

transport, this work is even more integrated.

"Aircraft manufacturers want even more highly integrated ATA32 systems because this is a very dynamic market, harboring a constant stream of innovative ideas, and they would find it hard to combine all these solutions if they came from different suppliers" notes Yves Leclère, Safran senior vice president, Aircraft Equipment branch.

However, while this enhanced system integration seems logical on paper, in reality it is very technically challenging. Landing gear and brakes are still very different disciplines, calling on distinct skill sets. Furthermore, manufacturers do not only want to assign larger work packages, as Yves Leclère explains: "They also want to give suppliers greater responsibility, and this depends on the acquisition of new skills, particularly concerning flight safety and certification tests."

Today, for example, Messier-Bugatti and Messier-Dowty are teaming up to meet this emerging requirement. A joint future programs department has been set up to support Safran's

offering of integrated landing system packages for the next generation of single-aisle commercial jets.

Messier-Bugatti and Messier-Dowty have already submitted joint contract proposals, especially for business aircraft and single-aisle jets. For the Safran Group in general, this is a cru-

cial challenge. "As for any significant change, the trend towards greater integration will drive changes in our sector," points out Olivier Andries. "Companies not selected as tier 1 suppliers on the next generation of single-aisle jets may well find themselves demoted to the minor leagues!" ■



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Safran makes the nose landing gear for the Airbus A380.

AN INNOVATIVE PACKAGE

Landing gear and braking systems offer a fertile field for innovation, spanning six different areas.

• Structure

Landing gear structural parts may be made of composites, or new metallic materials. Safran companies are also working on new coatings, to replace current materials with more environmentally-friendly products. Structural design will also increasingly call on powerful computer modeling systems.

• Electronics

The landing gear controls and actuators are still hydraulic, but they will become increasingly electric in the future, reflecting

the trend towards "more electric" aircraft. Work is already under way on components and electronic control units capable of supporting harsher operating environments, with higher temperatures and vibrations.

• Brakes

As the world's leading supplier of carbon brakes for aircraft, Messier-Bugatti continuously improves performance through its work on friction materials and technologies. The company's Sepcarb@III OR is already the fourth generation of carbon composite for these brakes. Messier-Bugatti is also developing electric brake technology.

• Predictive maintenance and auto-diagnosis

Another major trend that concerns

landing gear. While current systems monitor parameters such as tire pressure and brake temperature, the number of parameters will increase significantly, leading to full authority control systems. All data will be recorded, analyzed and sent directly to the flight deck or maintenance staff.

• Environment

Work is underway to reduce the acoustic signature of landing gear, as well as developing new taxiing solutions for energy savings.

• Extended integration

Studies are also under way to couple the landing gear with other functions, resulting in unprecedented performance gains.

SYNERGY. Consultants from Safran Conseil are currently on assignment at most Group companies. We take a closer look at this unique in-house consulting company.

SAFRAN'S IN-HOUSE CONSULTING TEAM

Safran Conseil is a consulting company created in 2004 to pool certain skills within the Safran Group. According to its chairman and CEO Françoise Descheemaeker, "We're a subsidiary that primarily provides services to all companies in the Group. We transfer and leverage expertise, while offering costs thirty to forty percent less than an outside service provider." Primarily employing engineers, Safran Conseil also aims to be an incubator of consultants with dual skills, covering both specific disciplines and the consulting services per se.

"Our offer is organized in five main areas: production/purchasing/services, development, organization, training, and methods," explains Véronique Bardelmann, consultant and head of management control. Safran Conseil continues to expand its scope of activity, while diversifying the type and size of its assigned missions.

"We are increasingly called on for cross-functional projects, to support organizational transformations," notes Françoise Descheemaeker. The company's consultants go into the field to support the deep changes under way, which may take up to two years. Today, the company is gradually opening its horizons outside the Group, as reflected in a recent contract with one of Safran's key partners. The aim is to meet three main objectives: develop business, diversify missions, and enhance expertise. "No matter what the job, Safran Conseil is an excellent support platform for structural changes in the enterprise," concludes



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One example of how Safran Conseil supports the implementation of a Lean manufacturing approach: the reorganization of the thrust reverser assembly shop at Aircelle. The shop is shifting from separate workstations to a line approach built around the Takt time principle, which can be defined as the maximum time allowed to produce a product in order to meet demand (so that the pace of production is synchronized with the pace of delivery to customers).

Descheemaeker, underscoring the strategic role of this cross-functional organization.

Tailored training

For example, one Group company wanted to develop a "managerial continuous improvement culture" while also deploying competencies. Safran Conseil drew on its knowledge of corporate, economic and industrial

environments to successfully carry out this project, demonstrating its strategic role. It applied the Lean Sigma approach to increasing industrial efficiency, with tailored training programs used in conjunction with a deployment scheme, spanning workers, management and the executive committee. ■

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