Titolo intervento

Sustainable composites for weight reduction in mass production

Abstract intervento

Developing materials and components optimized in their physical, mechanical, and thermal characteristics requires:

· minimizing the use of critical materials,

· avoiding energy-intensive processes,

· increasing lifespan, repairability and recyclability of products.

Composite materials (reinforced with fibres) play a fundamental role in achieving all these objectives.

ENEA Faenza activities about sustainable composites for mass production deal with:

· Research and development of structural and functional ceramic materials (monolithic, composite, and coatings), and prototype creation

· Development of innovative composite materials with polymeric and pre-ceramic matrices, recyclable and fire-resistant

· Engineering of innovative components and production processes, including 3D printing and (for composites) lamination technologies

· Thermomechanical characterization of materials and qualification of components

· Microstructural and physico-chemical characterization of ceramics, composites, and metallic materials

The research results exploitation is aimed at the mass production of consumer products and goods that pursue sustainability goals across various sectors, including:

· Automotive, by developing materials for lighter and stronger components

· Energy, by developing more durable components that optimize production and storage

· Construction, by manufacturing prefabricated structures and thermal insulating components, minimizing the use of steel and other materials with bad LCA