EuReComp

EUROPEAN RECYCLING & CIRCULARITY
IN LARGE COMPOSITE COMPONENTS

Newsletter 06
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Dear Reader,

Welcome to **Issue #6** of the EuReComp Newsletter!

In this edition, we are delighted to share the latest achievements from Work Package 5 (WP5) and Work Package 6 (WP6) — two crucial pillars driving the EuReComp project toward its mission of establishing a truly circular economy for composite materials.

WP5 demonstrates EuReComp's vision in action through innovative reuse and advanced manufacturing processes, transforming recovered fibres from WP4 into second-generation products across multiple industrial demonstrators, including the automotive, construction, and marine sectors. Complemented by digital traceability tools, these demonstrators prove how circular design and technology can bridge the gap between end-of-life materials and sustainable product innovation.

WP6, on the other hand, reinforces EuReComp's holistic approach to sustainability by integrating safety, environmental, economic, and socio-economic assessments across all processes. From on-site safety analyses and advanced CFD simulations to comprehensive life cycle and cost assessments, WP6 ensures that each EuReComp innovation is not only effective but also responsible and sustainable.

Together, these Work Packages mark a major step forward in shaping a future where advanced composites are reused, recycled, and reimagined — supporting the transition toward a circular, low-carbon industry.

Enjoy reading the latest updates, and stay connected with the EuReComp project through our website and social media channels!

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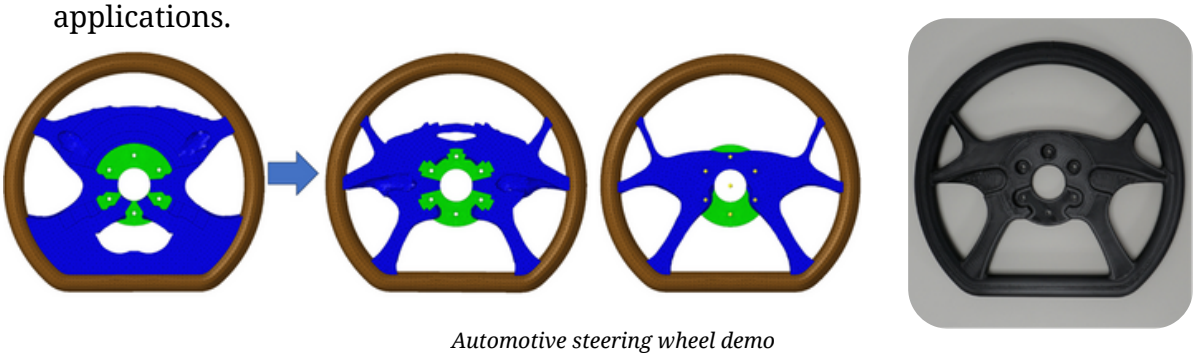
WP5: Constituents reuse with advanced manufacturing technologies

WP5 translates EuReComp's circular economy vision into practice by implementing innovative reuse and recycling methods for composite materials. It emphasizes sustainable manufacturing by integrating recovered fibres from WP4 into second-generation products through advanced remanufacturing routes. These efforts aim to demonstrate the full potential of composite recycling across multiple sectors through four industrial demonstrators.

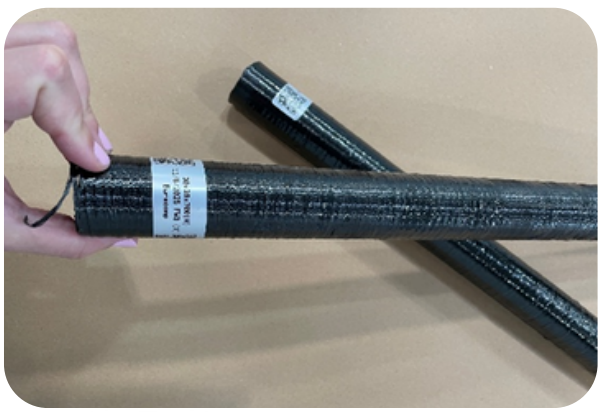
WP5 has made major progress in transforming recovered fibres into high-quality products, utilizing cutting-edge manufacturing techniques combined with digital traceability tools. Each demonstrator highlights the potential of circular composites in different industrial contexts:

- **Additive Manufacturing:** Development of a demo steering wheel, showcasing how 3D printing can incorporate recycled composite materials for automotive applications.



