

# WELCOME Atlas



When the Airbus Military A400M last appeared at the Royal International Air Tattoo in 2010, the type was in the early stages of flight testing. The aircraft is now close to final civil and military certification and initial service entry. This year's RIAT shows the progress made by Europe's new airlifter – very appropriate given the SkyLift theme.

Since the A400M's maiden flight in December 2009, the five test aircraft, operating from the two flight test and final assembly sites at San Pablo near Seville, Spain and Toulouse, France, have made great progress. Before the first aircraft is handed to the customer, the A400M must complete a 3,700-hour test programme, and over 85% of that total was complete by 1 June 2012, with over 1,100 test flights and more than 3,200 flying hours accumulated. The problems over contracts and re-designs that dogged the A400M during the 2000s are behind it as the aircraft nears service entry with the eight customer nations (France, Britain, Germany, Spain, Turkey, Belgium, Luxembourg and Malaysia), who will receive a total of 174 aircraft. The A400M is eagerly awaited by them – it fits into the gap between the C-130 Hercules and the C-17 Globemaster, boasting both strategic and tactical capabilities.

Testing new military aircraft always involves intensive evaluation and the A400M, or 'Grizzly' as the early test aircraft were nicknamed in 2010 by their flight test

crews, has been no exception. Progress has largely been smooth. As those who watched the aircraft's impressive flying displays here at Fairford in 2010 will have seen, the A400M is a sprightly performer. The nature of those displays reflected the real confidence in the A400M even at that early stage. Chief Test Pilot Ed Strongman describes the A400M's handling as 'immaculate'. The A400M performed as expected in tests of its cruise, take-off and landing speeds, its behaviour in crosswinds and in 'water trough' trials (a simulation of landing in very wet conditions).

The A400M is fully fly-by-wire, with its electrical system being very similar in design to the A380 airliner. Tests of the electrics, which drive all the mechanical and hydraulic systems on board, progressed well in the first year of the test schedule. Two static airframes in Getafe, Spain, and Hamburg, Germany, have meanwhile undertaken fatigue and load testing. These airframes replicate the strains an average A400M would experience in 25,000 flights – two and a half times its design-life.



A400M prototype displaying the flags of the eight nations that have ordered the type

Air-to-air refuelling trials with an RAF VC10



First five test aircraft in formation in early June 2012

Rough field landing trials



Tests of the flight management system – the nerve centre of the A400M's operation – as well as cockpit displays and the Head-Up Display (HUD) are other vital areas. The HUD is important because it will be the primary means by which operational crews will fly the aircraft. Ed Strongman said: "The HUD has been fantastic for the flight test programme, it's enabled us to go and get very accurate test reports quickly."

Further significant milestones have included cold weather and high altitude tests designed to push the A400M's systems to the limit. Cold weather trials at Kiruna, Sweden, saw the A400M subjected to temperatures as low as -38°C. 'Hot and high' altitude testing at La Paz, Bolivia, and Lima, Peru, saw the aircraft perform on runways at altitudes of up to 13,300ft. The A400M passed these tests with flying colours.

When in service the A400M's bread-and-butter will be strategic and tactical transport – moving loads over long distances, performing air drops and operating into unprepared runways. Many tests have explored these capabilities. Rough strip landing trials at Fonsorbes, France and Cottbus, Germany, assessed the A400M's ruggedness and its landing gear. Air drops of variously-sized cargo loads and British and French paratroopers tested the cargo ramp and side doors, and air-to-air refuelling trials were undertaken with an RAF VC10 and an Airbus A330 MRTT as a receiver, and were planned with a Transall as a tanker.

The testing hasn't been without niggles. Last year a gearbox failure on one of the A400M's Europrop International TP400-D6 turboprops disrupted the test schedule. That was resolved last autumn, but in early 2012 the fourth and fifth test aircraft's TP400s suffered an in-flight vibration from another gearbox problem. Airbus Military considers that this situation is under control however and is not expecting any impact on the date of first delivery.

So, what's next? Final certification is expected any time now. Initial military operational clearance is due in August or September. This will coincide with the first flight of MSN7, the first customer aircraft, destined for the French Air Force. This will be followed by more air-to-air refuelling, air drop and rough field trials as well as tests of defensive flares and chaff, the radar, cargo loading/unloading, night vision goggles and forward-looking infrared. Meanwhile, customer air forces' pilots, engineers and cargo loadmasters will begin learning how to operate the aircraft at the A400M International Training Centre using the facility's flight simulators, computer-based training and full-scale cargo hold.

MSN7 will be delivered to the French Air Force at the start of 2013 and altogether four aircraft will be delivered by the end of 2013. Already parts are being produced for aircraft all the way up to MSN19. The Turkish Air Force will take delivery of its first aircraft in late 2013. The Royal Air Force will receive its first A400M in mid-2014, shortly before the first deliveries to the Luftwaffe and the Royal Malaysian Air Force. Through the rest of this decade, full clearance for all the A400M's capabilities will be given and deliveries also made to Spain, Belgium and Luxembourg.

The A400M's appearance at RIAT 2012 is therefore a celebration of its flight test achievements. The event is also seeing another milestone. The RAF's Chief of the Air Staff, Air Chief Marshal Sir Stephen Dalton, is announcing that the A400M is to be known by its launch customers as 'Atlas' in military service. This weekend will see the fifth test aircraft display in the flying programme and also take part in a unique stream flypast with the RAF's new family of airlifters, the C-17 Globemaster, Voyager and C-130J Hercules – highlighting not just the SkyLift theme but the A400M's key place in the future of European military air transport. **MARK BROADBENT**