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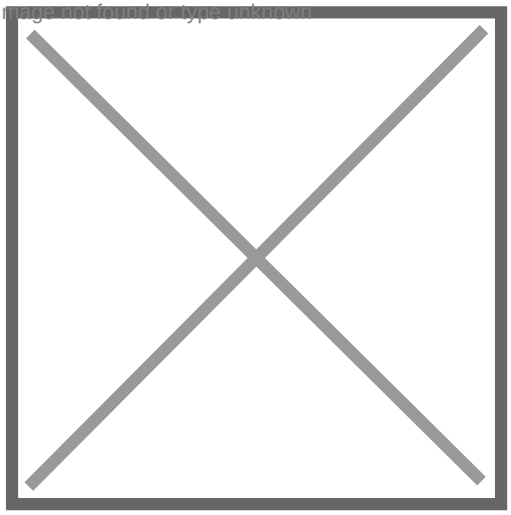

HORIZON-CL4-2021-RESILIENCE-01-01

MC4

Full Title: Multi-level Circular Process Chain for Carbon and Glass Fibre Composites

Aim:

MC4 (Multi-level Circular Process Chain for Carbon and Glass Fibre Composites) is a European partnership aiming to establish circular approaches for carbon and glass fibre composites. These materials are essential in numerous technical applications, for which their lightweight properties and high performances are especially valued. However, the European carbon and glass fibre value chains need to be optimized on 2 major levels: the environmental and economical efficiencies. Currently, up to 40% of the material is wasted in the production process, and after a lifetime of 15 to 30 years, 98% of the material ends up in a landfill with no hope to be recycled. With a yearly use of about 110.000 tons of carbon fibre composites parts and 4,5 million tons of glass fibre composite, the environmental impact needs to be addressed. In addition to these environmental issues, the current competitive position of Europe in these value chains needs to be improved in order to be less dependent from foreign sources. 80% of the virgin carbon and glass fibre manufacturing is done outside of Europe, and when the manufacturing is done in Europe, its technologies are often licensed from foreign countries.

Concept:
MC4 will tackle these issues by implementing research and innovation actions taking into account the specific needs of the two value chains, by: - Establishing a multi-level circular process for carbon and glass fiber composites, with processes developed for both a short term and a long term impact on the industry - Developing performant and economically realistic processes that are adapted to the specificities of the two value chains - Giving to the European

industry the means to master and own its patented manufacturing processes of recycled materials More specifically, MC4 will base the development of the recycling processes on chemical matrix/fibre separation for carbon fibre, and on a new type of resin for the direct re-use of the composite material for glass fibre. As a result, and with the use of a proper quality grading of the recycled material, MC4 will set up processes for reaching a 60% recycling rate within the supply chains, and will ensure the possibility to properly use the recycled materials in different application domains.

Start date:
01/04/2022

End date:
31/03/2025