Automotive steering wheel demo

- **Filament Winding:** A demo automotive shaft is being developed using filament winding, a process ideal for creating strong, hollow, cylindrical structures.

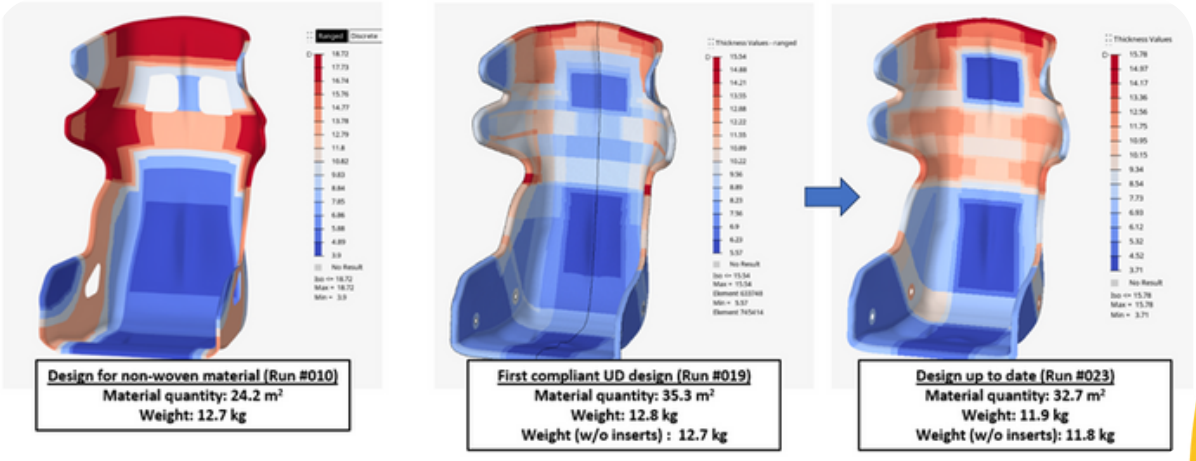


Automotive shaft demo

lets connect!

WP5: Constituents reuse with advanced manufacturing technologies

- **Compression Moulding:** This technique is being used to produce a demo formula seat, demonstrating the application of recycled materials in high-performance, complex-shaped components.



A demo formula seat

- **Infusion:** A demo container pontoon house is under construction using infusion processes, highlighting the application of repurposed and recycled composites in large-scale structural and marine contexts.

