

De & Remanufacturing for Circular Economy Investments in the Composite Industry

DEREMCO PROJECT

***Segunda jornada de
internacionalización de la I+D+i:
Oportunidades para las pymes a
través de la financiación en cascada***

*30 Noviembre 2023,
Bilbao*



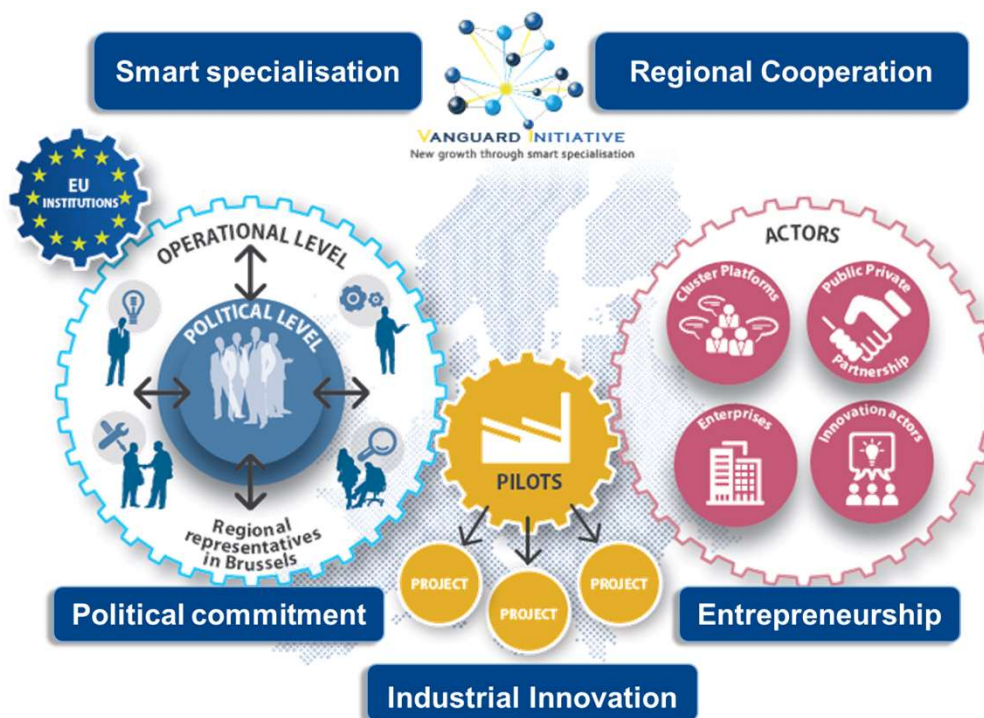
DeremCo Background: Vanguard Initiative

The [Vanguard Initiative](#) is a unique alliance that gathers 39 of the most advanced industrial regions in Europe, focused on **stimulating industrial innovation and building European value-chains** based on complementarities in regional Smart Specialisation Strategies.

Its aim is to create a **European network of open facilities** where companies (including SMEs) can find:

- ▶ Innovative technologies
- ▶ Multi-disciplinary competences (technology, business, innovation)
- ▶ Stimulating cultural environment

To understand, test, set-up and uptake innovative technologies and methods **de-risking private investments**.



