First ground test of Safran's hybrid electric propulsion system

July 19, 2018, Pau-Pyrenees Airport

Safran has passed a major milestone in its hybrid electric propulsion roadmap with the first ground test of a distributed propulsion system. The test run took place at a Safran Helicopter Engines test facility near Pau-Pyrenees Airport, in France.

In a distributed hybrid electric propulsion system for aircraft, a turbo-generator (a gas turbine driving an electrical generator) is coupled to a bank of batteries. This system powers multiple electric motors turning propellers to provide propulsion. The power is efficiently distributed by a new-generation power management system, and the motors are controlled by a fully-integrated smart power electronics assembly.

Several operating modes were tested and validated during this first series of tests, with the electric motors powered only by batteries or by a combination of batteries and turbo-generator. The system generated 100 kW of electrical power.

The demonstration was conducted by Safran Helicopter Engines, Safran Electrical & Power and Safran Power Units, in conjunction with Safran Tech, the Group’s research & technology center. It was carried out according to Safran’s roadmap for the development of hybrid propulsion solutions.

"Following the recent announcement of our partnership with Bell concerning ‘mobility on demand’, this latest milestone clearly reflects Safran's determination to invest in the development of hybrid electric propulsion systems, which will be the foundation of future propulsion solutions," said Stéphane Cueille, Senior Executive Vice President for R&T and Innovation at Safran.

Jean-Baptiste Jarin, Safran Helicopter Engines Vice President, Hybrid Propulsion System Program, added: “This test marks a major step forward in demonstrating our ability to offer hybrid propulsive solutions for tomorrow's aircraft. We are on track to meet our goal of testing a more powerful system in the near future.”

Hybrid propulsion systems should contribute to the emergence of new VTOL (vertical takeoff and landing) and STOL (short takeoff and landing) aircraft, by enhancing their flight capabilities and expanding their range of missions.

Safran's hybrid electric propulsion roadmap is focused on bringing these technologies to the market by 2025.
Safran is an international high-technology group, operating in the aircraft propulsion and equipment, space and defense markets. Safran has a global presence, with more than 58,000 employees and sales of 16.5 billion euros in 2017. Working alone or in partnership, Safran holds world or European leadership positions in its core markets. Safran undertakes Research & Development programs to meet fast-changing market requirements, with total R&D expenditures of around 1.4 billion euros in 2017. Safran is listed on the Euronext Paris stock exchange, and is part of the CAC 40 and Euro Stoxx 50 indices.

In February 2018, Safran took control of Zodiac Aerospace, significantly expanding its aircraft equipment activities. Together with Zodiac Aerospace, Safran has more than 91,000 employees and would have around €21 billion in adjusted revenue (pro forma 2016).

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