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This chapter covers the configuration steps for repetitive manufacturing (REM). These steps include creating a repetitive manufacturing profile, setting scheduling parameters for a run schedule quantity (planned orders), and selecting backflush settings for use online or in the background.

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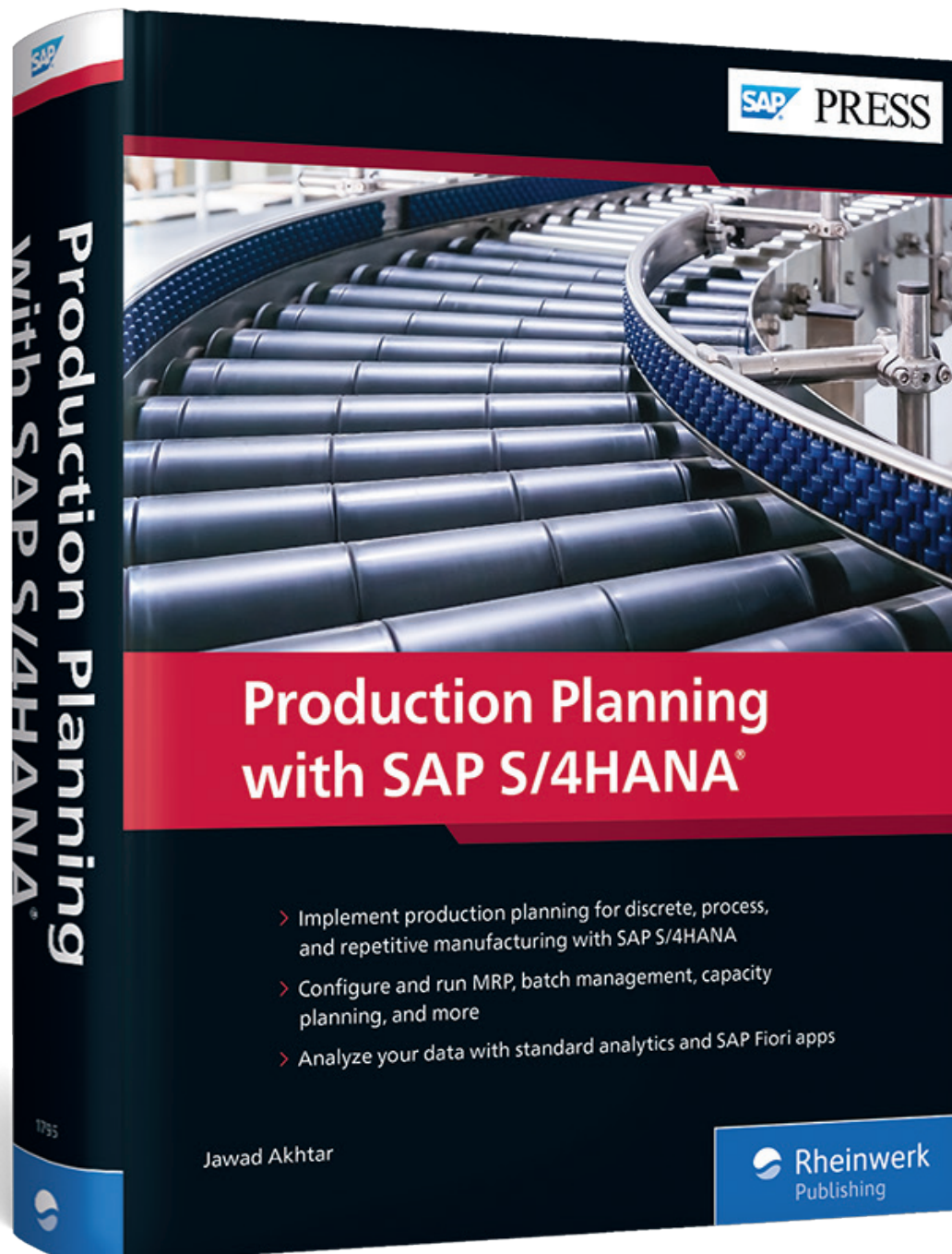
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Chapter 5

Repetitive Manufacturing Configuration

Configuration steps in repetitive manufacturing include creating a repetitive manufacturing profile, setting scheduling parameters for a run schedule quantity (planned orders), and selecting backflush settings for use online or in the background.

The configuration steps in repetitive manufacturing (REM) are relatively straightforward, without many complexities when compared to discrete manufacturing or process manufacturing types. In fact, the very purpose of REM is to enable lean manufacturing in actual business scenarios with correspondingly fewer entries in the SAP S/4HANA system. REM may not be able to manage complex manufacturing processes, but it can be used to bring about significant process optimization with a decreased data entry workload and improved system performance.

This chapter begins by explaining how to set up the REM profile using the REM assistant. The assistant guides the user with a step-by-step approach to ensure that the correct settings are made during the REM profile creation stage. The assistant also provides the detailed function of each configuration step and gives recommendations where necessary. You can even choose the desired production method, such as make-to-stock (MTS) or make-to-order (MTO). We deliberately took the long route to REM profile creation by using the assistant because we wanted to focus on explaining every available option in detail and with business examples.

At the end of REM profile creation by using the assistant, we explain the “normal” or the prevalent method of creating an REM profile with a single screen (and multiple tabs). Here, we also explain the options that aren’t available in the REM profile assistant. If you’re configuring an REM profile for the first time, we suggest that you use the REM profile assistant. If you’re already familiar with the REM profile and the functionalities it offers, then you can directly proceed to using the single-screen REM profile creation option.

We cover scheduling REM planned orders and running schedule quantity and then proceed to discuss the layout and display settings available on various screens in REM processing. You'll get to see the effects of the REM configuration in Chapter 8, in which we cover the production planning for REM in detail. Finally, we also cover the settings available to optimize day-to-day business transactions, such as backflushing.



