Dig-CirclE

Digitalization in the Circular Economy of high performance Composites

Motivation High-performance fibre-reinforced plastic (FRP) composites for aerospace and automotive applications offer optimal properties such as stiffness, strength and high lightweight potential. However, they are cost-intensive and complex to manufacture. Therefore, it is necessary to develop efficient circular processes, which do not exist yet, in order to significantly increase the added value of FRP.

Goal The aim of Dig-CirclE is to digitalise and automate processes related to the circular economy of FRP. The project pursues a holistic approach that examines and coordinates development and production, as well as reuse, repair and recycling. In addition, a search engine is being developed that allows circular processes to be evaluated and selected in terms of demand and costs.

Intended results

1) AI-supported diagnostic systems for an efficient circular economy of complex high-performance fibre-plastic composites
2) Digital component capture and cataloguing for automatic classification using AI
3) AI-supported quality assurance processes in the production of high-performance fibre-reinforced plastic composites

Expected impact An automated and digitalised circular economy enables the efficient production, reuse and recycling of FRP structures and thus contributes to the conservation of resources. This secures the location, increases employment and improves the competitiveness of producers, users and recyclers of FRP.

Tags AI, recycling, disassembly, repair, reuse, digitalisation, circular economy

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2 YEARS DURATION

Feb. 2021- Jan. 2023

5 PARTNERS

Elbe Flugzeugwerke GmbH;
LRP Autorecycling Leipzig GmbH;
Hightex Reinforcing Structures Ltd;
TU Chemnitz;
Fraunhofer IWU

1.3 MILLION € FUNDING

The total cost of the project is € 2.0 million, of which € 1.3 million will be funded.

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