Nexcelle's innovative nacelle system rolls out on the COMAC C919

November 12, 2015

The Nexcelle joint venture company of Aircelle (Safran) and GE Aviation's Middle River Aircraft Systems had a starring role in the C919's unveiling this month at Shanghai, marking the first full installation of its innovative nacelle concept with the LEAP-1C Integrated Propulsion System on the Chinese jetliner.

During a ceremony next to Pudong International Airport, the C919 was unveiled with the opening of a large red curtain in COMAC's final assembly facility for the twin-engine aircraft, followed by its rollout for observation by thousands of invited guests and workers.

The C919 is equipped with two CFM International LEAP-1C turbofan engines, developed as truly Integrated Propulsion Systems in a close cooperation between the powerplant's primary industrial partners: Nexcelle as the nacelle system supplier; and the CFM International jet engine joint venture of GE Aviation with Snecma (Safran).

A key feature of Nexcelle's design is the O-Duct thrust reverser – as conceived by Aircelle. The single-piece composite O-Duct replaces a traditional thrust reverser's two-piece "D" doors, reducing weight and drag while offering a high thrust reverser efficiency.

The O-Duct thrust reverser's multiple operational benefits

With its new kinematics, the electrically-actuated O-Duct moves affward to the reverse thrust position, powered by an electrical thrust reverser actuation system (ETRAS), providing the benefits of enhanced reliability, easier maintainability and reduced weight.
Features of Nexcelle's nacelle system for the C919 include its advanced inlet configuration with an innovative anti-ice system and the unique O-Duct thrust reverser.

The C919's ETRAS also evolved from Aircelle expertise, with the company first applying an electrical thrust reverser actuation system on its nacelle systems for the A380 jetliner.

Other features of Nexcelle's C919 IPS nacelle system are its extensive use of composites and acoustic treatment, and the advanced inlet configuration including an innovative anti-ice system.

The C919 unveiled at Shanghai on November 2 is designated aircraft #10101 in COMAC's numbering system, and will be the first C919 to fly – with its maiden takeoff planned in 2016.

Build-up of aircraft #10101's two LEAP-1C Integrated Propulsion Systems at Shanghai involved Nexcelle's on-site team, co-located at the COMAC C919 final assembly facility, and supported by the resources of its Aircelle and Middle River Aircraft Systems parent companies.

"Assembly and integration of the two C919 Integrated Propulsion Systems for aircraft #10101 went very well," said Manuel Rodriguez Arenas, the Aircelle manager who is assigned to Shanghai as the Nexcelle C919 On-Site Nacelle Architect and Integration Leader. "We are proud to be part of this program, which marks an important step forward for the aviation propulsion sector and for China's development of its aircraft industry."

Delivery of the next set of LEAP-1C Integrated Propulsion Systems is planned in the first half of 2016 for aircraft #10102 – which will be the second C919 to fly. Representative inert nacelles also are to be provided next year for the aircraft #001, which is to serve as the C919's ground-based static test airframe.