A350 XWB: a high-flying landing system

More than 550 orders have made the future A350 XWB airliner by Airbus a big commercial success even before its maiden flight. Messier-Bugatti-Dowty (Safran), a world leader for landing-gear systems – and the aircraft manufacturer’s partner for all the models in its range – is one of the key players on this forward-looking program.

Assembly work on the first A350 XWB (for eXtra Wide Body) began in early April in Toulouse, and all the teams at Airbus, and at all the companies manufacturing equipment for the program, are busy keeping the program on schedule. The European aircraft manufacturer has scheduled its future long-haul and medium-haul aircraft’s first flight in the first half of 2013. By then, a full battery of validation and qualification tests will be run to prepare the new aircraft for certification. It is expected to enter into service in 2014.

This new-generation twin-engine aircraft will have a very long range (nearly 15,000 km) and be available in three versions: the A350-800 (270 seats) and A350-900 (350 seats), followed by the A350-1000 (400 seats) a year later. The innovative A350 XWB will be packed with the best available aerodynamic systems, materials and technologies – which will cut its fuel consumption (by 25%), as well as its operating costs.

Integrated landing gear systems
Messier-Bugatti-Dowty has been one of the European aircraft manufacturer’s partners for a very long time and is playing a key role on this major program. “We were selected to design and develop the carbon brakes and wheels, and all the systems to steer and maneuver the nose and main gear on the various A350 XWB versions. We will also be supplying the main landing gear on the A350-800 and A350-900 versions,” explains Messier-Bugatti-Dowty Program Director Hélène Moreau-Leroy.

Aiming high
"Airbus decided to use tried and tested technologies for its landing gear and systems on its new aircraft, to ensure they are mature as soon as the aircraft enters into service, but nevertheless set very ambitious weight targets, which were a major challenge during the development phase," adds Hélène Moreau-Leroy. To meet this requirement for lighter landing gear, Messier-Bugatti-Dowty significantly increased high-resistance titanium content in its various parts (in particular in its structural components). There is another notable novelty; the A350 XWB will be the first Airbus with a guidance system using differential braking, which makes it possible to steer the plane on the ground if the hydraulic or electronic steering systems fail. "The aircraft will also come with our third-generation tire-pressure monitoring and wireless information transmission system," adds the Program Director. "And the efforts to cut mass during the wheel and brake engineering phase allowed us to slash weight compared to rival solutions."

On the bench
The landing gear is currently in the test phase: it is undergoing free-fall trials to test gear shock resistance, endurance tests and integration tests on Messier-Bugatti-Dowty and Airbus benches (Filton, UK). The various software applications are also being tested on avionics benches to ensure the braking algorithms are properly calibrated (for braking efficiency, to prevent skidding, etc.). The wheels and brakes are in their regulatory qualification phase in labs.

All the equipment supplied by Messier-Bugatti-Dowty will be tested once again this summer during the "power-on" campaign, which involves gathering all the aircraft systems on a representative mock-up to ensure they work suitably. All that will take the A350 XWB one step closer to its certification before it enters into commercial service.

- **555**: the number of Airbus A350 XWB orders recorded as at March 2012
- **2,000**: the number of parts in the A350 XWB’s main landing gear
- **18 wheels and 125 fittings** on 4 landing systems, plus 10 software applications, are necessary on an A350 XWB
- **7 Messier-Bugatti-Dowty plants** are working on A350 XWB production in France, the US, Canada, China and the UK
- More than **300 Messier-Bugatti-Dowty engineers and technicians** worked on designing and producing equipment for the A350 XWB
- **4 Group companies** are working on the A350 XWB: Messier-Bugatti-Dowty, Labinal, Hispano-Suiza and Sagem