

Colombes, 7th mars 2024

ARKEMA AND HEXCEL COMPLETE THE FIRST AERONAUTICAL STRUCTURE MADE OF THERMOPLASTIC COMPOSITES

This achievement stems from the strategic partnership between Hexcel and Arkema. The high-performance thermoplastic composite structure was designed and manufactured using HexPly® thermoplastic tapes. These aerospace-grade materials are developed from Arkema’s Kepstan® PEKK resin and Hexcel HexTow® AS7 and IM7 carbon fibers.

THE DEMONSTRATOR PROJECT WAS CARRIED OUT AS PART OF THE COLLABORATIVE PROJECT KNOWN AS HAICOPAS.

The primary goal of HAICoPAS is to optimize the design and production process for unidirectional composite tapes made from high-performance thermoplastic resins and continuous carbon fibers. Additionally, the project aims to develop a more efficient tape placement technology and a novel continuous and dynamic in-situ welding (ISW) assembly system with real-time quality control. Ultimately, the objective is to produce composite parts that can replace metallic materials (such as steel, aluminum, and titanium) in aircraft structures, achieving both cost competitiveness and high production rates.

The work of the project partners has successfully overcome the technological barriers identified at the beginning of the project, including:

- The development, implementation, and characterization of carbon/thermoplastic (C/PEKK) tapes.
- The creation of an automated deposition process for consolidation outside of autoclaves.
- The establishment of the ISW welding technology for assembly.

The definition of elementary parts intended to form the assembled components of the HAICoPAS demonstrator was carried out in close collaboration with an industrial advisory committee comprising Airbus, Safran, Daher, Hutchinson, and ATC. The final version of the aeronautical demonstrator, made from composite tapes and assembled using ISW technology, is currently on display at the JEC World Innovation Planets exhibition in the Mobility section.

This innovative demonstrator was successfully developed within the framework of the collaborative project “HAICoPAS”(Highly Automatized Integrated Composites for Performing Adaptable Structures). The HAICoPAS project is a collaborative initiative led by Hexcel and Arkema, along with their industrial partners (Ingecal, Coriolis Composites, Pinette Emidecau Industries (PEI), and Institut de Soudure). Additionally, a consortium of university laboratories, spearheaded by CNRS and comprising the PIMM (CNRS - Arts et Métiers ParisTech - Cnam) and LTEN (CNRS - Université de Nantes), played a crucial role in this endeavor. The Structuring R&D Project for Competitiveness (PSPC) received support from Bpifrance as part of the Investment for the Future Program and was endorsed by the Polymeris competitiveness cluster.

About Hexcel

Hexcel Corporation is a global leader in advanced lightweight composites technology. We propel the future of flight, energy generation, transportation, and recreation through excellence in providing innovative high-performance material solutions that are lighter, stronger and tougher, helping to create a better world for us all. Our broad and unrivaled product range includes carbon fiber, specialty reinforcements, prepregs and other fiber-reinforced matrix materials, honeycomb, resins, engineered core and composite structures for use in commercial aerospace, space and defense, and industrial applications.

Building on its unique set of expertise in materials science, **Arkema** offers a portfolio of first-class technologies to address ever-growing demand for new and sustainable materials. With the ambition to become in 2024 a pure player in Specialty Materials, the Group is structured into 3 complementary, resilient and highly innovative segments dedicated to Specialty Materials - Adhesive Solutions, Advanced Materials, and Coating Solutions - accounting for some 92% of Group sales in 2023, and a well-positioned and competitive Intermediates segment. Arkema offers cutting-edge technological solutions to meet the challenges of, among other things, new energies, access to water, recycling, urbanization and mobility, and fosters a permanent dialogue with all its stakeholders. The Group reported sales of around € 9.5 billion in 2023, and operates in some 55 countries with 21,100 employees worldwide.

Press Contact :
Anne Plaisance +33 (0)6 81 87 48 77 anne.plaisance@arkema.com