Efficient and Sustainable Manufacturing Pilot

DeremCo Project

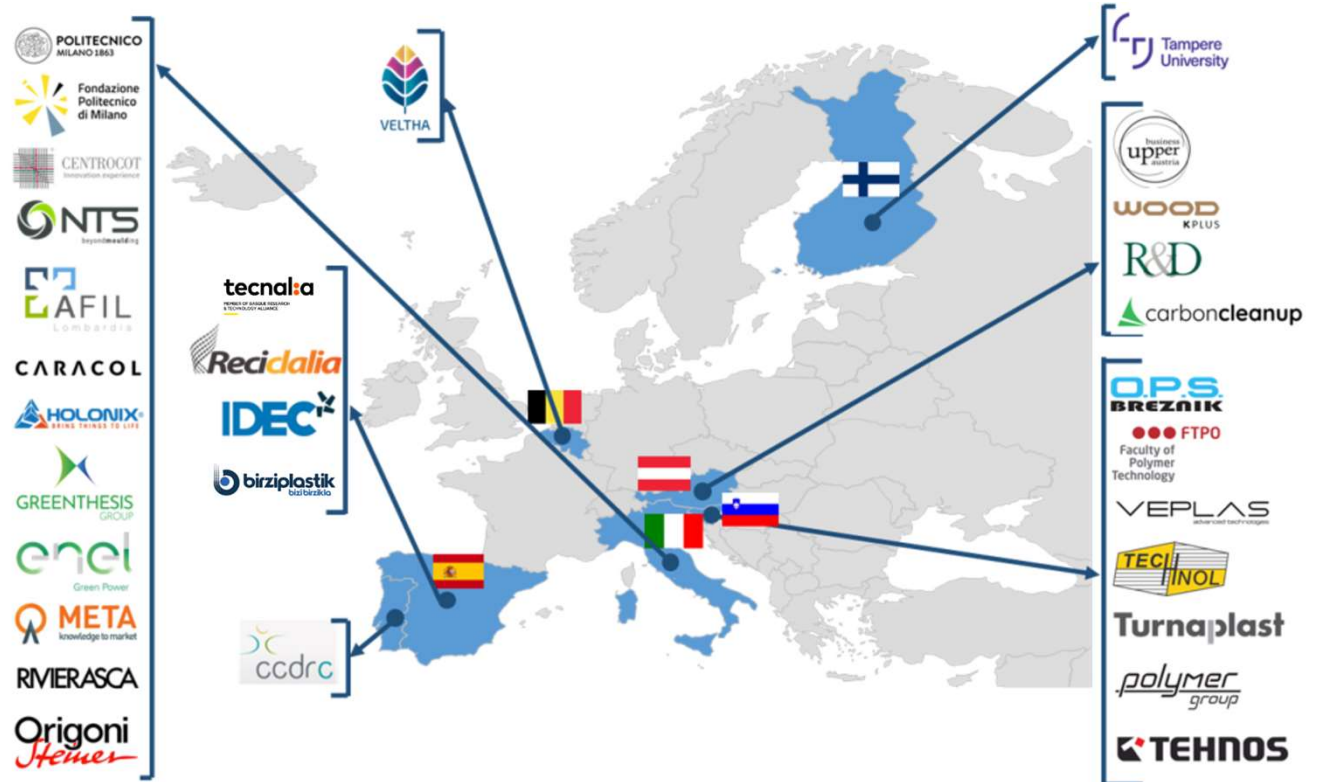


De and Remanufacturing for Circular Economy Investments in the Composite Industry

DURATION: 36 months, 2022-2025
CONSORTIUM: 30 partners, from 7 EU countries and Regions.
COORDINATOR: Politecnico di Milano
EC FUNDING: ca. 9 mln €.

DeremCo combines:

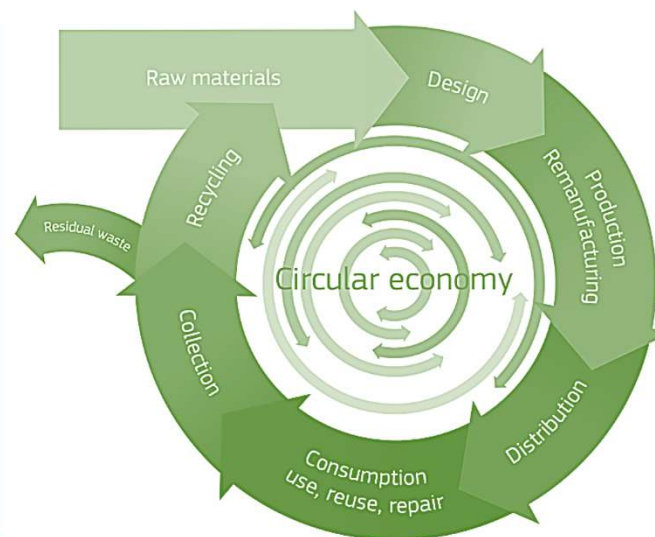
- Geographical areas with the highest utilization of composites;
- Complementarity in smart specialization on technical enablers;
- Part of the Vanguard De-and Remanufacturing network;
- Wind and automotive are distributed value-chains with relevant footprint in these Regions.



