

FURHY (FULLY RECYCLABLE HYBRID BIO-COMPOSITE FOR TRANSPORT APPLICATIONS) is a 42-month EU project, funded by Horizon Europe program, started on 1st of July 2023.

The project is coordinated by CETMA, an Italian RTO specialized in composites other partners involved are ONYRIQ-Spain, OLGUN CELIK-Turkey, CENTEXBEL-Belgium, GEN2CARBON-U.K., University of Salerno, RINA Consulting, LEONARDO Company, and NANOTECH -Italy.

The growing demand for reducing CO₂ emissions by cars has made led automotive OEMs (Original Equipment Manufacturers) to significantly invest into the electrification and weight reduction. Similarly, the aviation industry aims to reduce CO₂ emissions. Electric bikes, boards, and scooters are redefining mobility in today's cities. These new forms of sustainable mobility are enabled by innovation in advanced materials, particularly lightweight materials. For these materials the demand will dramatically exceed current production over the next 10 to 15 years. According the above, composite materials represent a key strategic area for improving the resilience of the EU mobility industry and its development has the potential to disrupt the mobility sectors. The FURHY project aims to put Europe at a leading position of the **development of a new, bio-based, smart and fully recyclable composite material**, obtained by fast and low energy consumption out-of-autoclave process. The matrix will be made by a new bio-based epoxy resin formulation filled with expanded graphite (EG), that will play a multiple role in the enhancement of both material and manufacturing process, providing smart-functions. **A hybrid composite will be developed using hemp and recycled carbon fibres (rCFs)**, thus maximizing the environmental benefits with a life-cycle perspective. The hybridization will let to exploit the advantages offered by both fibres, minimizing the relevant drawbacks. The manufacturing process will consist in a low energy version of the prepreg compression moulding (PCM). Aeronautics and automotive field are the main sectors of interest.

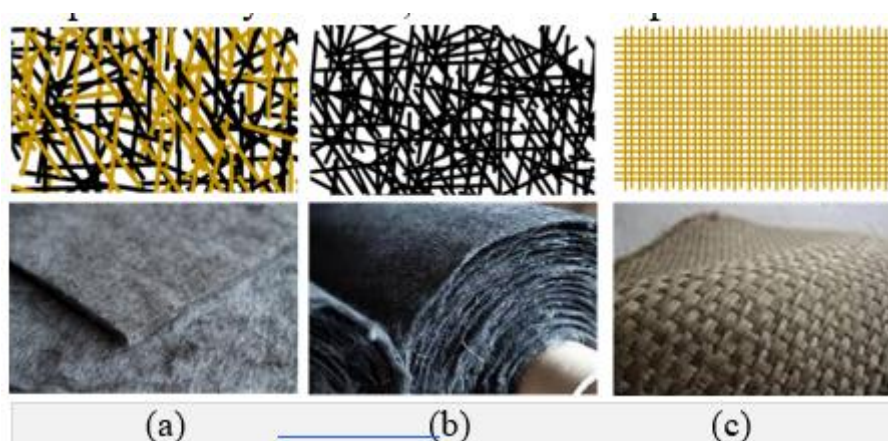


Figure 1 Fibre architectures at ply level - (a) innovative hybrid commingled hemp/rCF non-woven, (b) commercial rCF non-woven, (c) hemp fabric