



**IFTS**  
**International Flight**  
**Training School**  
Italian excellence in flight.



AERONAUTICA MILITARE

Powered by

**LEONARDO**

In collaboration with

**CAE**

# EXPERIENCE, EXCELLENCE, AFFORDABILITY

The Italian Air Force's world-renowned excellence in flight training along with Leonardo and CAE's leadership in delivering proven integrated training solutions, came together to create the **International Flight Training School (IFTS)**.

Located in Decimomannu Air Base (Sardinia), the IFTS is set to become the **international benchmark for advanced pilot training**, starting with **Phase IV** (Advanced/Lead-In Fighter Training). The Italian Air Force (ItAF) developed and offers in IFTS the world's only comprehensive Lead-In Fighter Training (LIFT) syllabus, leveraging on the capabilities of the M-346 Integrated Training System. It delivers tactical training that emphasizes the higher systems management proficiency required by intense data processing of 4th and 5th generation fighters, enabling higher situational awareness and skills' proficiency.

The **Italian Air Force (ItAF)** brings to the IFTS its **longstanding expertise**, while Leonardo brings its **proven M-346 advanced jet trainer** and, in collaboration with CAE, a state-of-the-art **Ground Based Training System (GBTS)**.

The IFTS offers **customised teaching modules**, compliant with the syllabus of partner air forces, including its basic training, to support the student pilot in achieving the desired proficiency and output standard, thus further enabling the **download of training from the Operational Conversion Unit (OCU)** to save time and valuable resources, while delivering better-prepared and safer pilots.



# IFTS ADDED VALUE

- International instructor pilots selected by **ItAF** (Experienced ItAF fighter pilots as well as multi-national former military pilots)
- **“Train As You Fight”** imprinted on the training program by ItAF thanks to the large ranging experience acquired in decades of training national and international combat pilots
- Stringent pilot qualification process to achieve the highest levels of training required to master every **4th-5th generation fighter aircraft**
- **The M-346 Integrated Training System (ITS)** including:
  - The **M-346 advanced trainer aircraft**
  - On-board **Embedded Tactical Training System (ETTS)** suite for the highest teaching effectiveness
  - An advanced **Ground Based Training System (GBTS)** by Leonardo and CAE with full state-of-art training devices, including Full Mission Simulators and Leonardo's proven and innovative **Live, Virtual, Constructive (LVC) environment** for maximum effectiveness and reduce costs
  - **CAE Medallion MR e-Series Visual System** 360-degree dome display delivering the industry's most immersive fast-jet training environment
- Highly modern **dedicated infrastructures** to guarantee students top level facilities
- Full 24/7 on-site operational support for aircraft and simulators
- Dual runway air base, live range, large and diversified training air spaces, ideal for every fighter training scenario, predictable weather
- Dedicated brand-new “Air Training Campus” tailored around student's needs
- Standardisation according to international recognised models
- International context, with unique opportunities for cultural exchanges
- Competitive cost effectiveness vs other western schools

|           |                                     |
|-----------|-------------------------------------|
| <b>80</b> | <b>Trainees per year (Phase IV)</b> |
| <b>22</b> | <b>M-346 AJT</b>                    |
| <b>40</b> | <b>Instructor Pilots</b>            |



# IFTS TRAINING MODULES OFFER

The IFTS delivers a comprehensive training package and offers tailored modules to meet the specific needs of partner air forces. This is achieved by a detailed analysis of the training program of the relevant air force, including earlier phases of training.

Each training module follows the ItAF syllabus, using a balance of synthetic training hours to complement and inter-operate with live flying

hours. Each option is priced individually and partner air forces can select modules to fit operational requirements and budget profiles.

Due to the modern M-346 aircraft, state-of-the-art GBTS, and innovative LVC capability, in the common modules IFTS delivers a far higher capability than other international military training academies do, while offering also a wide range of unique training contents.



