

Italian Facility Showcases State-of-the-Art Aeronautical Technology

For more than 40 years, Alenia Aerospazio has relied on DIT-MCO to meet the demands of an international marketplace.

Using DIT-MCO test systems gives Alenia Aerospazio precisely the kind of reality check it wants.

“With the high accuracy of its testing, DIT-MCO gives us the possibility of detecting the ‘real electrical state’ of the aircraft,” says Alenia’s Test Department Manager. “DIT-MCO has helped us increase the quality of our product.”

Between quality and cost control, DIT-MCO is an important part of Alenia processes. “Without the DIT-MCO test it would not be possible to detect connection failures,” he says. “If we should have this condition during functional test, we would have delays due to investigating and repairing the failure. We also could risk damaging the equipment involved.”

In recognition of its commitment to high quality performance, Alenia identified Caselle as a *Center of Excellence*. “Designation as a *Center of Excellence* comes from a sum of things, including skilled personnel, particular facilities for manufacturing, high quality of test instruments, and our information technology system that drives all processes from harness constructions to final assembly,” says the Test Department manager.

Serving an International Marketplace

As a member of the four-country consortium designing and manufacturing the Eurofighter Typhoon, Alenia Aerospazio has left wing design and manufacturing responsibility for all aircraft built by consortium members – DASA in Germany, CASA in Spain, BAE Systems in the United Kingdom, and Alenia Aerospazio in Italy. Alenia also is responsible for several critical onboard systems, including SPS, propulsion, navigation and armament, and it is jointly responsible with BAE for the rear fuselage. Alenia integrates all systems of the Italian aircrafts and performs full aircraft assembly for the Italian Air Force.

The high-profile Eurofighter program isn't the only aeronautical program to take advantage of Alenia's advanced systems laboratories, design capabilities, and manufacturing facilities. Other programs include:

- Tornado, the tri-national multi-role combat aircraft.
- AMX tactical support and reconnaissance aircraft, a joint program with Embraer (Brazil) and Aermacchi (Italy).
- C-27 J Spartan, a tactical transport airlift developed with Lockheed Martin.

None of these products leaves Alenia unless subassemblies and the final product have passed Alenia's standards using a DIT-MCO test system.

Long known for its technical leadership, the company has cooperated with Boeing, Lockheed Martin and Aerospaziale

The Eurofighter Typhoon will be assembled at Alenia's state-of-the-art aeronautical facility in Caselle, near Turin. The plant's 1,000-person workforce is dedicated mainly to military aircraft final assembly and flight testing.

With the inaugural flight of the first production run Italian Eurofighter next fall, the production phase program is moving forward according to schedule. Delivery of the first production run aircraft is expected by mid 2002 with completion of all deliveries for aircraft on order by 2015.

Caselle's Test Operations

Alenia Caselle has used DIT-MCO systems almost since DIT-MCO began building them. The operation that used a Model 4050 in 1960 and a punch tape model 775 now deploys ten DIT-MCO automated wiring analyzers. While one of their Model 775s still provides reliable service testing harness and relay panels, three DIT-MCO Model 2508 systems are dedicated to Eurofighter Typhoon production.

“Introducing automatic analyzers years ago increased testing speed with reduction of costs at the same time,” says the Test Department Manager. Automatic testing operations blend seamlessly with Alenia’s quality philosophy. Caselle’s test technicians perform continuity, high voltage insulation, and dielectric tests. “DIT-MCO testing is a routine step in our production cycles. This choice meets the program testing requirements.”

Aircraft harnesses, relay boxes, panels, and other assemblies are built and tested in a dedicated department before installation at the Caselle factory. Tested harnesses and other electrical assemblies are installed on aircraft and connected to each. “After that, a DIT-MCO analyzer will be connected to perform electrical continuity and insulation tests, using interface cables designed and built by Alenia,” says the Test Department

Manager. “These tests are performed within the production department for each aircraft program.”

The company’s statistics on different programs such as the F104, AMX, and Tornado confirm the importance of performing continuity and insulation tests on aircraft harnesses.

Benefits from Using DIT-MCO

Serving demanding customers like Alenia requires growing and adapting to their needs.

The Test Department Manager also notes that, “DIT-MCO has been chosen for its flexibility. Our test equipment needs to be used in conjunction with switching and comparators already installed in our plant, and we want to use the technical repair and maintenance background of our personnel who know DIT-MCO systems.”

When a facility operates multiple production lines building different products, standardization and process efficiencies help control costs. For Alenia, the combination of using standard interfaces with automatic test programming delivers significant efficiencies in cost and labor. “Using standard interfaces on different products has reduced materials and the number of test addresses,” says Alenia’s Test Department Manager. “DIT-MCO software allows us to test the product using any test bench, independently, by addresses connected, using the same test procedure.”

The consistency of DIT-MCO’s software user interface and the equipment itself also benefits Alenia. With two or three programmers and two test operators involved in rolling out every new aircraft, usability and short learning curves are important.

“Programming and test methods basically aren’t changed, but only periodically updated,” says Alenia’s Manager. “This is positive for us for two reasons. First, because we can use our background and existing knowledge. Second, we can utilize actual test procedures on new DIT-MCO systems. Learning to use new systems is easy because new software revisions maintain existing active commands.”

Maintenance also factors into their long-term use of DIT-MCO systems. “Our technicians have acquired a ‘know-how’ of DIT-MCO systems, a result of solving problems over the years and through repairing and maintaining analyzers,” says the Test Department Manager “This has allowed us to repair our equipment with speed and low cost, utilizing existing spare parts.” Alenia takes advantage of DIT-MCO’s Customer Service to install new analyzers and receive training. “We also receive good service when we consult via telephone on technical problems.”

In addition, adaptability is important. For example, Alenia streamlined some of its test procedures by taking advantage of remote control features via a laptop computer and an antenna to control the tester. “When manual operations are required on aircraft, it is an advantage to have a remote control device with an LCD display that shows main commands, such as advance, stop, repeat test, messages, etc.,” says Alenia’s Test Department Manager. “This means we don’t need two people during the test.”

Other customized test solutions take the form of material handling equipment. Test operations often integrate specially built mechanical structures to house equipment and maneuver adapter cables into the correct position. “Mechanical structures have helped us satisfy test requirements because they can make connecting the aircraft to the DIT-MCO easier and help avoid the risk of damaging the connectors,” says Alenia’s Test

Department Manager. This solution has reduced the time – and, therefore, costs – required to set up a test.

To succeed in the demanding aerospace marketplace companies like Alenia must deliver quality products with high reliability. In order to make this goal a reality, companies like Alenia make DIT-MCO testing a standard operating procedure.