Biostruct

Co-funded by the European Union

PRESS RELEASE

- BioStruct -
An European project to promote the use of bio-composites for structural applications

BioStruct, a new European partnership, has kicked off its mission to develop advanced technologies for the manufacturing of composite parts made from bio-materials. The project began in January 2024 and aims to solve technical issues linked to the use of biocomposites to allow their use in structural applications.

Context

Composites are widely used and crucial in numerous technical applications, valued for their lightweight properties and high performance.

However, persistent economic and technical challenges exist with the recycling of conventional fiber-reinforced composites made from glass or carbon fiber. Additionally, approximately 80% of all carbon fibers are produced outside Europe, with about half of the remaining 20% manufactured under foreign licenses, presenting genuine challenges to strategic autonomy.

The adoption of bio-materials (natural fibers and bio-based resin) for such composites is seen as a potential solution, yet issues arise concerning their suitability for structural applications. Natural products like natural fibers exhibit higher variability in terms of dimensions, weight, and appearance. Therefore, precision is crucial when handling fabric made of natural fibers, particularly during the lay-up and draping of composite parts.

Furthermore, a deeper understanding of the mechanical properties of natural fibers and resins is necessary to accurately design structural components and enable their use in structural applications.

Main objectives

The BioStruct project aims to advance bio-composites towards structural applications by addressing technological challenges related to the manufacturing of such parts.

Key objectives of the BioStruct project include:

- Developing an accurate draping process to control fiber orientation
- Creating material models to capture natural variability
- Integrating nano-structured bio-based sensors for load monitoring

How ?

The implications of BioStruct extend beyond environmental sustainability. By enhancing the use of bio-composites in structural components, the initiative aims to diminish reliance on conventional carbon and glass fiber composites, thus paving the way for a greener, more resilient future.

BioStruct's impact will be demonstrated through two flagship use cases: the manufacturing of a 6m electric boat and the production of rotor blades for wind energy plants, both using natural fibers and bio-based resins.

Expected results

The BioStruct project aims to achieve several outcomes, such as increased productivity, ensuring consistently high quality in high-precision manufacturing, promoting strategic independence for the EU manufacturing industry, and reducing greenhouse gas emissions.

By focusing on boat building and wind energy, the project directly targets 25% of the market, with potential applications in sports equipment and automotive sectors anticipated to increase the share to 45%.

With the projected growth of the bio-composites market, the consortium envisions a market potential of around €100 million by 2030, leading to a significant reduction in greenhouse gases, estimated at 2.5 to 4.3 million tons of CO2 per year.

Budget and funding

BioStruct has a global budget exceeding 8 million euros and is co-funded by the European Union under the Horizon Europe programme's topic HORIZON-CL4-2023-TWIN-TRANSITION-01-02. BioStruct started on January 1st, 2024, and is scheduled for completion in December 2026.

Project partners

The public-private European partnership, coordinated by Profactor, involves 10 organizations: PROFACTOR (Austria), ABELE INGENIEURE (Germany), AMURA (Spain), BLADEWORKS (Italy), CIDETEC (Spain), ENGINSOFT (Italy), IDEKO (Spain), LUMOSCRIBE (Cyprus), NOMA RESINS (Poland), and TECHTERA (France).

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