DeremCo Innovation and Technical Enablers

TECHNICAL ENABLERS:

- ▶ Innovative highly controlled demanufacturing (thermo-chemical, mechanical) processes
- ▶ Demand-driven reprocessing and certification solutions for unlocking industrial re-use business cases
- ▶ Product co-design solutions for enhancing user and citizens involvement
- ▶ A digital platform incorporating tools for material traceability and information exchange among stakeholders

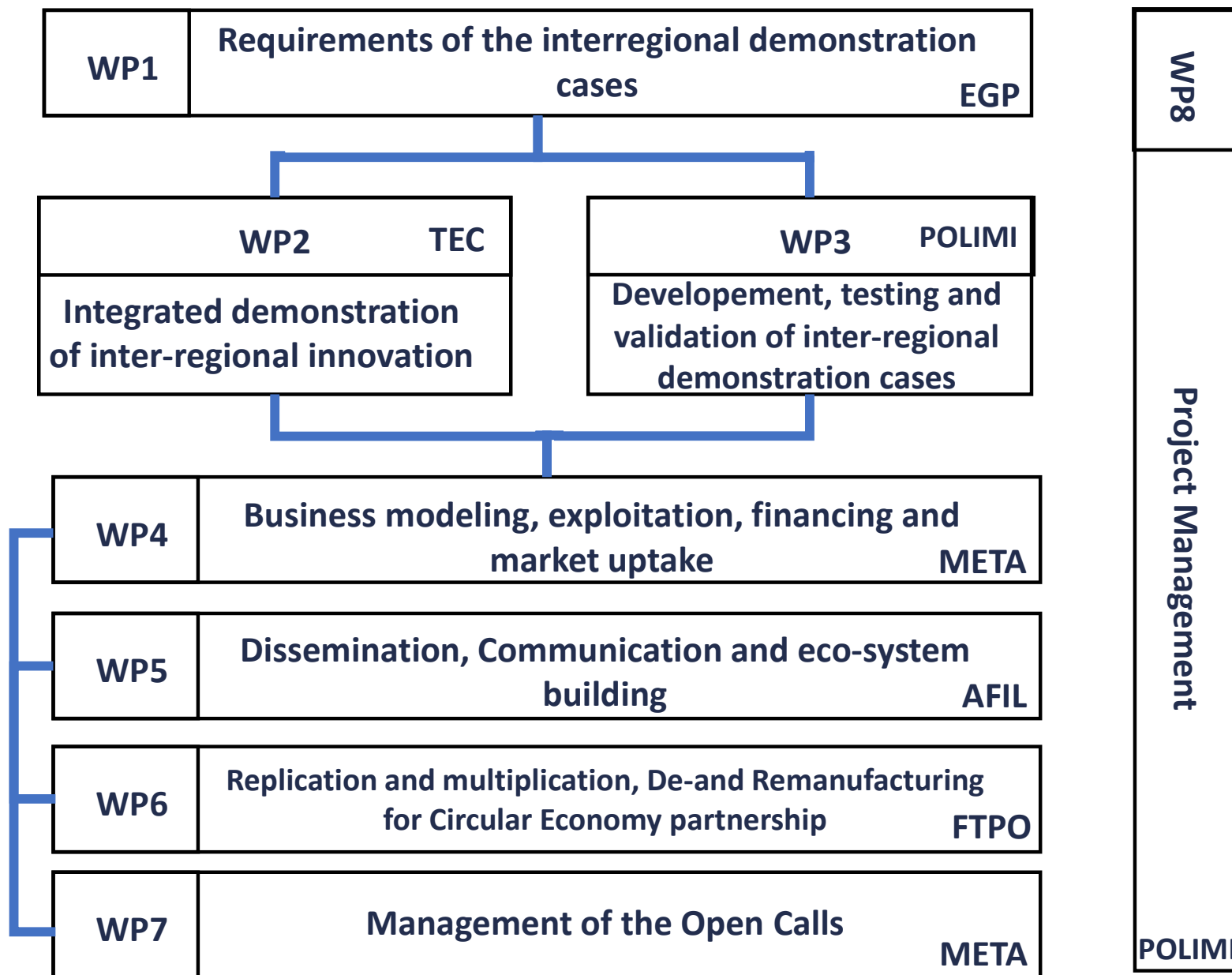


NON-TECHNICAL ENABLERS:

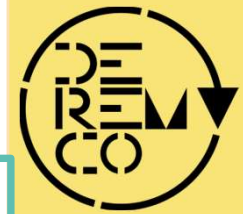
- ▶ Achieve large scale replication and multiplication by exploiting the capabilities of the Vanguard Initiative “De-and Remanufacturing for Circular Economy” network
- ▶ Boosting the industrial uptake within the local eco-system, implementing actions designed by public administrations and institutions, clusters and sector associations, financial intermediaries, citizens representatives
- ▶ Increasing awareness for a more conscious consumer behavior



Workplan:



DeremCo Innovation and Technical Enablers



Pilot Strategy 1 (S1):

Composite granule de-manufacturing, hybrid reprocessing and re-use.

