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tecnal:a

MEMBER OF BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

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Photo by Nicholas Doherty on Unsplash

TECNALIA Research and Innovation

TECNALIA is the largest center for applied research and technological development in Spain, a benchmark in Europe and member of the Basque Research and Technology Alliance. We collaborate with companies and institutions to improve their competitiveness, people's quality of life and achieve sustainable growth.

We collaborate with companies, based on trust, collaboration and a shared technological strategy, our main areas of action being: smart manufacturing, digital transformation, energy transition, sustainable mobility, health and food, urban ecosystem and circular economy.

TECNALIA's role in REFRESH

TECNALIA is committed to delivering exploitable, market-oriented solutions that enhance the circularity of large and complex composite products, such as wind turbine blades.

Within REFRESH project, the organization focuses on the valorization of recovered fibres through their incorporation into 3D-printed concrete.

In parallel, it develops comprehensive traceability systems that track materials from end-of-life wind blades through to their reintegration into new products, ensuring transparency and sustainability across the entire value chain.

TECNALIA's role in REFRESH - Traceability



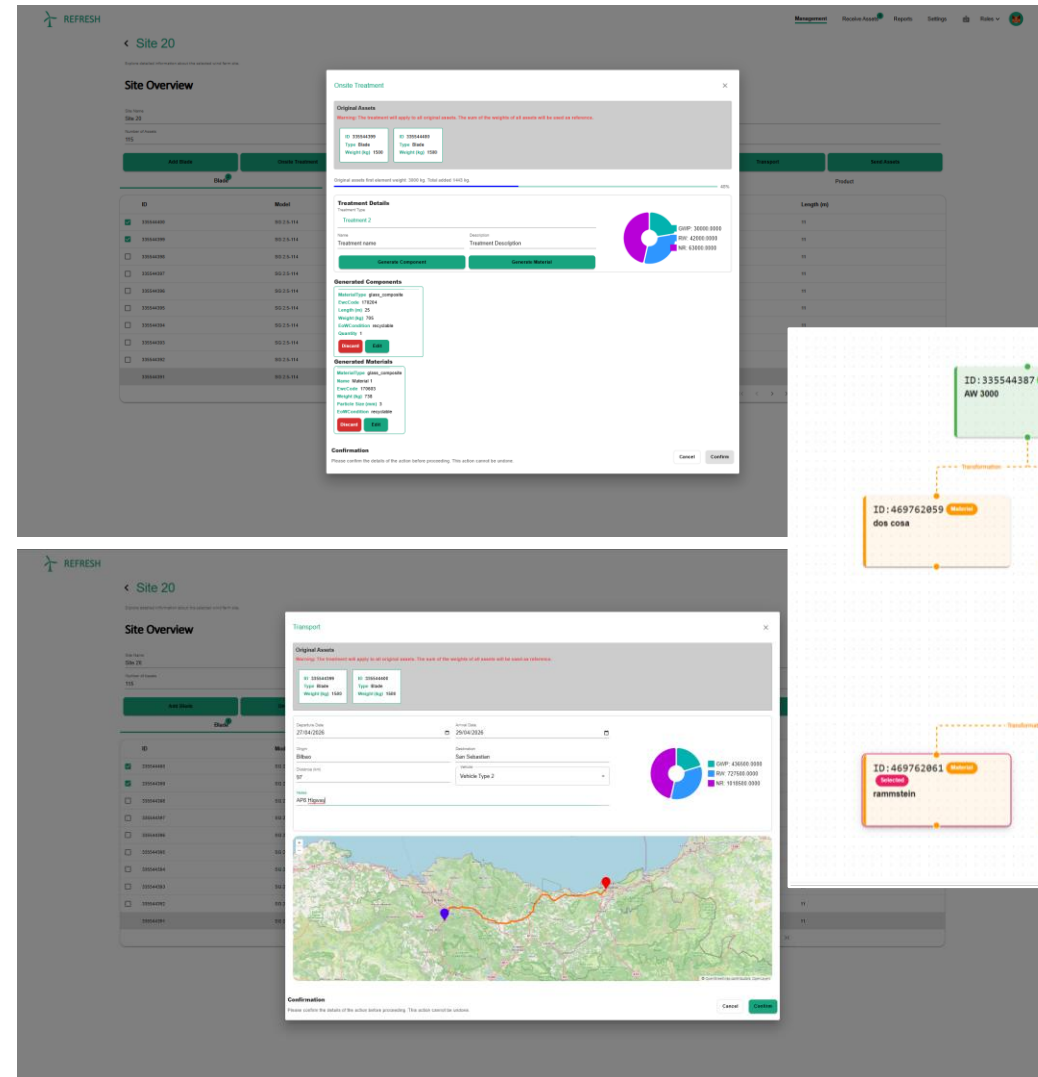
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INCLUDES:

- Traceability of blades from the wind farm to the products in which recycled materials are used.
- Transactions and ownership.
- Processing options.
- Spatial location.
- Aggregation of environmental data.

BENEFITS:

- Transparency and trust
- Quality assurance
- Better decision-making
- Facilitates regulatory compliance



TECNALIA's role in REFRESH – 3D concrete printing



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INCLUDES:

- Design of a mix suited for 3D printing.
- Development of the 3D printing mix incorporating different fibre dosage.
- Preliminary testing of mixes including fibres
- Demonstration at 1/10 scale: wind tower

BENEFITS:

- Integration of recycled materials
- Optimized material design
- Enhanced material performance
- Scalability validation



TECNALIA's Goals & Objectives

To develop a novel digital Blockchain Traceability Platform (BTP), covering the whole supply chain, along the decommissioning and recycling processes of wind blades, their components and materials, and test its efficiency into the assessment of materials performances along the circular value chain by means of a laboratory pilot.

To scale the process of integration for the long GF, deriving from process of recycling, into products, also through the development of cement-based reinforced material suited for additive manufacturing.