



At the Paris Air Show Premium AEROTEC will be showing off the next stage in the development of the world's first single aisle pressure bulkhead demonstrator made from thermoplastic CFRP

Augsburg/Bremen/Paris, 17.06.2019 – Aviation industry supplier Premium AEROTEC is making progress in developing the world's first thermoplastic pressure bulkhead through work by a multidisciplinary research and development team. The aim is to prepare the thermoplastic joining technology of resistance welding for use in serial production.

With this innovation Premium AEROTEC is further expanding the range of uses for thermoplastic CFRP (carbon fibre reinforced plastic) in the aircraft fuselage shell significantly beyond its current application for small parts. In collaboration with its partners, Premium AEROTEC is thus demonstrating its unique skill in developing and producing large aircraft components from thermoplastic CFRP.

The demonstrator is the second generation of the thermoplastic welded pressure bulkhead. Its predecessor celebrated its world première at ILA 2018 in Berlin. The 1:1 demonstrator for a plane in the Airbus A320 series was built from eight equally sized thermoplastic CFRP components. These are joined to each other using state-of-the-art CFRP welding technology. The entire development and design were undertaken by Premium AEROTEC; manufacturing of the individual components was undertaken by the Institute for Composite Materials (IVW) in Kaiserslautern. Additionally, the DLR Center for Lightweight Production Technology in Augsburg made joining the components possible by developing the CFRP welding technique for seams of this length.

In comparison to the current traditional pressure bulkhead for the A320 product family, made of riveted aluminium components, the thermoplastic CFRP version offers the same mechanical properties but with a saving in weight of around 10-15%. What is more, the reduction in production time of around 50% means reduced manufacturing costs. The thermoplastic pressure bulkhead offers all the characteristics needed for a NEXT GENERATION AIRCRAFT.

Premium AEROTEC is able to draw on many years of experience in the use of thermoplastic materials for smaller components for the A350 XWB, for connecting CFRP frames to CFRP skin sections, for example. Premium AEROTEC manufactures over 2,000 such clips per aircraft using a highly automated process.

Because of the machinery and systems involved, the process of heating, shaping and cooling pre-impregnated CFRP semi-finished products (prepegs) was previously difficult to apply to large-scale aircraft components. In addition to introducing it into serial production for the A350 XWB, Premium AEROTEC was also working on making this technology usable for larger components such as integral frames. The demonstrator to be exhibited in Le Bourget will enable the company to demonstrate that the technology can also be used for major components in the primary structure. The full-scale demonstrator, displayed in mounting conditions, exhibits a degree of



technical maturity far beyond the concept phase – laying a significant part of the foundations for the next generation of CFRP aircraft fuselage shells.

Premium AEROTEC is a global player in the aviation industry and achieved a turnover of €2 billion in 2018. Its core business is the design and construction of aircraft structures in metal and carbon fibre composite material. The company has sites in Augsburg, Bremen, Hamburg, Nordenham and Varel in Germany as well as Braşov in Romania. Premium AEROTEC employs around 10,000 people in total. Further information is available at www.premium-aerotec.com.

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