Note

Refer to Chapter 1 for features comparison among discrete manufacturing, process manufacturing, and REM, as well as how to decide which manufacturing type is most relevant for a given industry.

Let's get started.

5.1 Repetitive Manufacturing Profile

The REM profile enables you to control several important functions that form the basis of regular or periodic data recording in the system. This includes the options to post activities online or at a later date, automatic goods movements of all or some of the materials, and stock and/or automatic batch determination, among others. To create an REM profile using the REM profile assistant, follow the SAP configuration menu path, **SAP IMG • Logistics • Production • Repetitive Manufacturing • Control • Create Repetitive Manufacturing Profile Using Assistant**, or use Transaction OSPT.

In the following sections, we'll explain the steps involved in setting up an REM profile.

5.1.1 Repetitive Manufacturing Production Type

While creating an REM profile, you can decide whether you want to use the profile for the MTO or MTS production method.



Note

Chapter 11 covers MTO and MTS production methods.

Depending on the option you select, the system correspondingly displays the relevant screens and options to choose from. If you choose MTO production, you create

a profile suited to REM that references the sales order. If you choose MTS production, you create a profile suited to REM that doesn't reference the sales order.

You can also use an REM profile template to copy previously created and available REM profiles to create a new REM profile. This step copies all the settings of the REM template profile into the new REM profile, and you can then make the desired changes where needed.

Tips & Tricks

Choose the **Meaning** icon available on each screen of the REM profile creation to get information on the underlying concept of that functionality or area.

Choose the **Recommendation** icon available in each screen of the REM profile creation to see system advice on recommended settings.

For this example, we'll create an REM profile for an MTS production method. Figure 5.1 shows the initial screen to create an REM profile using the assistant. For this example, select the **Make-to-stock - REM** radio button, and then choose **Next**.

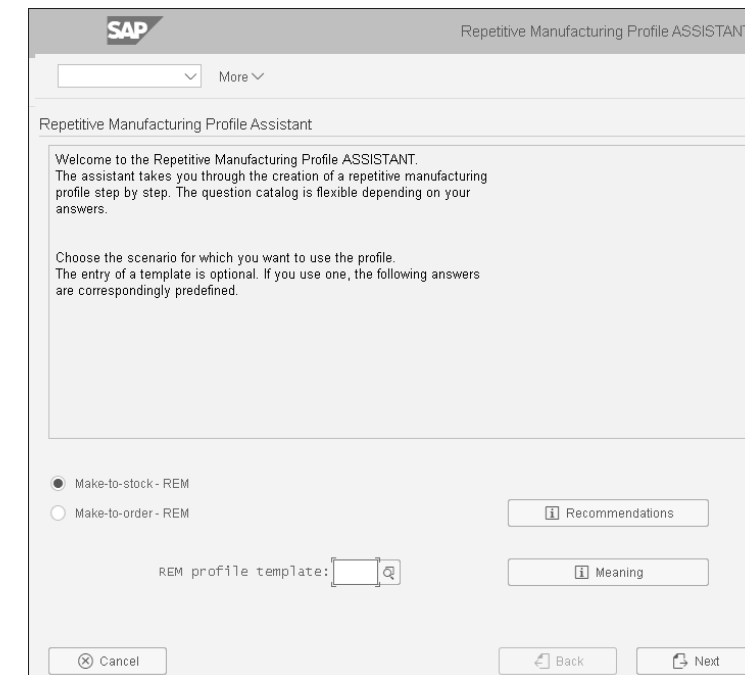


Figure 5.1 Initial Screen of the Repetitive Manufacturing Profile Assistant

5.1.2 Reporting Points

A *reporting point* (RP) enables the system to record consumption or other details, such as identifying the work in process (WIP) and better stock visibility in inventory management (IM), which are specific to actual information in time and equally helpful in reporting. As shown in Figure 5.2, you can select whether you want the system to include no RPs or make the RP mandatory or optional. The RP serves the same purpose as a milestone does in routing for discrete manufacturing. If you select the **Mandatory reporting points** option, then you have to define an RP at the time of assembly or component backflush.

Figure 5.2 Reporting Points

You can use RPs in one of the following situations:

- If you use *mandatory* RPs, then you must backflush at every RP. It makes sense to backflush at RPs if the goods issue (GI) is to be posted as close as possible to the actual issuance of the materials or if WIP is to be calculated.
- If you use *optional* RPs, you can carry out the normal final backflush, and then use RP backflush only in certain situations. At optional RPs, you can use the standard goods receipt (GR) posting procedures in REM for backflushing and then only backflush at RPs for special purposes, for example, when backflushing scrap or when calculating WIP. The optional RP makes sense when you usually don't have a need for an RP at all, but due to technical issues in the production line, you want to evaluate extra material issuance or extra scrap generation.

For this example, choose **Mandatory reporting points**, and then choose **Next**.

5.1.3 Automatic Goods Movements

The automatic goods movement option applies to RP backflush only. Without RPs, you can only post the GR on final confirmation. In Figure 5.3, you can choose whether

you want the system to perform automatic GR at the time of assembly backflush. When you record assembly backflush and confirm the yield, the system automatically performs the GR at the last RP.

Figure 5.3 Automatic GR

When using optional RPs, you choose the setting in automatic GR because you usually backflush the components along with the GR posting.

When using mandatory RPs, you can only backflush at RPs. The normal GR posting isn't available here. Therefore, for mandatory RPs, the recommendation is to define the last workplace on your production line as an RP with the automatic GR setting. If you set the automatic GR option, you have to post activities and GIs manually for operations that lie after the last RP. This is normally an exception to the preceding rule/recommendation.

