \$TC_DP3[1,1] =0   | Geometry - length 1   |          |
| \$TC_DP4[1,1] = 0  | Geometry - length 2   |          |
| \$TC_DP5[1,1] =0   | Geometry - length 3   |          |
| \$TC_DP6[1,1] =0   | Geometry - radius   |          |
| \$TC_DP7[1,1]=0    | Geometry - corner radius  |          |
| \$TC_DP8[1,1] =0   | Geometry - length 4   |          |
| \$TC_DP9[1,1] =0   | Geometry - length 5   |          |
| \$TC_DP10[1,1] =0  | Geometry - angle 1  |          |
| \$TC_DP11[1,1] =0  | Geometry - angle 2  |          |
| \$TC_DP12[1,1] =0  | Wear - length 1   |          |
| \$TC_DP13[1,1] =0  | Wear - length 2   |          |
| \$TC_DP14[1,1] =0  | Wear - length 3   |          |
| \$TC_DP15[1,1] =0  | Wear - radius   |          |
| \$TC_DP16[1,1] =0  | Wear - groove width b / rounding radius   |          |
| \$TC_DP17[1,1] =0  | Wear - projection k   |          |
| \$TC_DP18[1,1] =0  | Wear - length 5   |          |
| \$TC_DP19[1,1] =0  | Wear - angle 1  |          |
| \$TC_DP20[1,1] =0  | Wear - angle 2  |          |

| Command lines                              | Description  | Optional |
|--|--|----------|
| \$TC_DP21[1,1]=0                           | Adapter - length 1   |          |
| \$TC_DP22[1,1]=0                           | Adapter - length 2   |          |
| \$TC_DP23[1,1]=0                           | Adapter - length 3   |          |
| \$TC_DP24[1,1]=0                           | Clearance angle  |          |
| \$TC_DP25[1,1]=0                           | Reserved, default: 0   |          |
| \$TC_MOP1[1,1]=0                           | Prewarning limit in minutes, default: 0                                      |          |
| \$TC_MOP2[1,1]=0                           | Residual tool life in minutes, default: 0                                    |          |
| \$TC_MOP3[1,1]=0                           | Warning limit for count, default: 0  |          |
| \$TC_MOP4[1,1]=0                           | Residual unit quantity, default: 0   |          |
| \$TC_MOP5[1,1]=0                           | Wear prewarning limit - or location-dependent offset fine - prewarning limit |          |
| \$TC_MOP6[1,1]=0                           | Actual wear value - or location-dependent offset fine - actual value         |          |
| \$TC_MOP11[1,1]=0                          | Planned tool life  |          |
| \$TC_MOP13[1,1]=0                          | Target unit quantity   |          |
| \$TC_MOP15[1,1]=0                          | Wear setpoint - or location-dependent offset fine - setpoint                 |          |
| Other cutting edge data ..., if configured |  |          |
| \$TC_DP1[1,2] =                            | Cutting edge 2   |          |
| \$TC_DP2[1,2] =                            | Cutting edge 2   |          |
| \$TC_DP3[1,2] =                            | Cutting edge 2   |          |
| ...  |  |          |
| ...  |  |          |
| M17  | End of file  | X        |

## A.2 Setting machine data

### Dependencies

Machine data category "Universal axis test" relates to the function of SinuComNC Trace Server; meaning that there is a dependency on the HMI version and the NCU software version. If one of the conditions is not met, or the Trace Server is not used for other reasons, the machine data for the universal axis test does not have to be set, with the exception of MD19330 for SINUMERIK powerline.

The machine data category "NC Monitor" only depends on the NCU software version and not on the HMI version, i.e. the function can also be used for older HMI versions.

---

**Note**

Machine data:

- A change to machine data (MDx8xxx) triggers a re-organization of the memory.
  - The "Manufacturer" password must be entered in order to edit machine data.
  - After editing the data:
    - Create an NC archive
    - Trigger an NCK reset (Safety Integrated).
    - Restore the NCK archive from the backup file.
- 

