The A400M: the versatile airlifter for the 21st Century

January 2018 – The A400M is the most versatile airlifter currently available, and responds to the highly varied needs of world Air Forces and other organizations in the 21st Century. It can perform three very different types of duties: tactical and strategic missions directly to the site of action, as well as being able to serve as a “tanker”. Powered by four unique counter-rotating Europrop International (EPI) TP400 turboprop powerplants, the A400M offers a wide flight envelope in terms of both speed and height. It is the ideal airlifter to fulfil the diverse requirements of nations around the globe in terms of military and humanitarian missions for the benefit of society.

The A400M was launched in 2003 to respond to the combined needs of seven European Nations grouped within OCCAR (Belgium, France, Germany, Luxemburg, Spain, Turkey and the UK), with Malaysia joining in 2005. This is one of the major reasons for its extreme versatility. Its maiden flight took place on 11th December 2009 and the delivery of the first A400M was on the 1st of August 2013 to the French Air Force.

A wide range of transport missions
The A400M can perform missions which previously required two - or more - different types of aircraft, and which even then provided an imperfect solution. Its fuselage external width of 5.64 metres / 18 ft 6 in is equal to that of the A330/A340 wide-body. The inside usable width of four metres / 13ft, height of four metres / 13ft, and usable length of nearly 18m / 59ft, allows it to carry numerous items of outsize cargo including, for example, an NH90 or a CH-47 Chinook helicopter, or two Stryker infantry carrier vehicles (ICV) of 17 tonnes each for military purposes. It can also carry a 25 tonne semi-articulated truck with a 6m / 20ft container, or a rescue boat, or large lifting devices, such as excavators or mobile cranes needed to assist in disaster relief.

Furthermore, the A400M is the only airlifter that can fly these items directly to the site of the action thanks to its unique landing characteristics. With its 12-wheel main landing gear designed for operations from stone, gravel or sand strips, its efficient absorption of shock-loads into the airframe structure, and its minimised risk of foreign object damage, the A400M is able to land on, and take-off from, short, soft and rough unpaved airstrips meeting up to the CBR4 standard. These characteristics allow it to ensure, for example, that swift humanitarian aid can arrive on the spot in the very short timeframe needed after a disaster.

Once on the ground, the A400M is designed for very rapid and autonomous cargo unloading or loading without any specialized ground support equipment. Fitted with an on-board 32 tonne powered winch and an optional 5 tonne crane, the cargo hold is optimised for single loadmaster operation from a computerised workstation, where the loadmaster can pre-plan loading from a loads data base. So, by minimising the time on the ground, the A400M’s systems also reduce the aircraft’s vulnerability to hostile action.
The type’s low speed characteristics make the A400M ideal for dropping supplies from low altitude. The A400M can assure a very rapid and direct response to any occurrence, making it the ideal tactical airlifter.

**Versatility for other missions**
Thanks to its new technologies, the A400M has the ability to fly distances up to 4,700 nm / 8,700 km, at a cruising altitude up to 37,000 ft, and at a speed of up to Mach 0.72 - very similar to that of a jet powered airlifter. This gives it the potential for strategic/logistic missions.

Flying faster and higher, it can respond more rapidly to crises, because greater distances can be flown in a single crew duty-day. It is hence much more efficient than its predecessors. And as it can fly higher, it can cruise above turbulence, resulting in less fatigue for the crews, and passengers or troops alike.

Its fly-by-wire controls and related flight envelope protection facilitate the task of the crew and above all, enable a pilot, with one single and simple input on the control stick, to extract the optimum performance from the aircraft, for example in case of an escape manoeuvre, without running the risk of stalling or over-stressing the airframe.

Being able to fly fast and at high altitudes, it is also an ideal tanker aircraft to refuel military fast jets (fighters) and other large aircraft at speeds and altitudes suitable for fighter receiver aircraft. Refuelling can be done either through two underwing refuelling pods or through a centre-line fuselage refuelling unit. Its built-in air-to-air refuelling capability allows it to be rapidly reconfigured to become a tanker. It can therefore be easily adapted to rapidly changing operational scenarios, being able to perform very different types of missions, as needed. This adaptability is unique to the A400M, which can itself also be refuelled in flight.

The A400M excels in the paratrooping role, being able to drop from both high and low altitudes, (as high as 40,000 ft for special forces’ operations, and as low as 15ft for low level load deliveries). It can carry 116 fully equipped paratroops, who can jump from the ramp or through the paratroop side doors allowing rapid deployment of large numbers of troops ready for immediate operations.

**High survivability and reliability**
Finally, the A400M has been specifically designed for low detectability, low vulnerability and high survivability, giving it excellent self-protection. With clean and minimised infra-red signature engines, highly responsive fly-by-wire flight controls, four independent control computers, damage tolerant controls, and comprehensive optional defensive aids and cockpit armouring, the A400M is hard to find, hard to hit and hard to kill.

As for its “down-time”, the A400M is conceived to be the most reliable airlifter ever. It needs only 84 days of scheduled downtime maintenance in 12 years. By using proven Airbus commercial design concepts and tools, its availability benefits from high component reliability.
Information

Overall, the versatile A400M can do the job of three aircraft in one, always able to do more with less. Being bigger, it can carry more payload in fewer flights. Being faster, it can fly longer distances and missions in the same time. In summary, with fewer aircraft, the operator can do more, ensuring greatest investment and cost effectiveness.

*****