For this example, choose **Automatic GR**, and then choose **Next**.

Note

While configuring the REM profile using the assistant, your system displays either the screen shown in the preceding figure or the screen shown in the following figure. This is dependent on the option you've previously selected while creating a REM profile.

5.1.4 Reporting Points Confirmation and Kanban

Depending on your system release, you can select whether you want to use RPs with or without Kanban, as shown in Figure 5.4. RP Kanban enables you to monitor the production process at the intermediate level by using Kanban for processing products in individual operations. The RPs record the confirmation that an operation has completed. For this example, choose **RP Confirmation w/o Kanban**, and then choose **Next**.

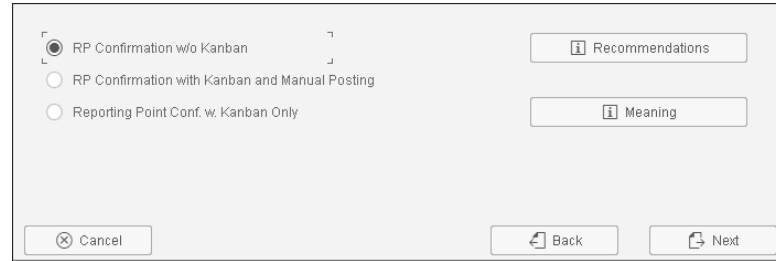


Figure 5.4 RP Confirmation for Kanban

5.1.5 Activities Posting

In the next screen, you can choose whether or not you want the system to also post the activities to a product cost collector at the time of assembly backflush by choosing the **Post activities** or **No activity posting** radio button. Activities may be machine hours, labor hours, or processing time, and they are defined in rate routing. If you follow the lean manufacturing approach, in which even the data entry effort is minimal, activities posting involves additional use of the system's resources, such as material calculation and price updates. Activities posting should only be considered if it's significant when compared with cost. We suggest that you engage a product cost controlling (CO-PC) resource to help with the decision-making process on activities posting.

If you instruct the system to post production activities, it calculates these activities either on the basis of details from the standard cost estimate or from preliminary costing in the cost collector for material. Additionally, the system posts the activities during the confirmation process. For this example, choose **Post activities**, and then choose **Next**.

5.1.6 Separated Backflush

You can choose whether you want the system to perform separated backflushes or not by selecting the **Separated backflush** or **No separated backflush** radio button. This option is primarily used to improve a system's performance, especially if it gets slow due to a large number of confirmations. With separated backflush, you can uncouple certain aspects of backflushing during the confirmation process by scheduling them as separate background jobs offline.

You use the separated backflush in the following cases, for example:

- To improve system performance
- If you're dealing with large bills of materials (BOMs)
- For sales orders with many schedule lines for small quantities

For this example, choose **Separated backflush**, and then choose **Next**.

If you choose **No separated backflush**, then Figure 5.5 will appear wherein you can choose whether you want the system to simultaneously post GR and GI in the same transaction of assembly confirmation. In REM, the final confirmation also encompasses GR. You can choose whether you also want to post GI during the confirmation process. If you choose the **Post GR only** option, you can post the GIs for the components collectively, for example, using the GI transaction in REM.

For this example, choose **Post GR and GI** in the assembly confirmation.

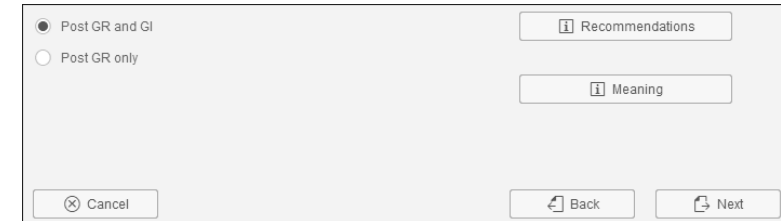


Figure 5.5 Automatic GR and GI

5.1.7 Process Control

In Figure 5.6, you can choose when GI and calculation of costs are performed and whether GI and calculation of costs are aggregated during confirmation. While you have the option to let the system perform several steps/functions together, you can use the **Process control** option to customize the process according to your business needs. You can click on the **Customizing** button on this screen to make the necessary changes. However, we cover the customization of process controls later in Section 5.5.



Figure 5.6 Process Control in Backflushing

It's important to note that you'll only get this option if you chose **Separated backflush** in the previous step. In that case, you have to define the process control for this separated backflush, and there are four options available to maintain.

For this example, enter the **Process control** "SAP1", and choose **Next**.

5.1.8 Firming Planned Orders

It makes sense to firm the planned orders when you create them in the REM planning table because a firmed planned order won't change during the material requirements planning (MRP) run. You also have the options to not firm the planned order at the time of its creation and to firm planned orders in the planning time fence only.

For this example, choose **Firm planned orders in plng time fence**, and then choose **Next** (Figure 5.7).

Figure 5.7 Firming Planned Orders in REM

5.1.9 Automatic Stock Determination

You can choose to take advantage of the system performing the automatic stock determination at the time of component or assembly backflush by selecting the **Use stock determination** radio button. The prerequisite is that you've already set up the automatic stock determination procedure in the system. Stock determination enables the system to suggest available stock for consumption based on the defined criteria.

For this example, choose **Do not use stock determination**, and then choose **Next**.

5.1.10 Batch Determination Procedure

Similar to the previous automatic stock determination procedure, you can also choose whether or not the system should perform the batch determination procedure in REM by selecting **Separate batch search procedure** or **No separate batch**

search proc. The material, in this case, must be batch-managed to use this functionality. Batch determination enables the system to suggest available batches for consumption based on the defined criteria. For this example, choose **No separate batch search proc.**, and then choose **Next**.

Note

Batch determination is covered in Chapter 9.

