

Project Title:	EcoFloor – Environmentally friendly and impact-resistant floor panels for civil aircraft
Partner:	Faserinstitut Bremen e.V. Institut für Textiltechnik Augsburg gGmbH
Accompanying Partners:	CTC GmbH 3D-ICOM GmbH & Co. KG ZAL GmbH
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Mission Statement

Facing global competition and environmental change, the aviation industry is confronted with ever-increasing demands on the economic efficiency and ecological impact of its products. To meet these requirements, carbon fibre-reinforced plastics (CFRP) are increasingly being used in aircrafts. However, their production as well as end-of-life products generate waste streams from which recycled carbon fibres (rCF) can be recovered. These fibres are not yet used in structural components, which means that the remaining mechanical properties are not sufficiently utilised. The EcoFloor project is investigating the use of rCF in environmentally friendly and impact-resistant floor panels in civil aircraft. The aim is to reduce the consumption of fossil raw materials and CO₂ emissions in the production phase.

Approach

This goal is to be achieved by using reinforcement fabrics from rCF in the top layers of the sandwich panels and sustainable materials in the intermediate layer (see Fig. 1). For this purpose, a process is developed to process rCF into multiaxial fabrics and woven fabrics. These fabrics are then combined with a cork layer as face sheets. The resulting composites are improved in terms of impact strength and acoustic properties. During the development, the process parameters for the production of the new construction and vacuum infusion process are determined in order to achieve the quality required within the aviation industry. The identified approach will be evaluated for its potential to increase the efficiency of component manufacturing compared to the conventional autoclave manufacturing process. The identified processes are used for the design and validation of a demonstrator floor panel using the

novel sandwich construction. Finally, the economic and ecological advantages of the process and product development are examined and a recycling strategy for the panels is developed.

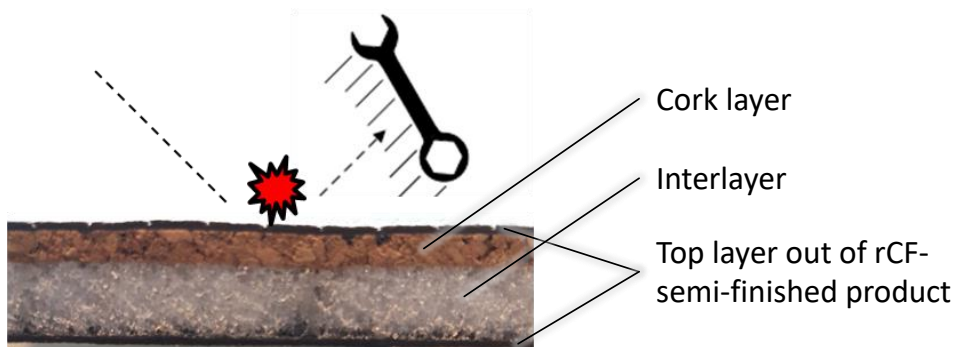


Fig. 1: Layer structure of an alternative floor panel with cork layer and rCF top layers

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