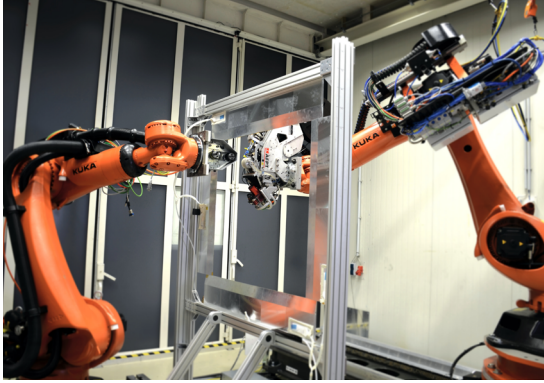
DUAL-ROBOT AFP AND WELDING OF THERMOPLASTIC CFRPs



RESEARCH LOCATION

DLR Institute of Structures and Design, Augsburg

PROJECT

Development of tool-less, dual-robot layup and welding technologies for thermoplastic CFRPs

PROJECT TERM

2021-2024

MATERIAL

Thermoplastic composite (CF/LM-PAEK)

OBJECTIVES

- Development of tool-less, dual-robot AFP
- Development of jig-less, continuous ultrasonic welding
- Design of a Software basis for effortless programming of dual-robot processes
- Automatic enhancement of standard industry robots

Main cost drivers and barriers to rapid design changes for modern CFRP components are expensive molds and jigs. The National Research Council of Canada together with the DLR developed a holistic and novel approach which uses dual-robot manufacturing and joining and can therefore be carried out without tools and jigs. Within this Small Teams Initiative project, not only the accuracy of standard industrial robots has been improved drastically, but also a closed software pipeline from CAD to robot has been built up that is a significant part of the advanced process. Using existing research done by the DLR on direct consolidation AFP and continuous ultrasonic welding (cUW) in mono robot configuration the team established new processes that are using significant less expensive jigs and improved design flexibility.

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More information
Innovative Robotic Platforms for Manufacturing and Joining Thermoplastic Aerostructures

YouTube video
Dual-Robot AFP and Welding of Thermoplastic CFRPs

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