Container pontoon house demo

Team EuReComp visit in APM facilities

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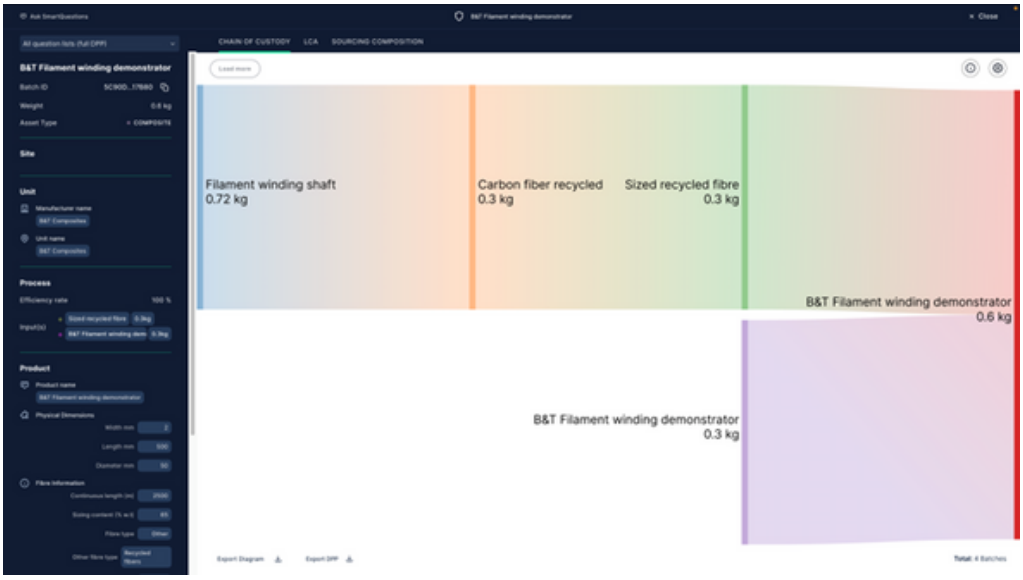
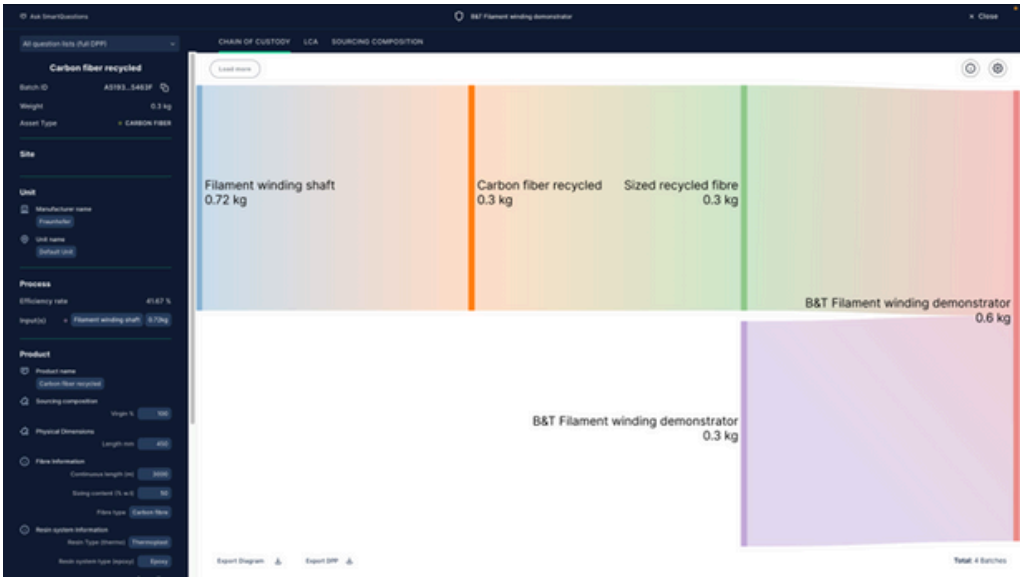
WP5: Constituents reuse with advanced manufacturing technologies

To ensure transparency and traceability across the value chain, Circularise developed digital tools that enable secure data sharing and monitoring of recycled components throughout their lifecycle. These tools were tested on various demonstrators, including repair and recycling use cases, enabling upstream and downstream stakeholders to verify recycled content and material properties.



Screenshot of the platform including the traceability of the filament winding demonstrator. The details shared from this product can be found on the left-hand side.



Screenshot of the platform for the filament winding demonstrator. This displays the details of the recycled carbon fibre, one of the components of the value chain. This view is valid for all the different components when clicking on them.

WP5: Constituents reuse with advanced manufacturing technologies

- ***What's Next for WP5***

In the coming months, WP5 will focus on finalizing the manufacturing of all demo cases, including the steering wheel, automotive shaft, formula seat, and container pontoon. Parallel experimental activities will continue to generate data for validation and material development, with results to be published and disseminated jointly through WP8 in upcoming scientific and exploitation outputs.

- **Contribution to the EuReComp Scope:**

WP5 is pivotal to achieving EuReComp's mission of a sustainable circular economy for composite materials. By transforming recovered fibres from WP4 into functional, market-ready demonstrators and combining them with digital traceability tools, WP5 bridges the gap between composite waste and new high-value products. These actions contribute directly to the project's goals of enabling effective recycling, supporting resource efficiency, and advancing circular design and reuse strategies for carbon fibre reinforced polymers (CFRPs).