**Machine data for universal axis test (HMI-Advanced ≥ 06.03.15)**

General MD:

| MD no.  | Name                           | Old | New | Remarks              | PL | SL | PL(ST) |
|---------|--------------------------------|-----|-----|----------------------|----|----|--------|
| 11295   | PROTOK_FILE_MEM[5]             |     | 1   | Data buffer in DRAM  | X  | X  |        |
| 18370   | MM_PROTOK_NUM_FILES[5]         |     | 2   |                      | X  |    |        |
| 18371   | MM_PROTOK_NUM_ETPD_STD_LIST[5] |     | 25  |                      | X  |    |        |
| 18373   | MM_PROTOK_NUM_SERVO_DATA[5]    |     | 10  |                      | X  |    |        |
| Option: |                                |     |     |                      |    |    |        |
| 19330   | IPO_FUNCTION_MASK              |     |     | Bit 3 = 1 (add 8Hex) | X  |    | X      |

Channel MD:

| MD no. | Name                         | Old | New | Remarks | PL | SL | PL(ST) |
|--------|------------------------------|-----|-----|---------|----|----|--------|
| 28300  | MM_PROTOK_USER_ACTIVE[5]     |     | 1   |         | X  |    |        |
| 28302  | MM_PROTOK_NUM_ETP_STD_TYP[5] |     | 20  |         | X  |    |        |

Axis MD:

| MD no. | Name                  | Old | New | Remarks               | PL | SL | PL(ST) |
|--------|-----------------------|-----|-----|-----------------------|----|----|--------|
| 36730  | DRIVE_SIGNAL_TRACKING |     | 1   | Each axis and spindle | X  | X  |        |



**Machine data for variable monitor (NC axes)**

General MD:

| MD no. | Name                 | Old | New | Remarks               | PL | SL | PL(ST) |
|--------|----------------------|-----|-----|-----------------------|----|----|--------|
| 18860  | MM_MAINTENANCE_MON   |     | 1   |                       | X  | X  | X      |
| 19334  | SYSTEM_FUNCTION_MASK |     |     | Bit 6 = 1 (add 40Hex) | X  |    | X      |

Axis MD:

| MD no. | Name             | Old | New | Remarks               | PL | SL | PL(ST) |
|--------|------------------|-----|-----|-----------------------|----|----|--------|
| 33060  | MAINTENANCE_DATA |     | 7   | Each axis and spindle | X  | X  | X      |

Machine data according to the control model:

PL(ST) = SINUMERIK powerline System NCU 840D/810D/840Di  
Data logging with Servo Trace

PL = SINUMERIK powerline System with NCU 840D/810D/840Di  
Data logging with Trace Server

SL = SINUMERIK solution line System with NCU 710, 720, 730, 740, 840Di sl  
Data logging with Trace Server or Servo Trace

Dependency on the NCU software version:

PL = Universal axis test:  
≥ NCU 06.04.15 with Trace Server or: ≥ NCU 06.03.xx with Servo Trace  
NC Monitor: ≥ NCU 06.05.11

SL = Universal axis test: ≥ NCU 02.04 HF3 (NCK 67.03)  
NC Monitor: ≥ NCU 02.04 HF3 (NCK 67.03)

**Note****Machine data**

- As of ePS Server V4.4 all axis test types can be executed with Servo Trace. You only have to adapt MD19330 in the "Universal axis test" area accordingly.
- The additional machine data listed in the "Universal axis test" is valid if the measured values are logged by means of Trace Server (standard as of HMI 07.03.xx saved to the MMC2 folder).
- The machine data 19330 and 19334 included in the ePS package represents expansion levels which are subject to SINUMERIK license agreements. In SINUMERIK solution line NCU software V2.4 HF3 or higher this data is managed by the system (NCK 67.03), i.e. the options (MDx9xxx), including MD19330 do not have to be activated.

### Optional setting Data storage in SRAM or DRAM

You can configure either SRAM or DRAM as the storage location for the log files (Protoc) of SinuComNC Trace Server.

The default setting for the machine data for SinuCom NC Trace Server defines SRAM as buffer for Trace data that has been acquired. However, this data can also be saved to DRAM of the NCU. You must accordingly define the maximum size of the data buffer as machine parameter (cannot be set up on solution line systems).

| MD no. | Name                  | Old | New     | Remarks                                 |
|--------|-----------------------|-----|---------|---|
| 11295  | PROTOK_FILE_MEM[5]    | 0   | 1       | 0=Protoc in SRAM<br>1=Protoc in DRAM    |
| 18351  | MM_DRAM_FILE_MEM_SIZE |     | add 500 | 500 KB additionally reserved for Protoc |

---

#### Note

The setting in \$MN\_MM\_DRAM\_FILE\_MEM\_SIZE is not available for the solution line system. The logs for solution line systems are always saved to DRAM.