5.1.11 Reduction in Planned Order Quantities

In the screen shown in Figure 5.8, you can choose whether you want the system to reduce the production quantities in the planned order or in the run schedule quantity (RSQ) when you perform assembly confirmation of a material. You can also choose whether you want the system to reduce the planned order quantity only if it pertains to a specific production version. As each production version reflects a production line, this option enables you to reduce planned order quantities as soon as the goods on the production line (in direct relation to the production version) are produced.

For this example, choose **All**, which causes the system to reduce planned order quantities in all cases. Choose **Next**.

Figure 5.8 Reduction in Planned Order Quantities

5.1.12 Reduction Period

In the screen shown in Figure 5.9, you can choose the period in days during which the system should reduce the planned order quantities. The system considers the reduction period from today and expands to consider the defined dates in the future. For example, if you're consistently faced with overproduction and want to

avoid additional production for the defined days in the future, then you can enter the reduction period here. In addition, note that the system reduces the planned order quantities dates of the past in any case and accords them higher priority than the current date or future dates.

For this example, enter “3” in the **Reduction period** field, and then choose **Next**.

The screenshot shows a configuration screen for 'Reduction period for Planned Orders'. At the top left, there is a label 'Reduction period:' followed by a text input field containing the number '3'. To the right of this field are two buttons: 'Recommendations' and 'Meaning'. Below these are three buttons: 'Cancel' (with a close icon), 'Back' (with a left arrow icon), and 'Next' (with a right arrow icon).

Figure 5.9 Reduction Period for Planned Orders

5.1.13 Create New Planned Orders on Goods Receipts Reversals

In the screen shown in Figure 5.10, you can choose whether the system should automatically create planned orders for reversed quantities. If you choose not to, then the system automatically creates planned orders during the MRP run if necessary. For this example, choose **No planned order creation**, and then choose **Next**.

The screenshot shows a configuration screen for 'Planned Order Creation on GR Reversals'. It features three radio button options: 'No planned order creation' (which is selected), 'Create plnd orders for reversed GR qty', and 'Create planned orders with asynch. MRP'. To the right of these options are two buttons: 'Recommendations' and 'Meaning'. At the bottom are three buttons: 'Cancel' (with a close icon), 'Back' (with a left arrow icon), and 'Next' (with a right arrow icon).

Figure 5.10 Planned Order Creation on GR Reversals

5.1.14 Online Error Correction

You can choose how the system processes errors encountered during transaction postings, such as a failed component backflush due to a mismatch in IM. Other types

of errors may include an insufficient quantity of a component’s stock in a component backflush, a missing storage location for GI or GR, and so on. If you opt for **No online correction** or **Optional online correction**, you can use a separate transaction to attend errors separately, provided that reprocessing records are created (see the next step). You can also choose **Online correction mandatory**. For this example, choose **Optional online correction**, and then choose **Next**.

5.1.15 Reprocessing Errors Log Maintenance

During automatic goods movement processing, such as backflushing, sometimes the processing isn’t successful due to insufficient stock, an incorrect storage location, or missing or nonupdated rates for activity types. All such unsuccessful records end up in errors log maintenance for reprocessing and to note that they haven’t been resolved yet.

In the screen shown in Figure 5.11, you can choose how the system should manage all reprocessing records of all items that caused the errors. The available options are that the system won’t maintain any reprocessing record, the system will maintain collective reprocessing records, or the system will maintain individual and collective reprocessing records of errors. For this example, choose **Indiv.and cumul. reprocessing records**, and then choose **Next**.

The screenshot shows a configuration screen for 'Reprocessing Incorrect Records'. It features three radio button options: 'No reprocessing records', 'Cumulated reprocessing records', and 'Indiv.and cumul. reprocessing records' (which is selected). To the right of these options are two buttons: 'Recommendations' and 'Meaning'. At the bottom are three buttons: 'Cancel' (with a close icon), 'Back' (with a left arrow icon), and 'Next' (with a right arrow icon).

Figure 5.11 Reprocessing Incorrect Records

5.1.16 Movement Types for Stock Postings

On the next screen (Figure 5.12), the system provides standard movement types that the system uses to perform various IM transactions. For example, for GI against an REM planned order, the movement type is **261**, and its reversal is reflected in movement type **262**.

Figure 5.12 Movement Types for MTS Production

If you have any customized movement type to record an inventory transaction, you can enter it on this screen. The prerequisite for using a customized movement type is that you’ve maintained it in the system previously and then assign it on this screen. Choose **Next**.

5.1.17 Naming the Repetitive Manufacturing Profile

You’ll now see the last screen of the REM profile creation process using the assistant. In this screen, enter the **REM profile** “PP10”, and give it a short description. You can go back and make changes to any of the settings you’ve made so far.

5.1.18 Summary of Repetitive Manufacturing Profile Settings

Figure 5.13 shows the overview/summary screen of the REM profile PP10. Choose **Continue**, and then save. Scroll down to review the remaining options that you configured for the REM profile in the previous screens.

After you’ve created the REM profile, you can’t use the same transaction to make changes to it because it’s only for the creation of the REM profile. At the same time, when you become familiar with the REM profile, you can proceed to directly create it without using the REM profile assistant. This saves time and effort because all of the selection options are available on one screen and in different tabs.

