

Development of fiber reinforcing thermoplastic composites based on hybrid yarns

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Abstract

Nowadays, fibre reinforced composites are in use in a variety of structures, ranging from space-craft and aircraft to buildings and bridges. This wide use of composites has been facilitated by the introduction of new materials, improvements in manufacturing processes and developments of new analytical and testing methods. Thermoplastics also offer the option to fuse or weld moulded subcomponents, which can reduce assembly weight and stress concentrations by eliminating fasteners and adhesives. Eventually, respect to others conventional materials like aluminum or steel the FRTC will have less specific density which is a significant advantage in transport applications

The speech will show a new technology to manufacture fibre-reinforced thermoplastic composites. The technology will be based on the hybridization at micro and macroscale of fibrous elements comprising the two main components of the final products (high performance filaments and thermoplastic filaments). This will result in semi-elaborated products (yarns and fabrics) which can be further processed into thermoplastics composites.

The processing of these materials still remain a big challenge, the speech will review the different processing technologies and the works carried out at AITEX to improve processing technologies and the materials performance.