

Project



CIRC-01-2016-2017

FiberEUse

Full Title: Large scale demonstration of new circular economy value-chains based on the reuse of end-of-life fiber reinforced composites

Aim:

Glass and carbon fiber reinforced polymer composites (GFRP and CFRP) are increasingly used as structural materials in many manufacturing sectors like transport, constructions and energy due to their better lightweight and corrosion resistance compared to metals. Composite recycling is a challenging task. Although mechanical grinding and pyrolysis reached a quite high TRL, landfilling of EoL composites is still widespread since no significant added value in the re-use and remanufacturing of composites is demonstrated. The FiberEUse project aims at integrating in a holistic approach different innovation actions aimed at enhancing the profitability of composite recycling and reuse in value-added products. The project is based on the realization of three macro use-cases, further detailed in eight demonstrators:

Use-case 1: Mechanical recycling of short GFRP and re-use in added-value customized applications, including furniture, sport and creative products. Emerging manufacturing technologies like UV-assisted 3D-printing and metallization by Physical Vapor Deposition will be used.

Use-case 2: Thermal recycling of long fibers (glass and carbon) and re-use in high-tech, high-resistance applications. The input product will be EoL wind turbine and aerospace components. The re-use of composites in automotive (aesthetical and structural components) and building will be demonstrated by applying controlled pyrolysis and custom remanufacturing.

Use-case 3: Inspection, repair and remanufacturing for EoL

CFRP products in high-tech applications. Adaptive design and manufacturing criteria will be implemented to allow for a complete circular economy demonstration in the automotive sector. Through new cloud-based ICT solutions for value-chain integration, scouting of new markets, analysis of legislation barriers, life cycle assessment for different reverse logistic options, FiberEUse will support industry in the transition to a circular economy model for composites.

Start date: 1 June, 2017

End date: 31 May, 2021