---

### Handshake between the PLC and the axis test

The PLC user program of the machine can lock execution of external program elements. Interface signals are provided to enable the function.

---

#### Note

As of PLC Toolbox V7.2 those bits are reset automatically to "0" in the PLC program. If you are using a Toolbox of a lower version number you must program this initialization in the startup OB. You should also clear the bits with a RESET if necessary.

---

### See also

Important Internet addresses:

Workplace PC: PC service start page

Installation on the PCU: HMI start page and HMI data communication

Additional addresses: Check the Internet settings

On this page, you can check the requirements and the transfer quality.

## A.3 List of abbreviations

|          |  |
|----------|--|
| Admin    | Administrator (user role)  |
| AMB      | Access MyBackup  |
| AMC      | Analyze MyCondition  |
| AMM      | Access MyMachine   |
| AMP      | Analyze MyPerformance  |
| AMT      | Access MyTool ID   |
| ASP      | Application service provider version   |
| CAM      | Computer-Aided Manufacturing   |
| CF Card  | CompactFlash Card: Memory card   |
| CNC      | Computerized Numerical Control: Computerized numerical control   |
| CoL      | Certificate of License   |
| COM      | Communication  |
| CU       | Control Unit   |
| CP       | Communication Processor  |
| CPU      | Central Processing Unit: central processing unit   |
| DB       | Data Block (PLC)   |
| Dbxy     | Data block (e.g. B 59)   |
| DHCP     | Dynamic Host Configuration Protocol: Dynamic assignment of an IP address and other configuration parameters on a computer in a network |
| DNC      | Direct Numeric Control   |
| DIR      | Directory: Directory   |
| h        | Hour   |
| HMI      | Human Machine Interface: SINUMERIK user interface  |
| HTTP     | Hypertext Transfer Protocol, Hypertext transfer protocol   |
| HTTPS    | HyperText Transfer Protocol Secure, Safe hypertext transfer protocol   |
| HW       | Hardware   |
| IAC      | InterActive Client   |
| IE       | Internet Explorer  |
| IH       | Maintenance  |
| IIS      | Microsoft Internet Information Service   |
| MCI      | Motion Control Interface   |
| MCIS     | Motion Control Information System  |
| MCIS MDA | MCIS Machine Data Acquisition: Machine data management   |
| MCP      | Machine Control Panel: Machine control panel   |
| MD       | Machine data   |
| MLFB     | Machine-Readable Product Code  |
| MHComm   | Machine Handler Communication  |
| MMP      | Manage MyPrograms  |
| MMT      | Manage MyTools   |
| MPI      | Multi Port Interface: Multiport Interface  |
| MS       | Microsoft  |