## 6 PACKAGE OPTIONS AVAILABLE ON END USER NEEDS

|             | M-346 QUAL | A2A | A2G | ADV A2A | NVG      | AAR      | A2G RANGE |
|-------------|------------|-----|-----|---------|----------|----------|-----------|
| 1           | ✓          | ✓   |     |         | optional | optional | optional  |
| 2           | ✓          |     | ✓   |         | optional | optional | optional  |
| 3           | ✓          | ✓   |     | ✓       | optional | optional | optional  |
| 4           | ✓          | ✓   | ✓   |         | optional | optional | optional  |
| 5           | ✓          | ✓   | ✓   | ✓       | optional | optional | optional  |
| FULL course | ✓          | ✓   | ✓   | ✓       | ✓        | ✓        | ✓         |

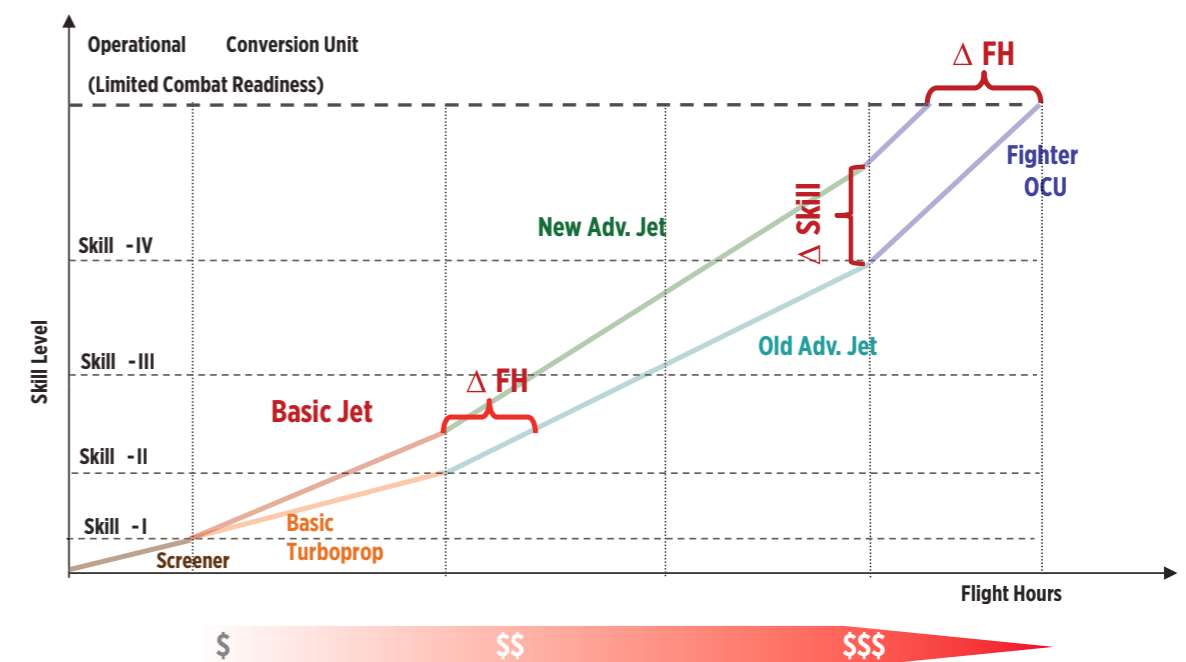
- M-346 Qualification
- Air-to-Air (A2A)
- Air-to-Ground (A2G)
- Advanced Air-to-Air (A2A)
- Emergency Recurrent Training
- Night Vision Goggles (NVG)
- Air-to-Air Refuelling (AAR)
- Air-to-Ground Live Range (A2G)

# THE DOWNLOAD CONCEPT

The M-346 with its associated state-of-the-art GBTS, has been specifically designed to improve the teaching effectiveness during the advanced and LIFT phases of training, enabling considerable transfer of flight hours and associated advanced training tasks from the Operational Conversion Unit (OCU) on the more expensive front-line fighters, to provide the best possible balance

between high training effectiveness and lower life-cycle cost.