Parameter	New Value	Description of New Value
REM profile	PP10	PP REM in S/4HANA
Activities	2	Post activities
Costing	1	Using preliminary cost estimate for product cost collector
Backlogs	3	As 2, plus create individual postprocessing records
Error correct.	2	Optional online correction
Reduc.prod.qts	3	Other alternatively assigned plnd orders incl. strategy 2
Reduct.period	3	
Planned Orders		No planned order creation
Reporting point	1	Backflushing with reporting points (milestone logic)
Automatic GR	1	Automatic GR during backflush for the last reporting point
Post GR and GI	1	GR and GI
Firming logic	1	Always firm
Total reqmts		No totaling of dependent requirements
W/o Phant. Assys		
Process control	SAP1	Aggregate goods issue and work per job
Stk determ.rule		
Search proced.		
Goods issue	261	
GI/reversal	262	

Figure 5.13 Overview of the REM Profile after All Settings Are Made

To make changes or to update any field in the already-created REM profile, follow the SAP configuration (Transaction SPRO) menu path, **Production • Repetitive Manufacturing • Control • Define Repetitive Manufacturing Profiles**, or use Transaction OSP2. Here, you can make changes to **REM Profile PP10**. For this example, scroll down and choose **Backflush using standard cost estimate for material** (not shown), and then save the REM profile (see Figure 5.14).

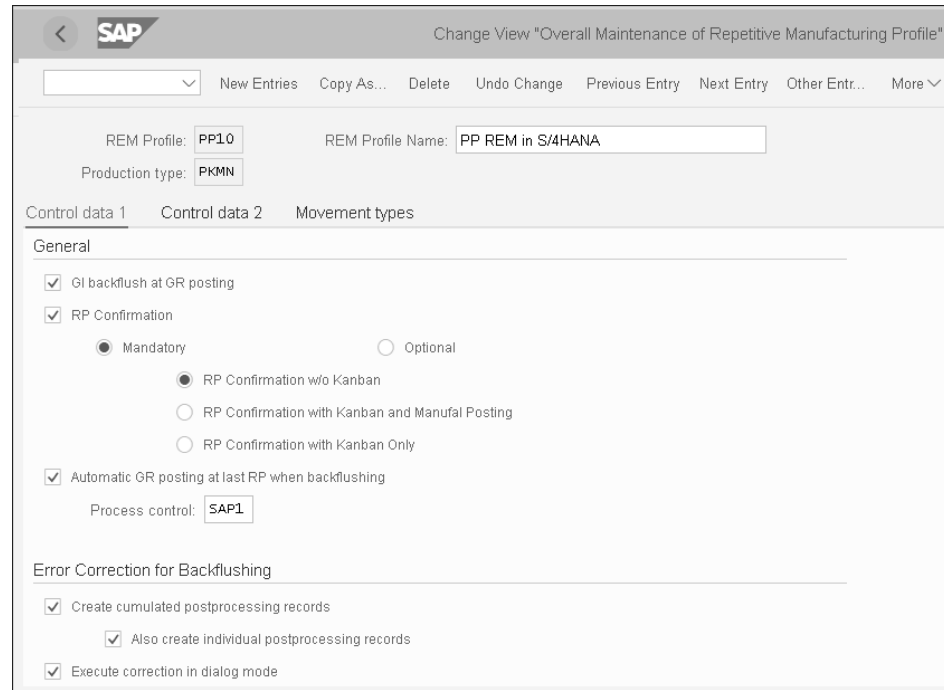


Figure 5.14 Overall Maintenance of the REM Profile

5.2 Scheduling Planned Orders

The next basic configuration topic we’ll discuss is scheduling planned orders. As in the discrete manufacturing or process manufacturing types, you can take advantage of the available scheduling options. You can set scheduling parameters for planned orders in REM by following the configuration menu path, **SAP IMG • Production • Repetitive Manufacturing • Planning • Define Scheduling Parameters for Planned Orders**. The initial screen appears for maintaining the scheduling parameters for a planned order. Because the order type for the REM planned order is “PE”, enter **Plant “1000”** and **Order Type “PE”**, and double-click the **Plant** field (1000). It’s important to note here that the **Order Type “PE”** is identical to the RSQ.

After this selection, choose the **Detail** icon. This takes you to the detailed screen to set scheduling parameters for the REM planned order of **Order Type PE** and **Plant 1000** (see Figure 5.15).

Because REM uses rate-based scheduling, select both the **Scheduling** and **Generate Capacity Reqs.** checkboxes. At the same time, if your organization decides to use detailed scheduling for all non-REM applications, you can select the relevant scheduling and capacity requirements checkboxes to meet the business need.

You can also select the **Scheduling Type**, which, for this example, is **Forwards**. You can also choose from **Backward Scheduling** and **Current Date** as scheduling types. Refer to Chapter 3 in which we cover scheduling in detail. Although the details covered in Chapter 3 are applicable to scheduling production orders, the same equally applies to planned orders.

