

The ECO-COMPASS EU-China Project

– EMuS 2019 –

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ABSTRACT

Fibre reinforced polymers are important materials used in aviation due to their excellent specific properties enabling the reduction of fuel consumption. For example, carbon fibre reinforced epoxy resins are used in fuselage and wing structures. Glass fibre reinforced phenolic resins are mainly used for the interior panels due to their low weight and favourable fire properties. All these composite materials used in aviation have one thing in common: they are man-made. Renewable materials like bio-fibres and bio-resins are under investigation for a long time for composites but they did not make it into modern aircraft in high amounts yet.

The project ECO-COMPASS under Horizon 2020 aims to bundle the knowledge of 17 partners from China and Europe to develop ecological improved composites for the use in aircraft interior and secondary structures [1]. Bio-based reinforcements, epoxy resin and sandwich cores are developed and improved for their application in aviation. Furthermore the use of recycled carbon fibres to increase the mechanical strength and multifunctional aspects of bio-composites are evaluated. In order to withstand the special stresses in aviation environment, protection technologies to mitigate the risks of fire, lightning and moisture uptake are under investigation. An adapted modelling and simulation will enable the optimization of the composite design. Electrical conductive composites for electromagnetic interference shielding and lightning strike protection are under investigation in ECO-COMPASS as well. The cooperation includes the exchange of knowledge and materials in order to optimize the development of ecological friendly composites.

The aim of the presentation at the EMUS conference is to give an overview of the project objectives and its special background with the collaboration of Chinese and European partners. Selected topics and results of the ECO-COMPASS project will be presented. A special attention will be given to the multifunctional aspects of the composites under evaluation in the ECO-COMPASS project.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690638 and the Special Research Plan on Civil Aircraft of Ministry for Industry and Information of the People's Republic of China (MIIT) under Grant No MJ-2015-H-G-103.

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<https://doi.org/10.1007/s13272-018-0298-z>