



Eaton meets challenge to reduce weight on Airbus A380

Location:

Toulouse, France

Segment:

Commercial Aviation

Problem:

To reduce the weight of the aircraft.

Solution:

5000 psi hydraulic system.
Variable frequency fuel pumps.

Results:

Weight savings of a full metric ton.

A New Era in Aviation

Background

Airbus has been an innovator in commercial airplane development for decades and has a family of aircraft covering the spectrum - from short-haul single aisle planes to larger intercontinental passenger and freighter craft. The most sophisticated, and certainly the largest of these planes, the A380 is now entering service and will serve a market that is expected to triple in terms of global passenger demand over the next 20-30 years.

Combining the very latest-technology materials, systems and industrial processes, the A380 can comfortably carry 555 passengers in three classes of service with room to spare. The A380's efficiency and advanced technology result in lower seat-mile costs for airline customers. The A380's ability to carry more passengers will help to ease airport congestion

by transporting more people without additional aircraft movements. The aircraft's significantly reduced noise and emissions levels will help to minimize its effects on the environment, and its unprecedented level of lightweight, advanced materials reduce its weight, helping to make it a highly fuel-efficient aircraft - burning 12 percent less fuel than its competitors and reducing exhaust emissions.

Challenges

For the Airbus A380, reducing the weight of the world's largest passenger aircraft was critical to the program's successful development. Several major systems in the platform were addressed, including the hydraulic system with its requirement to operate some of the world's largest flight control surfaces, landing gear and utility systems. For example, the A380's tail is as big as the wing of a typical 150 passenger aircraft.

Solution

Airbus turned to Eaton's Aerospace Group, a world leader in aircraft hydraulic power generation, fluid conveyance and motion control systems, for the solution.

Utilizing its long experience in higher-pressure military aircraft hydraulic systems, Eaton designed the world's first higher-pressure 5000 psi commercial hydraulic power generation system for the A380.

Results

According to Phil Galloway, engineering manager at Eaton's Fluid Power facility in Jackson, Miss., "by utilizing higher pressure, the overall volume and size of the entire hydraulic system was reduced throughout the aircraft, eliminating a full metric ton of additional weight."



Powering Business Worldwide

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Partnerships built to last

When Airbus decided to build the largest passenger aircraft in the world, we knew we had to find the best, most innovative partners in the world.

In many cases we found that know-how in the U.S. Today, hundreds of American companies, like Eaton, are producing the systems and parts which have brought the A380 from the drawing board to the skies. Airbus works with companies in more than 40 states, spending more than \$23 million everyday — more than \$8.5 billion in 2005 alone. This makes the U.S. our biggest source of aircraft components and makes Airbus the largest export customer of the U.S. aerospace industry.

System integration and flight test support allow Eaton to deliver a total systems solution to the customer.

Finally, Eaton developed the aircraft's interior lighting system solution which offers superior reliability to achieve a life of the platform product.

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