

Alenia Aermacchi M-346

The M-346 is the most advanced/lead-In fighter trainer aircraft currently produced and the only new-generation trainer optimized for the role of training pilots who fly on latest-generation high-performance military planes. Thanks to its advanced technical design solutions and to the adoption of the latest “design-to-cost” and “design-to-maintain” concepts, the M-346 provides reduced acquisition and operational costs. Furthermore the reduced number of hours necessary for its maintenance make the aircraft excellent for cost-effectiveness.

The M-346 features innovative design solutions: it is an aircraft with full authority quadruplex Fly-by-Wire control system that, thanks to the optimization of the aerodynamic configuration, allows the aircraft to remain fully controllable at angles of attack of over 30 degrees. This, combined with the twin-engine configuration, the duplication and redundancy of the electric and hydraulic system, the choice of state-of-the-art equipment, make the M-346 the most modern pre-operational tactical training aircraft in the world.

The M-346 is equipped with a digital avionic system, fully modelled on those of latest-generation military aircraft such as Eurofighter, Gripen, Rafale, F-16, F-18, F-22 and the future F-35 and is well-suited for every phase of advanced and pre-operational training, enabling fewer required flight hours on the more expensive frontline aircraft.

The M-346's wide envelope, very high thrust/weight ratio and extreme manoeuvrability make it an aircraft capable of reproducing, for the student pilot, flight conditions similar to those he will find on the combat aircraft on which he will operate, thus maximizing the training effectiveness.

The M-346 also integrates the ETTS (Embedded Tactical Training Simulation) that has the ability to simulate a complete suite of sensors, countermeasures and armaments, and also to create a virtual tactical scenario, simulating air, naval and land forces, enemy or friend, interacting in real time with the aircraft during the training missions.

The M-346 is provided with hard points, allowing up to 3000 kg of external loads to be carried, and is characterized by the integration of the Helmet Mounted Display, vocal commands and in-flight refuelling probe. Thanks to the excellent performance, combined with the possibility to install Electronic Warfare System, Tactical Data Link, Multi-mode Radar and kit for the reduction of the radar signature, the M-346 reaches excellent levels of survivability and effectiveness when operating in hostile theatres.

Alenia Aermacchi's Integrated Training System (ITS) includes, together with the M-346, an exhaustive Ground Based Training System (GBTS), enabling the student pilot to learn and rehearse the entire aircraft syllabus and all training objectives on the ground, before replicating them in flight.

Alenia Aermacchi's GBTS includes the following: Academic Training System in classroom; flight simulators with different degrees of complexity (Simulation-Based Training; Flight Training Device and a Full Mission Simulator). Also available are a Mission Support System, central element of configuration and data distribution with the aircraft and GBTS, and a Training Management Information System, allowing a complex management of the Integrated Training System.

Also a dedicated Integrated Logistic Support (ILS) has been developed to guarantee a high aircraft availability and high mission rates.

The pre-series aircraft made its first flight in July 2008, thus beginning the M-346's industrialization phase. Today the highly-automated production line of the M-346, designed by Alenia Aermacchi, meets the requirements of the programme in terms of capacity, cost and quality, assuring the rate of four aircraft per month, with the capacity to respond to the market requirements with extreme flexibility.

In November 2009, ARMAEREO (General Directorate for Aeronautical Armaments) signed the contract for the first batch of six M-346s (called T-346A) to the Italian air Force, including ground training systems. This contract forms part of a broader agreement to supply a total of 15 M-346s and related support.

The M-346 has since won then the most important international bids, in total, 48 aircraft have been ordered to date.

In September 2010, Alenia Aermacchi signed the first international contract for the M-346 with the Republic of Singapore within their Fighter Wings Course (FWC) Programme, which aims to replace the country's current fleet of trainers (A-4 Skyhawk). A consortium, formed by ST Aerospace (as prime contractor), Alenia Aermacchi and Boeing was awarded the contract to supply 12 M-346 aircraft and the Ground Based Training Systems. In June 2011, Alenia Aermacchi also finalised with ST Aerospace the logistic support contracts for the M-346 fleet of the Singaporean Air Force.

This first international contract was followed by a more recent one in 2012 with the Israeli government for the supply of 30 M-346s which will replace the A-4 Skyhawks, currently in service with the Israeli Air Force. Delivery of the first M-346 is expected in the middle of 2014.

The M-346 has also been selected by the United Arab Emirates Air Force.

The M-346 programme also involves other Finmeccanica Group companies including Selex ES and Sirio Panel, and is continuing to attract interest from potential international customers and partners.

Today the United States represent a major opportunity for the M-346, with its T-100 variant. In January 2013, Alenia Aermacchi and General Dynamics signed a letter of intent to compete as partners on the U.S. Air Force's T-X Trainer Replacement Programme tender. The Alenia/GD team will offer the T-100 as a solution to replace the aging fleet of T-38 jets. General Dynamics C4 systems, a business unit of General Dynamics, will serve as the prime contractor, while Alenia Aermacchi will act as the subcontractor. General Dynamics brings proven experience in systems integration, while Alenia Aermacchi will leverage its capabilities in jet training and trainer aircraft design and manufacturing. The plane will be manufactured in the U.S. with a focus on U.S. made content.