

Press release

Liebherr-Aerospace and ISAE-SUPAERO invest in industrial chair

Liebherr-Aerospace Toulouse and ISAE-SUPAERO strengthen their collaboration by establishing jointly an industrial chair, co-financed by the French National Research Agency. The chair's team will develop and improve methods and tools for the design of aerodynamic turbomachine wheels, contributing to research for low-emission aircraft of the future.

Toulouse (France), January 2024 – For the first time, Liebherr-Aerospace Toulouse, Liebherr's center of excellence for environmental control and thermal management systems, and ISAE-SUPAERO (Institut Supérieur de l'Aéronautique et de l'Espace) join forces to create an industrial chair. This initiative, co-financed by the French National Research Agency (ANR), aims to stimulate cooperation between public and private research stakeholders.

The CASTOR Chair for Radial Turbomachinery Aerodynamics started on January 1, 2024, and will run for 4 years. It will result in 3 theses, 2 post-doctorates and the creation of a research engineer position. The total amount of 1.250 M€ (50 % from Liebherr-Aerospace Toulouse and 50 % from ANR, the French National Research Agency) will be used to finance equipment and subcontracted work.

The aim is to make progress on the design of radial turbomachinery stages, which are at the heart of Liebherr-Aerospace's air systems, and in which ISAE-SUPAERO has cutting-edge skills and research infrastructures.

This collaboration will enable Liebherr to continue proposing key technologies for the decarbonization of aviation, with more efficient air systems that consume as little energy as possible for future aircraft.

Contributing to the development of low-emission aircraft of the future

The radial turbomachine is a key component of the air-conditioning system manufactured by Liebherr-Aerospace Toulouse. In the turbine of the compressor, the shape of the blades must be finely optimized to provide the best energy efficiency and expansion or compression ratios – independently from the flight phases of the aircraft.

This design phase is vital for offering aircraft manufacturers less energy-intensive air-conditioning systems for future low-emission aircraft.

Several lines of work will be explored: Unconventional radial turbine configurations will be calculated and tested to improve efficiency and operating ranges. Furthermore, efforts will be devoted to advancing numerical and experimental methods.

A win-win partnership

For Liebherr-Aerospace, this project is an excellent way of accelerating its research and development activities. It enables the company to mobilize and finance over the long term the cutting-edge skills in ISAE-SUPAERO's research laboratories, which also serves Liebherr's future products.

From ISAE-SUPAERO's point of view, this chair symbolizes recognition of the relevance and applicability of its work by the French Ministry of Higher Education, Research and Innovation. What's more, the resulting substantial funding will enable the Institute to expand its experimental and digital capabilities.

Liebherr-Aerospace Toulouse and ISAE-SUPAERO have been partners for 25 years. This chair represents an opportunity for both entities to intensify their collaboration and structure a joint research program.

About Liebherr-Aerospace & Transportation

Liebherr-Aerospace & Transportation SAS, Toulouse (France), is one of eleven 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 six decades of experience in this field. The range of aviation equipment produced by Liebherr for the civil and defense sectors includes flight control and actuation systems, landing gears and environmental control and thermal management systems. These systems are deployed in wide-bodied aircraft, single aisle and regional aircraft, business jets, defense aircraft, defense transporters, defense training aircraft and civil and defense helicopters.

Liebherr's aerospace and transportation systems division employs around 6,000 people. It has three aviation equipment production plants at Lindenberg (Germany), Toulouse (France) and Guaratinguetá (Brazil). These production sites offer a worldwide service with additional customer service centers in Saline (Michigan/USA), Seattle (Washington/USA), Montreal (Canada), Hamburg (Germany), Dubai (UAE), Bangalore (India), Singapore and Shanghai (People's Republic of China).

About the Liebherr Group

The Liebherr Group is a family-run technology company with a highly diversified product portfolio. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality and user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 140 companies across all continents. In 2022, it employed around 51,000 staff and achieved combined revenues of over 12.5 billion euros. Liebherr was founded in Kirchdorf an der Iller in Southern Germany in 1949. Since then, the employees have been pursuing the goal of achieving continuous technological innovation and bringing industry-leading solutions to its customers.

About ISAE-SUPAERO

ISAE-SUPAERO, a public institution of higher education and research under the authority of the French Ministry of the Armed Forces, has been contributing to the excellence of the aerospace industry for over 100 years, making a significant contribution to French and European prosperity and sovereignty.

The Institute is a world leader in higher education in aerospace engineering, thanks to its broad range of courses (engineering, master, specialized master and doctorate), the employability of its graduates (who have an impact in many other sectors), and the number of graduates (more than 750 per year at master's level or above, 40% of whom are international). Able to master the complex challenges of ecological and digital transitions, new forms of mobility and new uses of space, the engineers and PhDs trained at ISAE-SUPAERO are at the heart of developments in the aerospace, civil and defense sectors.

Focusing on aerospace issues, the Institute's research teams stand for rapid growth of their scientific activity and the quality of their relations with industrial partners (the Institute ranks in the top 25 worldwide for the proportion of scientific publications shared with industry).

ISAE-SUPAERO is a founding member of the ISAE Group and the University of Toulouse, and a partner of the Ecole Polytechnique and 100 universities worldwide.

www.isae-supaeero.fr

Image



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The ISAE-SUPAERO and Liebherr-Aerospace Toulouse Team in charge of the Industrial Chair – © Liebherr

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