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### HELUES PROJECT: ARKEMA AND HEXCEL HIGHLIGHT THERMOPLASTICS BREAKTHROUGH AT PARIS AIR SHOW

**At the Paris Air Show, the HELUES project perfectly illustrates thermoplastic solutions with a new demonstrator, a complex structural component for an overwing emergency exit door, and is the result of a multi-partner collaboration aimed at revolutionizing how aerospace components are manufactured for the next generation of high-rate aircraft production.**

In 2018, Hexcel and Arkema have signed a strategic alliance to develop thermoplastic composite solutions for the aerospace sector combining the expertise of Hexcel in carbon fiber and that of Arkema in PEKK. At Paris Air Show, Hexcel has spotlighted its latest advancements in thermoplastic composite technology by showcasing a highly innovative PEKK/carbon thermoplastics component developed as part of the HELUES project.

As global demand surges for more efficient and scalable aircraft manufacturing, particularly for single-aisle jets, Hexcel and its HELUES partners are helping OEMs address critical production challenges through new material and process innovations.

#### ARKEMA AND HEXCEL TO PIONEER A NEW MANUFACTURING PROCESS USING HIGH-TEMPERATURE THERMOPLASTICS.

At the core of the HELUES technology is a one-step forming and injection overmolding technology that utilizes HexPly® unidirectional (UD) carbon fiber-reinforced Kepstan® PEKK tapes in conjunction with Kepstan® PEKK injection molding compounds. This integrated approach enables the rapid creation of a fully formed, structurally complex component, including reinforcing ribs and functional elements, in less than two minutes.

#### Thermoplastics technology offers aerospace OEMs three key advantages:

- **Dramatically shortened cycle times** - from hours to minutes - to meet production targets of up to 80-100 jets per month,
- **Greater design flexibility and weight savings**, thanks to thermoplastics' ability to be reshaped and welded rather than fastened,
- **Enhanced sustainability and recyclability**, as thermoplastics can be reprocessed and reused.

The HELUES demonstrator directly replaces a traditionally assembled door structure with a single, integrated part, reducing component count and assembly steps by up to 90%. Early-stage testing confirmed excellent material bonding between molded ribs and thermoformed laminates, further supporting the part's viability in demanding aerospace environments.

With the commercial aviation sector preparing for a future defined by high-rate production and more automated, sustainable assembly lines, thermoplastics are gaining momentum as a material of choice. By reducing reliance on energy-intensive autoclaves and enabling robotic manufacturing processes, solutions like the HELUES component demonstrate how composite innovation can unlock both performance and production scalability for the next generation of aircraft.

The HELUES project, funded by the **German Aerospace Centre** and supported by **the Bavarian State Ministry of Economic Affairs**, brought together **Airbus Helicopters Deutschland GmbH, Neue Materialien Bayreuth GmbH, Christian Karl Siebenwurst GmbH & Co. KG, Incoe corporation**

Supported by :



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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 more sustainable materials. With the ambition to become 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 2024, 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 2024, and operates in some 55 countries with 21,150 employees worldwide.

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