With the outstanding M-346 performance, advanced avionics, and full suite of embedded simulation, the Phase IV syllabus used by IFTS brings the trainee to a level of airmanship and skills not achievable with any other training system.



# INTEGRATED TRAINING SYSTEM (ITS)

The right solution for the training needs of an air force.  
The optimal balance of real aircraft and appropriate simulation reduces costs while increasing pilots' advanced skills.



## THEORY

ELECTRONIC CLASSROOM  
COMPUTER BASED TRAINING (CBT)

PROCEDURAL DEVICES  
SIMULATION BASED TRAINING (SBT)



## HANDLING

UNIT LEVEL TRAINING DEVICE (ULTD)

FLIGHT TRAINING DEVICE  
PART TASK TRAINER (PTT)

FULL MISSION SIMULATOR (FMS)

REAL TIME MONITORING STATION (RTMS)



## MISSION TRAINING MANAGEMENT

INSTRUCTOR OPERATING STATION (IOS)

MISSION PLANNING AND  
DEBRIEFING STATION (MPDS)

TRAINING MANAGEMENT  
INFORMATION SYSTEM (TMIS)

# FLIGHT EXECUTION



# M-346 ADVANCED JET TRAINER

The Leonardo **M-346** is a twin-engine, tandem-seat next generation advanced jet trainer, designed to allow student pilots to develop knowledge, skills and practices needed for effective exploitation of modern combat aircraft.

## COCKPIT & AVIONICS

- Excellent visibility from both seats
- Latest generation Human-Machine Interface (HMI) with:
  - Three liquid crystal Multi-Function Displays (MFD) per each cockpit
  - Two independent raster/stroke type Head-Up Displays (HUD)
  - Up-Front Control Panel (UFCP)
  - Digital moving map
  - Hands On Throttle And Stick (HOTAS) controls
  - Integrated Helmet Mounted Display (HMD) system
  - Night Vision Goggles (NVG) full compatibility
  - Get Home Display (GHD), for backup flight data
  - Autonomous navigation based on Embedded GPS/INS Radar-altimeter (EGIR)
  - Radio-aided navigation based on TACAN and VOR/ILS/MB
  - Two independent V/UHF transceivers



## EMBEDDED TACTICAL TRAINING SYSTEM

Key feature of the M-346, the comprehensive in-flight ETTS suite enables the aircraft to offer the whole spectrum of simulated training functions in flight and provides both students and instructors with the following on-board simulations:

- A tactical scenario (digital map with threats and targets)
- Presence of realistic Computer Generated Forces (friend and foe)
- On-board sensors (such as multimode Fire Control Radar, targeting pod and active/passive electronic countermeasures)
- Weapons, including specific symbology and delivery parameters
- Live, Virtual, Constructive environment

ETTS functions can support Stand Alone (flying a single-ship mission) or Multi-Ship networked operations, with aircraft and simulators being networked via a dedicated Training Datalink to exchange Tactical Scenario data with other participants.

## SAFETY

- Digital four channel Fly-By-Wire Flight Control System with carefree handling
- Hydraulic and electrical redundancy
- In-Flight safety features:
  - Ground Proximity Warning System (GPWS)
  - Pilot Activated Attitude Recovery System (PARS)
  - Mid-Air Collision Avoidance System (MIDCAS)

## CABIN

- Two Martin Baker Mk.IT16D “zero-zero” ejection seats
- On-Board Oxygen Generator System (OBOGS)
- Environmental Control System (ECS)

## ENGINES & FUEL SYSTEM

- Two interchangeable modular dry turbofan engines equipped with FADEC
- An Auxiliary Power Unit (APU) to provide autonomous engine starting
- 2,500 L internal fuel and three external fuel tanks (630 L each)
- Single point pressure refueling system



## LIVE, VIRTUAL, CONSTRUCTIVE (LVC)

The advanced integrated LVC system, incorporating Leonardo's advanced jet training aircraft and CAE's state-of-the-art simulation are both proven and operational with the Italian Air Force.