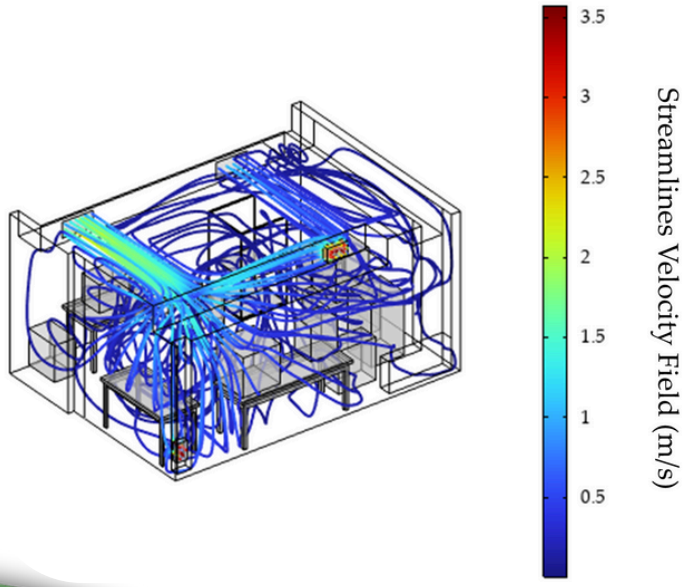
WP6: Safety–Environment–Performance Benchmarking

WP6 has achieved substantial progress in assessing the safety, environmental, economic, and socio-economic performance of EuReComp's recycling and manufacturing technologies. Notable achievements include the use of up-scaled recycled carbon fibres in the container pontoon demonstrator, extensive hotspot analyses comparing baseline and EuReComp scenarios, and on-site exposure assessments for safety validation. Comprehensive Life Cycle Assessments (LCA) and Life Cycle Costing (LCC) studies have been carried out, complemented by socio-economic analyses. The second version of the Holistic Tool was completed, integrating sustainability indicators for multi-criteria decision-making. Additionally, WP6 partners published two peer-reviewed papers and presented their results at two international conferences.

Risk and Safety:

An on-site exposure assessment was conducted at B&T facilities to evaluate the safety aspects of carbon fibre (CF) filament winding. Using a range of advanced instruments, exposure to nanoscale and microscale particles, volatile organic compounds (VOCs), and noise was quantified at multiple locations around the process.

A **Computational Fluid Dynamics (CFD)** model was also developed to simulate airflow in a 3D printing workroom and track particle dispersion under various operating conditions.



Visualization of streamlines in the 3D printing room.

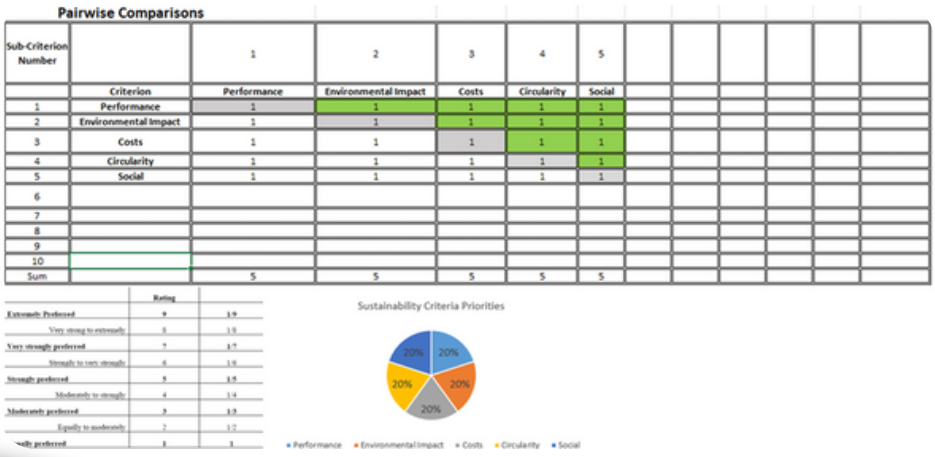
WP6: Safety–Environment–Performance Benchmarking

Environmental Impact:
A comprehensive Life Cycle Assessment (LCA) was performed to evaluate the environmental impacts of the technologies developed within EuReComp. One key highlight was the container pontoon demonstrator, where substituting virgin glass fabric with recycled glass fabric in GF/PU panel manufacturing led to an over threefold environmental impact reduction—surpassing initial sustainability targets.

Economic Impact:
Through Life Cycle Costing (LCC), WP6 analysed pilot-scale chemical-assisted solvolysis processes using different fibre types and updated cost data from laboratory and demonstrator levels. Sensitivity analyses identified cost hotspots and pathways for optimization. A consortium-wide LCC workshop strengthened partner understanding of cost modelling and methodology.

