

Project title: E-SATstart

Partners: RWTH Aachen University (IST, ILR, IEM, FSD, SLA),
Fraunhofer-Institut für Produktionstechnologie (IPT), Helix
Carbon GmbH, ENGIRO GmbH, IMA Materialforschung
und Anwendungstechnik GmbH, CirQua GmbH, MTU Aero
Engines AG, Liebherr-Aerospace Lindeberg GmbH

Duration: 11/2020 - 10/2023

Funding: BMWi

Univ.-Prof.
Prof. h.c. (Moscow State Univ.)
Dr.-Ing. Dipl.-Wirt. Ing.
Thomas Gries
Director

Yanick Schlesinger
Scientific employee

17.02.2021

Mission Statement

The objective of the overarching collaborative project E-SATstart is to develop several core technological innovations of the Silent Air Taxi, an ultra-quiet, low-cost producible small aircraft that can be certified for commercial aviation. By directly connecting regional centers and rural areas, the Silent Air Taxi serves as a pioneer of new mobility concepts that make aviation more efficient and ecological.

In the partner project "Research of key technologies for the electro-hybrid Silent Air Taxi", 6 institutes of RWTH Aachen University and a total of 7 partners from industry are systematically researching and optimizing the necessary technological principles and methods. Within the project, the Institute of Textile Technology is developing a process route for the cost-effective production of a wing in large quantities based on the use of hybrid thermoplastic-thermoset composites.

Approach

The aim is to develop a process route for the production of a hybrid wing made of thermoplastic and thermoset. To this end, alternative curing concepts for the co-consolidation of thermoplastic and thermoset are first identified and evaluated in terms of technical and economic suitability by means of a utility value analysis and rough cost calculation. This is followed by the selection of suitable material combinations of thermoplastic and thermoset for the manufacture of the wing. Material combinations are prepared in the form of a material map containing all the relevant achievable material properties as well as information on process control during textile processing

and consolidation. Particular attention is paid to the processing window in terms of temperature and pressure. Subsequently, in cooperation with IMA Materialforschung und Anwendungstechnik GmbH, a material combination is selected that meets both the mechanical requirements and the requirements for certification of the structure. The production route is then implemented in terms of process technology on the basis of a prototype.

Acknowledgement

The project "E-SATstart", funding code 20M1908C, is funded within the 1st call of the aeronautical research program VI of the Federal Ministry for Economic Affairs and Energy based on a decision of the German Bundestag.

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

Contact

Yanick Schlesinger, M.Sc.
Department: Composite Reinforcements
Tel.: +49 (0)241 80 23457

Dominik Granich, M.Sc.
Department: Hybrid Materials and Impregnation Technology
Tel.: +49 (0)241 80 22092

Hannah Dammers, M.Sc.
Department: Composite Production
Tel.: +49 (0)241 80 22095