

First Delivery of A400M: Liebherr-Aerospace on Board

August 2013.

On August 1, 2013, Airbus Military delivered the first A400M to the French Air Force, which is the first air force to receive the multi-role transport aircraft. Liebherr-Aerospace supplies the A400M with a wide range of flight-critical systems and components.

Liebherr Flight Control and Actuation Components for the A400M

The primary flight control system controls the position of the aircraft in flight by means of the rudder, the elevators, ailerons and spoilers. These control surfaces are either activated by hydraulic servo controls or – in case they fail – by electro-hydrostatic actuators (EHAs). Liebherr-Aerospace Lindenberg GmbH, Lindenberg (Germany), supplies the A400M with two EHAs for the elevator, one EHA for each of the two ailerons, six spoiler servo controls as well as two electric back-up hydraulic actuators (EBHAs) for the rudder. The EBHAs, also referred to as hybrid actuators, are a particularly ambitious combination of both solutions: They function as conventional servo controls in the hydraulic system, and if the supply system fails, they switch over to electric operation. The electric motor/pump unit, which was specifically developed for the A400M program, and the digital power electronics are key elements in the EHA and EBHA.

The A400M high lift system, which consists of flaps solely, provides lift augmentation during take-off, slow flight and landing. For the flap system, Liebherr delivers the central power control unit and the wing tip brakes ensuring safe flight operations. Like on the A380, the flap power control unit is equipped with variable displacement hydraulic motors.

In addition, Liebherr-Aerospace Lindenberg GmbH developed key components for the A400M's door and ramp actuation system.

Liebherr Air Management System for the A400M

Liebherr-Aerospace Toulouse SAS, Toulouse (France), is the first supplier to have been given the responsibility for an entire Airbus air management system. For the A400M, Liebherr developed the air conditioning system, the engine bleed air system and the cabin pressure control and ventilation control systems – in all the company manufactures over 100 components.

The A400M engine bleed air system is based on the architecture Liebherr-Aerospace developed for the A380 bleed system. It draws off air from the engines, processes the air at a temperature of around 200 °C and a pressure of roughly 3 bar and distributes it to other systems, e.g. the air conditioning and de-icing systems. In addition, Liebherr delivers the associated distribution system, the on-board oxygen generation system (OBOGS), the on-board inert gas generation system (OBIGGS) the de-icing system for the engine air intake and the leak monitoring system for the hot-air distribution pipes.

The air conditioning system cools down the air supplied by the bleed system to the necessary cabin temperature, regulates the temperature and supplies the cabin with fresh air. Like the engine bleed air system, the air conditioning system for the A400M is based on established Liebherr technology, that is on the systems with two cooling packs used in Airbus single-aisle and long-range aircraft. However, certain elements of the A400M air conditioning were enhanced: for example, the water separation architecture was improved, and the cooling packs were integrated into the aircraft in an extremely compact way. Also, the system includes a new cooling turbine and a state-of-the-art system for the regulation of ram air.

Liebherr's A400M ventilation control system comprises a central computer, all related electric and pneumatic valves as well as the supplementary electric cabin heating elements. It primarily distributes fresh and recycled air, and cools the aircraft's electronic circuits and instruments.

The A400M is the first aircraft to have the new, lighter cabin overpressure monitoring system on board. As part of the cabin pressure control system, which regulates cabin pressure fully automatically by two smart valves, it allows for significant weight savings in the airframe structure.

Liebherr-Aerospace is a leading supplier of systems for the aviation industry

Liebherr-Aerospace & Transportation SAS, Toulouse (France), is one of ten divisional control companies within the Liebherr Group and coordinates all activities in the aerospace and transportation systems sectors.

Liebherr-Aerospace is a leading supplier of systems for the aviation industry and has more than five decades of experience in this field. The range of aviation equipment produced by Liebherr for the civil and military sectors includes flight control and actuation systems, landing gear and air management systems. These systems are deployed in wide-bodied aircraft, single aisle and regional aircraft, business jets, combat aircraft, military transporters, military training aircraft, civil helicopters and combat helicopters.

Liebherr's aerospace and transportation systems division employs over 4,400 people. It has four aviation equipment production plants at Lindenberg (Germany), Toulouse (France), Nizhny Novgorod (Russia), and Guaratinguetá (Brazil). These production sites offer a worldwide service with additional customer service centers in Saline (Michigan/USA), Seattle (Washington/USA), Wichita (Kansas/USA), Montreal (Canada), Sao José dos Campos (Brazil), Hamburg (Germany), Moscow (Russia), Dubai (UAE), Singapore and Shanghai (People's Republic of China).

Captions

liebherr-A400M-first-delivery-300dpi.jpg:

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