

“Novel Thermoplastic Structures for Aerospace”

Over the last 30 years, GKN Aerospace - Fokker has applied thermoplastic materials for a wide range of aircraft structure applications with increasing complexity and structural significance. Starting with nonstructural applications like the Fokker 50 Main Landing Gear door and Fokker 100 baggage floor panels, via control surface ribs and the Airbus A340 / A380 'J-Nose' wing fixed leading edges, to completely thermoplastic induction welded elevators and rudders currently in service on large cabin Gulfstream aircraft. The next steps to fuselage panels and horizontal stabilizers are currently in progress, including some applications on helicopters / tilt rotor aircraft and UAM platforms. The presentation will focus on some of the unique properties of thermoplastics like the improved damage tolerance / impact resistance and through-the thickness strength as well as on the novel production and assembly techniques enabled by thermoplastics like the different welding techniques and co-consolidation. Certification aspects, high-rate production potential (out-of-autoclave) and sustainability, the first flying fully recycled thermoplastic parts, will be covered as well.