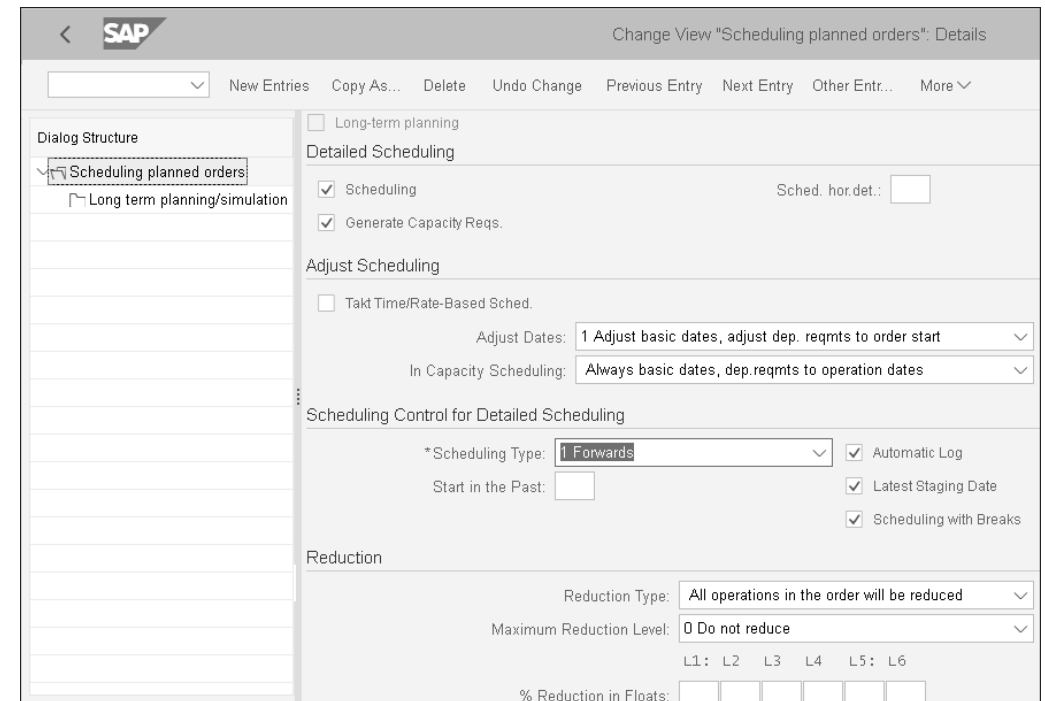


Figure 5.15 Detailed Screen of Scheduling Parameters for Planned Orders

5.3 Display

You have a few different options to control how different settings will appear in your system. The following sections cover two display options.

5.3.1 Entry Parameters for a Planning Table

You can choose how the display entry parameters of the REM planning table should look or how to present the requisite information. The settings you make in this section will eventually be available on the initial parameters selection screen of the REM planning table (Transaction MF50). To maintain or change the entry parameters of the planning table, follow configuration menu path **SAP IMG • Production • Repetitive Manufacturing • Planning Table • Maintain Entry Parameters** (see Figure 5.16).

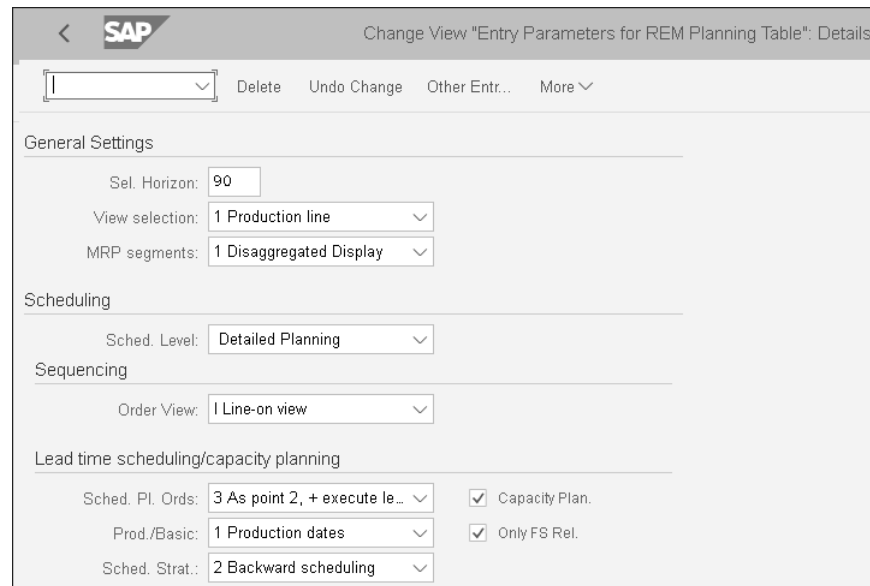


Figure 5.16 Entry Parameters of the REM Planning Table

You'll be able to see the impact of the preceding configuration on the parameters selection screen of the planning table (Transaction MF50), which we cover in Chapter 8.

5.3.2 Maintain Rows Selection

You can control the display of information within the planning table, including receipts, requirements, and stock situations. To configure rows selection in the planning table, follow the configuration menu path, **SAP IMG • Production • Repetitive Manufacturing • Planning Table • Maintain Rows Selection**. For this example, select all the checkboxes (see Figure 5.17); however, you should select only the checkboxes

relevant to your business needs to keep things lean when dealing with your company's unique situation.