Social Impact:
An extended socio-economic analysis assessed broader social and economic implications of EuReComp's recycling and manufacturing innovations. This analysis provided valuable insights into societal acceptance, policy impact, and long-term benefits of the proposed solutions.

Holistic Index Tool:
The Holistic Tool (version 2) was finalised to provide a unified framework for sustainability assessment. Integrating environmental, economic, circularity, performance, and social indicators, it enables multi-criteria decision-making (MCDM) and scenario analysis for composite recycling processes.



Interface of holistic index tool.

WP6: Safety–Environment–Performance Benchmarking

Publications & Dissemination:

WP6 partners contributed two journal papers and presented key results at the 8th International Conference on Engineering Against Failure (ICEAF):

- Voultsou, D.M., et al. **"Computational Fluid Dynamics as a Digital Tool for Enhancing Safety Uptake in Advanced Manufacturing Environments Within a Safe-by-Design Strategy,"** Materials, 2025, 18, 262.
- Poranek, N., et al. **"Comparative LCA Analysis of Selected Recycling Methods for Carbon Fibers and Socio-Economic Analysis"** Materials, 2025, 18, 2660.
- Conference Presentation: "**Sustainability and Economic Viability of Chemical and Plasma Solvolysis Processes from End-of-Life CFRP Parts**."
- Poster: "**A Multi-Criteria Decision-Support Tool for the Selection of Sustainable Composite Recycling Processes**."

- ***What's Next for WP6***

In the final project phase, WP6 will update all safety, environmental, and economic assessments using refined data from the latest demonstrators. These updated insights will guide partners toward safer, more efficient, and cost-effective technologies. The final version of the **Holistic Index Tool** will integrate all feedback, enabling robust scenario comparisons and comprehensive sensitivity analyses. A detailed **user manual** will accompany the tool's release, which will be made openly accessible for broader application in future sustainability assessments.

- **Contribution to the EuReComp Scope:**

WP6 provides the foundation for the holistic evaluation of EuReComp's recycling and manufacturing processes. By aligning risk management, LCA, and socio-economic evaluation, WP6 enables data-driven decision-making for scaling up the most promising solutions. Through its Holistic Index Tool, WP6 directly supports EuReComp's mission to drive resource efficiency, circularity, and low-carbon innovation across the European composites value chain.

The 4th and Final Open Workshop of EuReComp!

Save the Date — Final EuReComp Open Workshop!

The Final EuReComp Open Workshop will take place on **Friday, 20 March 2026**, hosted by **Dallara** in Varano de' Melegari, Parma, Italy.

This closing event will bring together project partners, industry stakeholders, and research experts to showcase the main outcomes of EuReComp and explore the future of circularity in composite materials.

Stay tuned for more information and the preliminary agenda on our website: ***www.eurecomp.eu***

Follow EuReComp on **LinkedIn** and **X** to be the first to know when registrations open!

Events / Conferences / Exhibitions

EuReComp M42 Progress Meeting held in Lagos, Portugal

EuReComp Presented at IndTech 2025 Conference

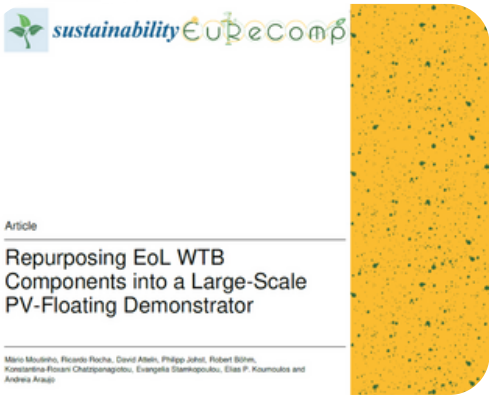
The Team Series continues!

EuReComp at the 2025 EU Industry Days

EuReComp Featured at K-Messe 2025 in Düsseldorf

lets connect!

Events / Conferences / Exhibitions



New Publication: ***Repurposing End-of-Life Wind Turbine Blades into Floating PV Demonstrator***

EuReComp at ICCM24

The Webinar Series continues!

At the 8th International Conference on Engineering Against Failure (ICEAF

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Our Team

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48 months

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