The LVC system allows student pilots to perform real time joint missions in complex training scenarios, involving:

- Real aircraft with pilots on board (Live)
- Simulators with real pilots at the controls (Virtual)
- Computer Generated Forces (CGF) i.e. virtual entities, such as other aircraft – including virtual wingman – naval units or ground forces (Constructive).

Furthermore, since 2018, the system has been linked to front line fighter aircraft simulators as proven during international exercises.

True “system of systems”, the LVC exploits the on-board ETTS and the datalink, both able to integrate within a so-called “airborne network” to share all the tactical scenario and data (CGF, weapons etc.) between pilots on real aircraft and simulators. The RTMS manages the joint mission in real time.

LVC scenarios offer a high level of tactical realism and training effectiveness, allowing for the reduction in the number of flight missions required with major cost savings.



## CAE Medallion MR e-series visual system

This cutting-edge integrated visual solution is designed specifically for the safe and efficient training of fast jet pilots.

The CAE Medallion MR e-Series includes a back-projection 360-degree dome display system, industry-leading CAE Medallion image generators and state-of-the-art projectors, all integrated to create an immersive fast-jet virtual training environment.

New and innovative features of the CAE Medallion MR e-Series include:

- E-Collimation so scene objects are always crisp at the right position
- 3D viewing for improved depth and relative speed perception
- Optimized Night Vision Goggle (NVG) mode.

Total immersion in typical fast jet training scenarios means the CAE Medallion MR e-Series provides a safe, immersive and incredibly realistic virtual environment to prepare fast jet pilots for actual missions.

## FUTURE DEVELOPMENTS

**Expanding IFTS** concept to all the phases of flight training (ph 1, 2, 3) to include also multiengine and rotary wing platforms.

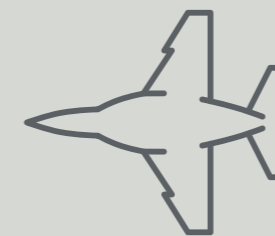
Implementing **Red Air Capability** thanks to fighter-like performance of the M-346 platform.



# RSSTA-DECIMOMANNU

## Air Force Base (CAGLIARI)

Exploiting IFTS capabilities thanks to wide dedicated working area in A/A and A/G scenario associated with dedicated ranges



**22**  
M-346 AJT



**40**  
Instructor Pilots



**80**  
Trainees per year

"It's the most modern advanced/lead-in fighter trainer in production, and it's the only new generation trainer equipped for this role. Its performance and flight qualities are excellent, similar to modern fourth- and fifth-generation fighters. Its design solutions are advanced and provide high levels of safety and lower training-cycle costs. It is suitable for every phase of advanced training, LIFT and 'companion trainer' for combat types, thanks to its ability to simulate a wide range of sensors and armament."

"The recent introduction of LVC – live, virtual and constructive – training allows missions to be data-linked between simulators and aircraft. The T-346A [as ItAF calls the M-346] 'downloads' training tasks from the more expensive firstline fighters. Its low maintenance costs and high efficiency make it an economically sound option for advanced training."

**Gen. Luigi Casali**

former Head of Training and Standardisation Office, Air Education and Training Command, Italian Air Force

"The synergy between aircraft, instructors and simulation that we have here at Galatina is unique in the world. The ITS allows us to explore new areas of training, with a considerable optimisation of resources."

"The arrival of the T-346A provided the Galatina school with a generation leap. Students arrive at their operational units better prepared."

"The internationalisation of the school provides a considerable degree of added value. Dealing with instructors from other cultures, other capabilities and different training and flying methods gives us an advantage."

**T. Col. Mauro M.**

former Commander of 212° Gruppo, 61° Stormo, Italian Air Force







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