SHOWCASE OF DEMO CASES

Reuse of glass fibre reinforced composite (GFRC) parts for transport

End-of-life polyester-based GFRC flat panels will be used to develop technical boards for the transport sector validating the reshaping technology developed in the project.

Reuse of carbon fibre reinforced composite (CFRC) parts for mobility

The basic concept of the demo-case is to define the basic structure of a vehicle that can be reused over several vehicle lives. The basis of this examination will be the tractor unit of the EDAG Citybot – an autonomous transport system for the inner city. Here, the high durability of carbon fibre composites can be exploited to achieve a lower overall footprint of the vehicle.

THE CONSORTIUM

The project is being implemented by 21 partners.

Academic partners and research organisations:
Tampere University; Politecnico di Milano; Fraunhofer IWU and WKI; Icam Quest; University of Patras; Gaiker; and Centre National de la Recherche Scientifique.

Technology providers:
Invent; Iris Technology Solutions; Rescoll; and Grifo Multimedia.

Post-use products managers and recyclers:
Cobat and Carbon Clean-Up.

End users:
Res-T; Benasedo; HEAD Sport; Geven; and EDAG Engineering.

Public awareness, Dissemination and Exploitation Associations:
APRA Europe; AVK; and META Circularity.

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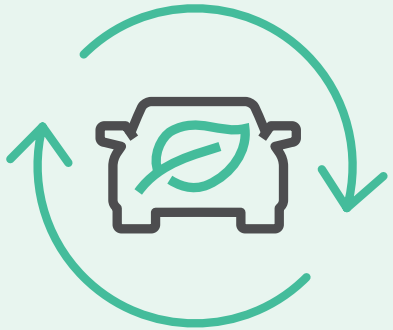
RE CREATE

CIRCULAR REUSE AND REMANUFACTURING OF FIBER-REINFORCED COMPOSITE MATERIALS



This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101058756.

AMBITION AND KEY CHALLENGES

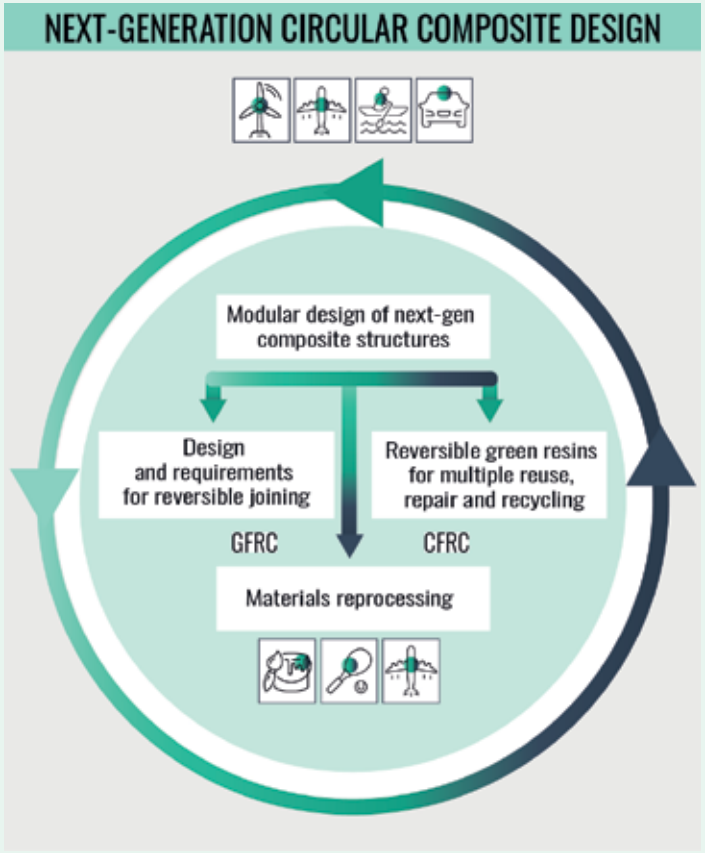
The main ambition of RECREATE project is to develop a set of innovative technologies all aiming to exploit the circularity potential of End-of-Life (EoL) complex composite waste.

The key challenge of the project is the reduction of cost of fibers in the composites market, which is expected to decrease the cost of composites. This can drive a wider penetration of fiber composites in various applications, especially in the e-mobility sector.

Viable EoL strategies present the greatest challenge for composites manufacturers. Therefore, exploiting complex EoL composites, mainly carbon fibre reinforced composites (CFRC) and glass fibre reinforced composites (GFRC) as a feedstock for multi life cycle parts and materials in the manufacturing industry provides main expected impact deriving from the project results.

Solutions for the remanufacturing and reuse of EoL composite structures will be developed. This includes suitable inspection, testing and defect characterization as well as techniques for the dismantling of multilayer structures (for de-coating, disassembly and adhesive disconnection).

The expected impact is further enhanced by limiting the market threats through the demonstration of viable demand-driven solutions of circular business cases.



Complex material compositions and crosslinked nature of composites, especially thermoset composites, make their recyclability difficult. Most of the composites currently in use are disposed of in landfills, or incinerated. As a consequence, by enhancing the greatest market opportunity, by lowering the cost of reusable materials available in traceable and certified way RECREATE is meant to deliver a core change to the composites industry.

MARKET

The demand for both composites and high-performance fibre materials, especially carbon, at affordable costs is foreseen to grow steadily in the next few years in EU, driven by progressive banning of landfilling of composite waste and growing needs in many manufacturing sectors. It is therefore crucial that new technological alternatives are identified, so to allow the recovery and reuse of materials and components in an environmentally and economically sustainable way.

Target industries and market segments interested in the project results range across different sectors such as automotive and transport, wind energy, aeronautics and aviation industries and include European SMEs and large corporates as end users and technology providers.

RECREATE directly affects 70% of composite consumption sectors in the EU through its nine demo cases. Moreover, in terms of geographical distribution of composites use in manufacturing, the project covers 90% of the European market.