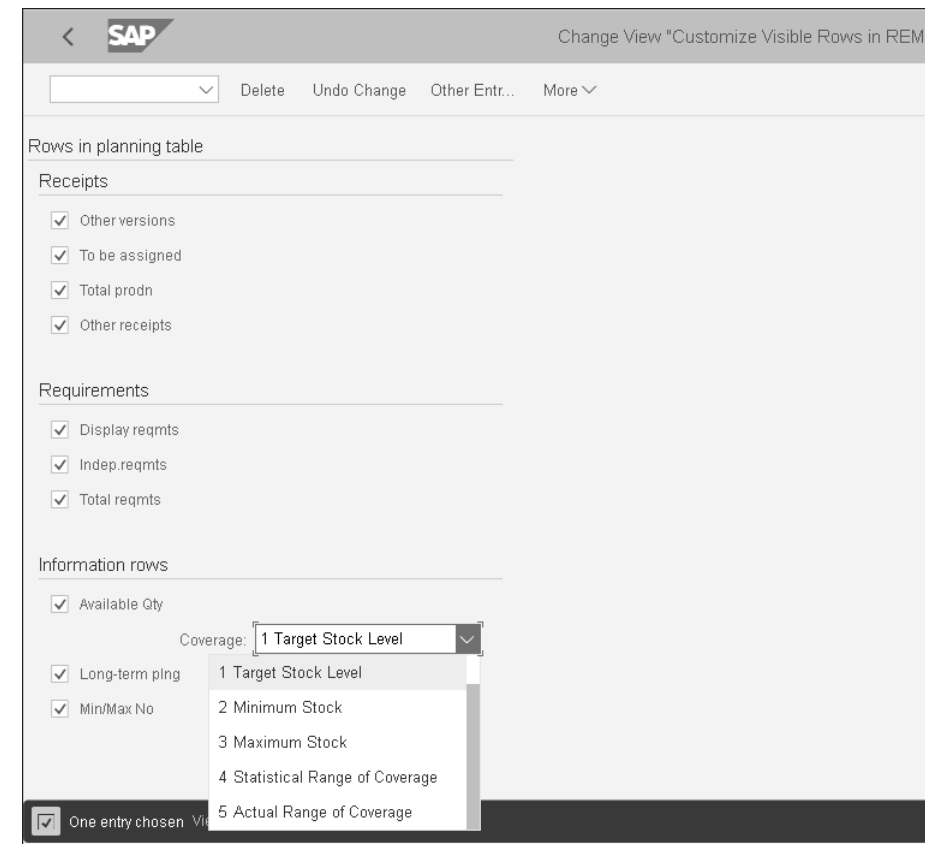


Figure 5.17 Visible Rows in the REM Planning Table

5.4 Material Staging

A *pull list* is basically a movement of stock (stock transfer) from storage location to storage location that uses inventory movement type 311. It's also known as *material staging*. You can also assign previously configured stock determination and batch search procedures on this screen. For the necessary settings, follow the configuration menu path, **SAP IMG • Production • Repetitive Manufacturing • Material Staging • Define Control Data for Pull List** (see Figure 5.18).

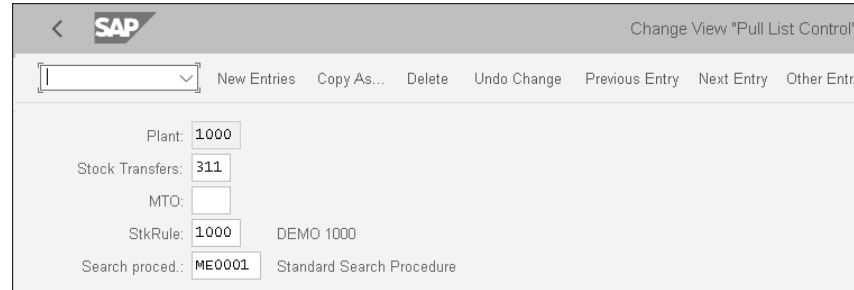


Figure 5.18 Pull List Control

5.5 Global Settings for Confirmation and the Logistics Information System

Some settings are maintained at the global level. This includes the period the system is to take into account when automatically updating statistics (logistics information system [LIS]) of the planning figures. It also includes the option allowing you to require the system to display the planned order number of the RSQ number during backflushing.

To configure the necessary settings, follow the configuration menu path, **SAP IMG • Production • Repetitive Manufacturing • Backflushing • Maintain Global Settings for Confirmation and LIS**. In the **Start: current date+** and **Finish: current date+** fields (see Figure 5.19), you can choose to start from the current date (the earliest) and give any number of future dates.

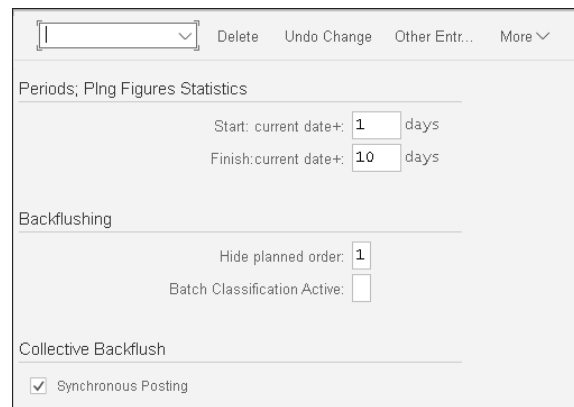


Figure 5.19 Field Selection Table in REM

When you maintain the process control for confirmation, you can control when the system should update the transactions, such as backflush or activities costs calculation. The system can update the information immediately and online by using an update program or later in a background program. It's therefore important to ensure that you select the process control when you're creating the REM profile.

In Figure 5.20, if you place the cursor in the **Backflush** field and press **[F4]**, the dropdown on the right side of the screen appears. From the dropdown, you can choose one of the three backflushing options available. To set the relevant parameters, use configuration menu path, **SAP IMG • Production • Repetitive Manufacturing • Backflushing • Separate Backflushing Processes • Define Confirmation Processes**.

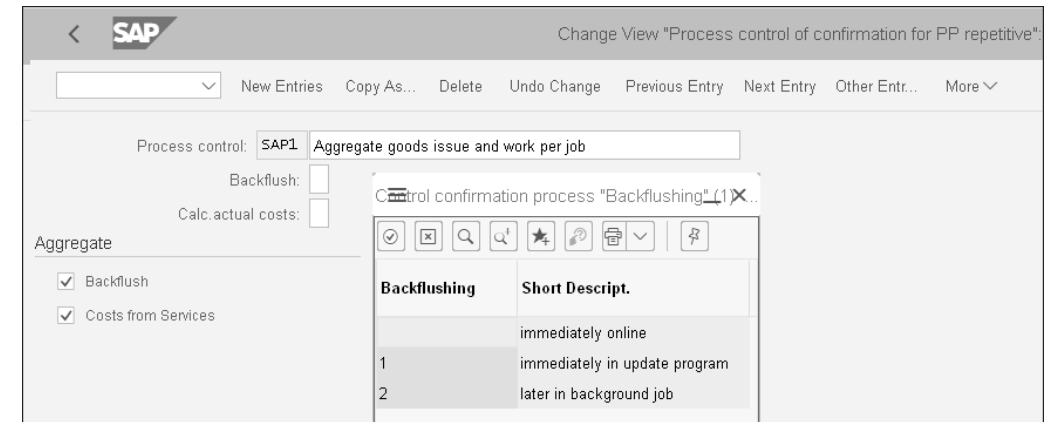


Figure 5.20 Process Control Confirmation Parameters

5.6 Operational Methods Sheet

The operational methods sheet (OMS) supports business tasks in the entire REM cycle. An OMS shows the production details that a plant operator needs to produce the goods. You can make several layout and configuration settings to customize the display layout of an OMS. For example, you can specifically select the desired fields from the work center, operation, component, production resources/tools (PRT) or Document Management System (DMS) that you want to appear in the OMS. You can separately customize the header and table (item) details.