Input materials will be largely based on EoL wind turbine blades and treated through mechanical grinding, while reprocessing will be carried out with a hybrid textile/composite technology that may lead to a variety of products with technical specifications met with lower virgin fiber content (0-30%) and high recycled concentration (up to 90%).

All demo cases included in S1 are reported in Table 1:

| ID | Type | Input (EoL materials) | Output sector / Product | End-User | Reprocessing technology | Reprocessing materials | Preliminary target (KPI) |
|-----|----------------------------|-----------------------|-----------------------------|-------------|-------------------------|--|---|
| 1.1 | Business to Business (B2B) | Wind turbines | Automotive, Lighting frames | NTS | BMC, Injection molding | Thermoset and recycled Glass Fiber (rGF) | 20% recycle |
| 1.2 | Business to Consumer (B2C) | Wind turbines | Creative products | OS/RIV | Various | Thermoset and rGF | >30% recycle |
| 1.3 | B2B | Car body components | Packaging | WOOD/RD | Pulp molding | Recycled paper + recycled natural fibers | >10% composite recycle |
| 1.4 | B2B | Wind turbines | Wind turbines | CARACOL | 3D Printing | Thermoset and rGF | waste reduction >70% weight reduction >80% |
| 1.5 | B2B | Wind turbines | Fences | TECHNOL | Hot pressing | Thermoset and rGF | >60% composite recycle |
| 1.6 | B2C | Wind turbines | Shelf for motorhomes | VEPLAS | Vacuum Infusion | Thermoset and GF | >30% recycle |
| 1.7 | B2B | Wind turbines | Mounting keys | OPS | Injection Molding | Thermoplastic and GF | >50% recycle |
| 1.8 | B2B | Wind turbines | Structure parts | CAP | VARTM | Thermoset and GF | >40% recycle |
| 1.9 | B2C | Wind turbines | Rails for Ski bindings | TURNAPLA ST | Injection Molding | Thermoplastic and GF | >50% recycle |



DeremCo Innovation and Technical Enablers



Pilot Strategy 2 (S2):

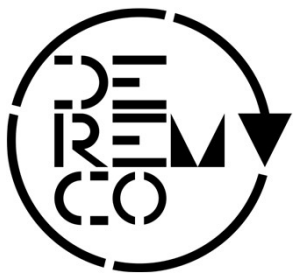
Long fiber and matrix de-manufacturing, textile reprocessing and re-use.

Input material will be mainly related to Glass Fiber Reinforced Plastics (GFRP) scraps and waste from wind energy sector. High efficiency pyrolysis will be used to obtain long fibers clean and with a minimal decrease of mechanical performances. Innovative re-sizing and textile reprocessing of the recovered carbon fibers will lead to a variety of textile products like continuous roving, fabrics, mats that will allow the realization and replication of circular demo cases (output market aerospace) and cross-sectorial cases for markets with a high demand of cheaper Carbon Fiber (CF) (as automotive).

All demo cases included in S2 are reported in Table 2:

| ID | Type | Input (EoL materials) | Output sector / Product | End-User | Reprocessing technology | Reprocessing materials | Preliminary target (KPI) |
|-----|-----------|----------------------------|--------------------------------------|--------------|----------------------------------|---|------------------------------------|
| 2.1 | B2B | Bathtubs | Automotive (pump bracket) | OPS | Injection molding | Thermoplastic and rGF | 30% recycle |
| 2.2 | B2B | Wind turbines | Tail Plane Tip | IDEC | Injection molding | Thermoset and recycled Carbon Fiber (rCF) | 5-25% rCF |
| 2.3 | B2C / B2B | Wind turbines | Textile, technical yarns and fabrics | COT | Hybrid yarn spinning and weaving | rGF and rCF fibers, textile recycled polymers | 3 products by mixed rCF/rGFd yarns |
| 2.4 | B2B | Aeronautic / wind turbines | Automotive components | BIRZIPLASTIC | Injection molding | Thermoplastic and GF/CF | Fiber content 20% |
| 2.5 | B2C | Wind turbines | Construction | RIVIERASCA | Rolling | rGF Mat | Fiber content 40% |



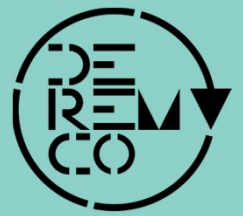


De & Remanufacturing for Circular Economy Investments in the Composite Industry

Management of the Open Calls



Goals:



«Creation of an ecosystem supported by a specific capacity building program, that will recruit stakeholders as multipliers to attract other potential users

....