Appendix

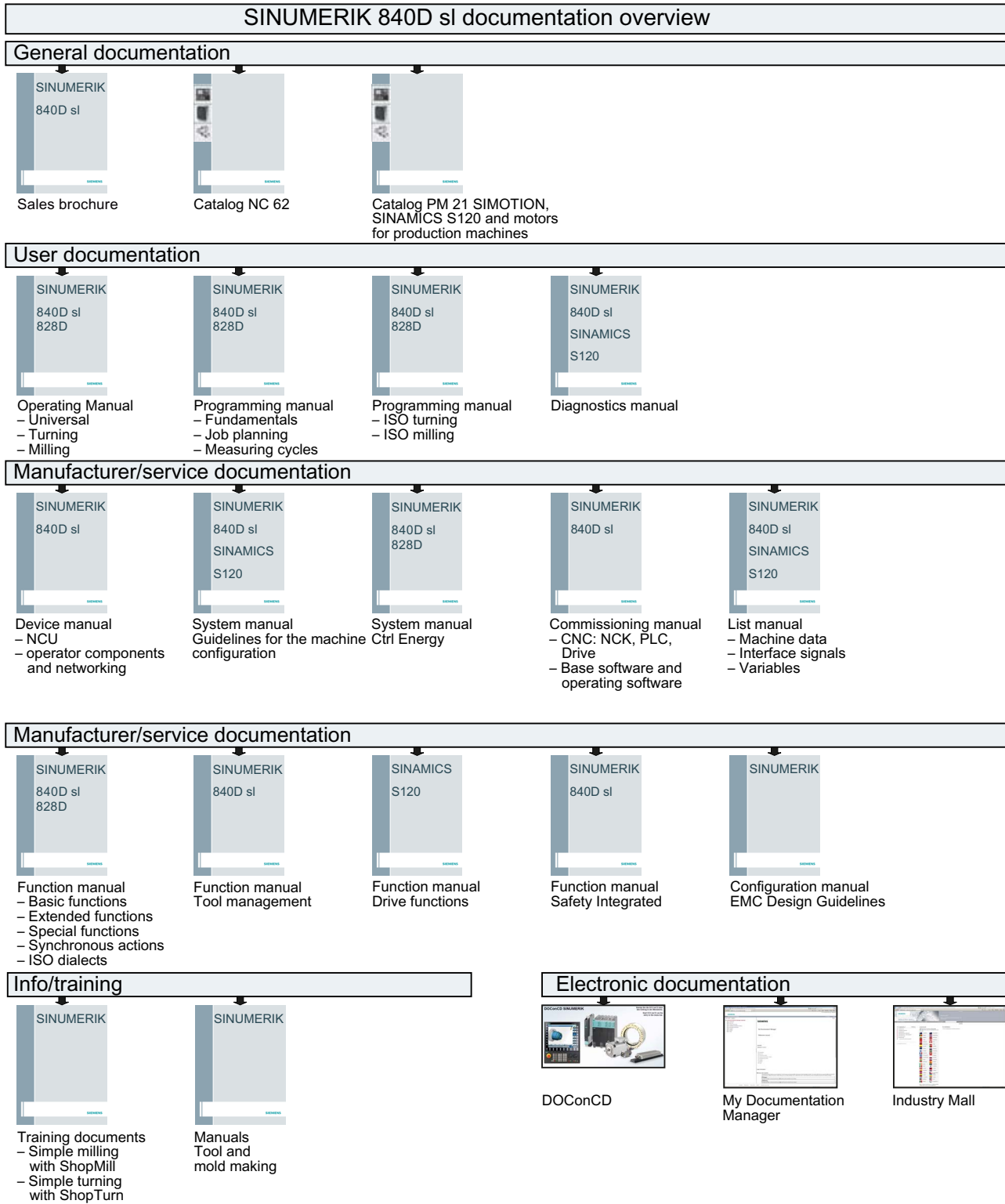
A.3 List of abbreviations

|            |   |
|------------|---|
| MSDE       | Microsoft Data Engine   |
| MSI        | Microsoft Software Installation   |
| MSTT       | Machine control panel   |
| NC         | Numerical Control: Numerical control  |
| NCK        | Numerical Control Kernel: Numerical kernel with block preparation                     |
| NCU        | Numerical Control Unit: NCK hardware unit   |
| OB         | Organization block in the PLC   |
| ODBC       | Open Database Connectivity  |
| OEM        | Original Equipment Manufacturer   |
| OLE        | Object Linking & Embedding  |
| OP         | Operation Panel: Operating device   |
| OPI        | Operation Panel Interface: Operator panel interface                                   |
| OPC        | OLE for Process Control   |
| PC         | Personal Computer   |
| PCMCIA     | Personal Computer Memory Card International Association (Memory card standardization) |
| PCU        | PC Unit: Computing unit   |
| PG         | Programming device  |
| PDA        | Production Data Acquisition: Production data acquisition                              |
| PLC        | Programmable Logic Control: Programmable memory control                               |
| PMT        | Parts Monitoring & Tracking: Part tracking  |
| PO         | POWER ON  |
| ProToolPro | Configuration tool  |
| PWS        | Personal Web Server   |
| SAT        | Satellite   |
| SK         | Softkey   |
| SEC        | Service Engineer Client   |
| SEG        | Tool Setting Station  |
| SMC        | Service Mode Client   |
| SW         | Software  |
| TDI        | Tool Data Information   |
| TC         | Teamcenter  |
| TLCA       | Tool Library CA: Tool catalog data  |
| TLCU       | Tool Library Customer: Customer tool catalog data                                     |
| TLCUA      | Tool Library Customer Assemblies: Complete tools                                      |
| WCS        | Workpiece Coordinate System   |
| T          | Tool  |
| TLC        | Tool Length Compensation  |
| WOP        | Workshop-Oriented Programming   |
| WPD        | WorkPiece Directory: Workpiece directory  |
| TRC        | Tool Radius Compensation  |
| T          | Tool  |
| TO         | Tool Offset   |

---

|     |                            |
|-----|----------------------------|
| TM  | Tool Management            |
| TC  | Tool Change                |
| XML | Extensible Markup Language |

## A.4 840D sl documentation overview



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