To create an OMS, follow the configuration menu path, **SAP IMG • Production • Basic Data • Line Design • Operational Method Sheet**, or use Transaction OLDPS. In the

Table Assignments area shown in Figure 5.21, you can select **COMPONEN**, **MATERIAL**, **OPERATIO**, or **PRT**, for example, from the **Table ID** column. Next, you can use the **Assign fields** folder available on the left-hand side of the screen to choose the field that you want to display in the OMS.

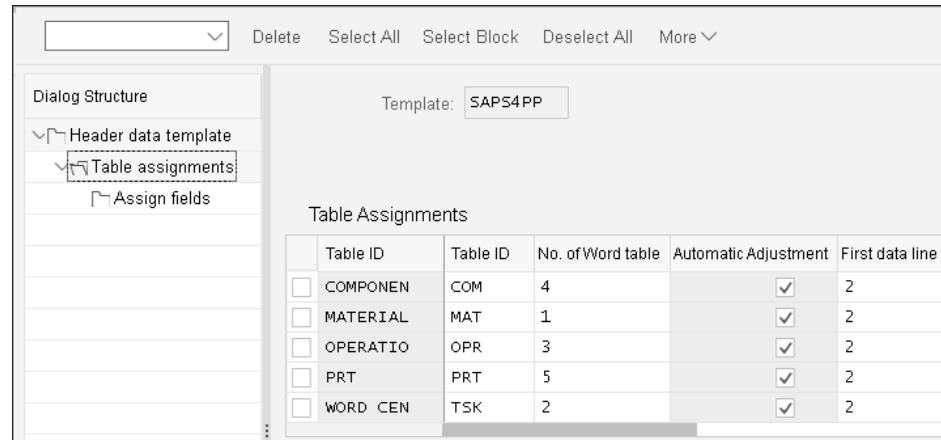


Figure 5.21 Operational Methods Sheet

In Chapter 8, we'll show how the settings you made here enable you to display (and print) the OMS in REM. You have to ensure that integration with Microsoft Word is in place as well. The prerequisite is to have at least Word for Windows 95 installed with macros enabled. The template file is placed within the SAP system, which the system refers to while creating the OMS.

5.7 Summary

The REM profile is the main configuration activity, and it controls the various functions that you can perform in REM. You assign the configured REM profile in the material master. You can configure the scheduling parameters of RSQs as well as alter the display layout of the planning table. You can control when the system performs automated functions, such as backflush, either online or in the background.

In the next chapter, we'll cover the business processes associated with discrete manufacturing in the SAP S/4HANA system. The chapter will build upon the configuration concepts and understanding you developed in Chapter 3.

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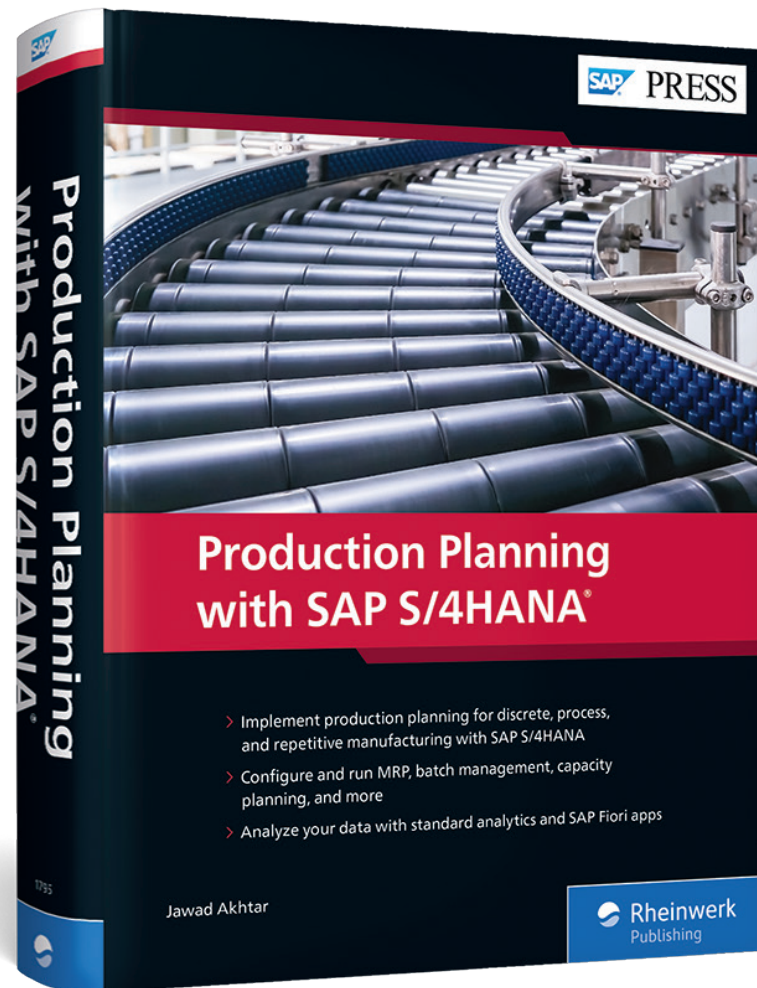
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