- **demonstration activities** on new circular business cases in the composite sector
- new **SME driven technological solutions** to be brought at high TRL (TRL>7) for further boosting the profitability of the DeremCo business cases.»



Intro

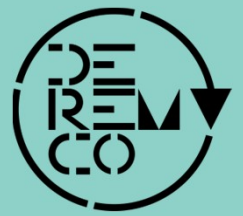


Assign 60Keuro grants to SMEs to:

- Support new **SME driven technological solutions** to be brought at high TRL (**TRL>7**) for further boosting the profitability of the DeremCo business cases.»
- **Demonstration activities** on new circular business cases in the composite sector
- 2 Calls (**April 2024 – January 2025**)
- Minimum of 21 funded projects



Goals – Looking for solutions:



- **Input** – (materials) to be treated with DeremCo technologies to enter new markets
- **Process** – complementary technologies, including IT solutions, that enhance those in use at DeremCo
- **Output** – novel solutions using DeremCo materials



Funding third parties: GENERAL ASPECTS



- 2 Calls (**April 2024 – January 2025**)
- Each call open for 3 months
- Results communicated 1 month after the closure of the call
- Minimum of 21 funded projects
- Budget for each call: maximum €660k allocated for the first call (11 projects over 21) - no "topic" restriction (to be discussed)
- Possibility to have a reserve list
- To be considered: an update of technical specifications for the DeremCo solutions between the 2 calls
- Availability of a technical "help desk" to provide technical clarifications to beneficiaries (based on the involvement of the partners through a "distribution list").





ELIGIBILITY

Only **legal entities** can be grant beneficiaries:

- **SMEs**, including start-ups with legal or operational offices in one of the consortium members' regions
- **Consortia of SMEs** are also eligible (max 3 entities)
- In defining the regions of the consortium members, branch offices can also be considered. A letter of endorsement from the concerned regional authority (main office) is needed.

Note:

- Applications can be submitted by not established entities (they must be established when signing the contract).

To be verified:

- Should the entities of a consortium be independent?





ELIGIBLE ACTIVITIES

- Trial/testing activities (including purchase of raw materials other than the DeremCo)
- Market research
- Demonstration activities (check consistency with DeremCo's activities)





GRANT

Maximum Size: €60k per beneficiary (for consortia max €180k i.e. 3x60)

Contribution rate: 100%

Payments:

- €40k pre-financing
- €20k at the end of the project (after compliance check)
- Grant provided as Lump Sum





SUBMISSION OF APPLICATIONS

Via an **online applications form**:

- **Basic information** (Name, contacts, etc.)
- **Description** of the adoption/market potential of the proposed solution
- **Action plan** detailing activities to be implemented with the grant (including time schedule)
- Description of the **expected result**
- **Video pitch** max 3 min (to be a nice to have plus)



EVALUATION OF APPLICATIONS

«External evaluation, by independent experts, based on specific criteria, as in the Guide for Evaluators. Partners' networks will be utilized to select the most appropriate external experts.

Final consensus meeting, composed by DeremCo partners and individual experts. The ranking of the proposals from the previous step will be assessed to ensure the high quality and the contribution to the objectives of the proposals to be selected.»

- 3 independent experts
- They can be experts of partners not directly involved in DeremCo activities (a signed declaration of no conflict of interest is needed).

SELECTION CRITERIA

Criteria to be used during the evaluation by the independent experts:

- Technical-financial feasibility of the action plan
- Market potential
- Soundness and credibility of the marketing plan
- Credibility of the applicant
- Consistency with the value chains of the industrial partners



POST EVALUATION PROCEDURES

- Signature of the contract with beneficiaries specifying their obligations
- Appointment of a **technical mentor** (from Polimi or the partner that supplies the raw material / demo case leaders)
- Grant balance paid after final assessment, carried out by the technical mentor.

To be discussed:

- Costs of human resources will be considered eligible?





Next steps

31/12/2023

- Draft call
- Draft online application form
- Evaluation grid
- Draft contracts



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THANKS

DOES ANYONE HAVE
ANY QUESTIONS?



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the European Union