

De & Remanufacturing for Circular Economy Investments in the Composite Industry

DEREMCO PROJECT

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

*02 Diciembre 2024,
Bilbao*



Co-funded by
the European Union

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DeremCo Project



De and Remanufacturing for Circular Economy Investments in the Composite Industry

DURATION: 36 months
(2022-2025)

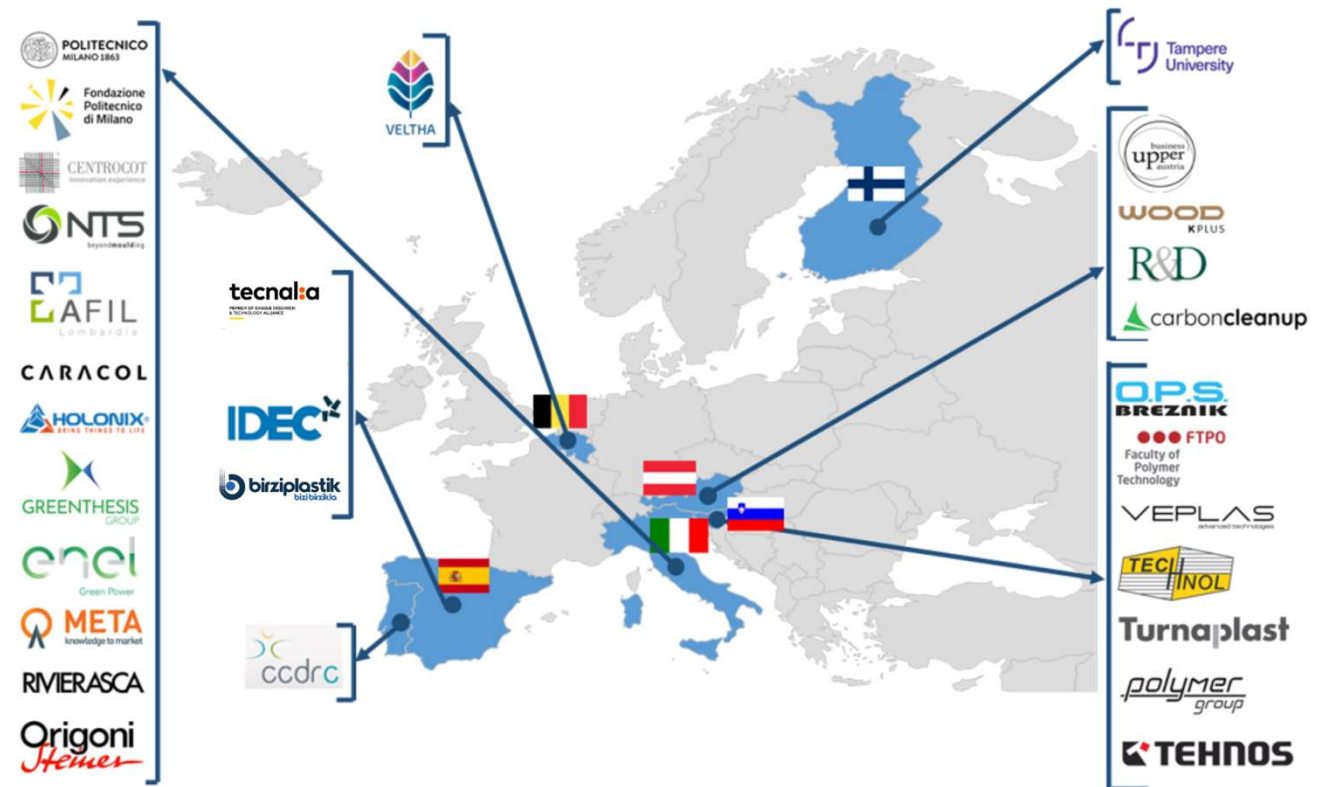
CONSORTIUM: 30 partners,
from 7 EU countries and
regions

COORDINATOR: Politecnico
di Milano

EC FUNDING: ca. 9 mln €.

DeremCo combines:

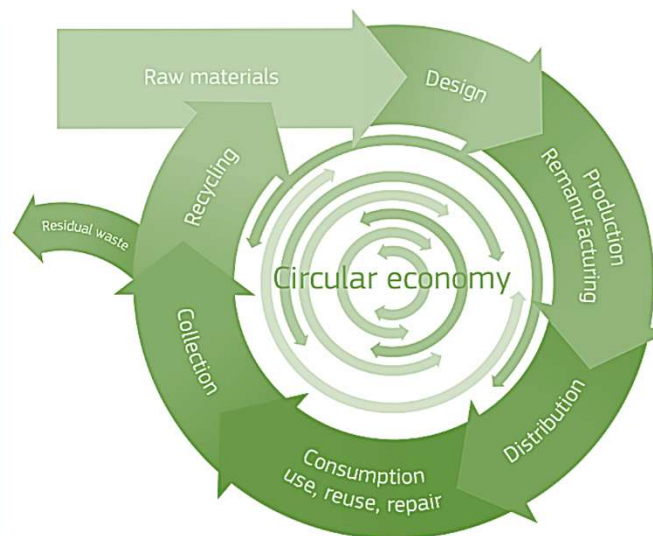
- ▶ Geographical areas with the highest utilization of composites;
- ▶ Complementarity in smart specialization on technical enablers;
- ▶ Part of the Vanguard De-and Remanufacturing network;
- ▶ Wind and automotive are distributed value-chains with relevant footprint in these Regions.



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

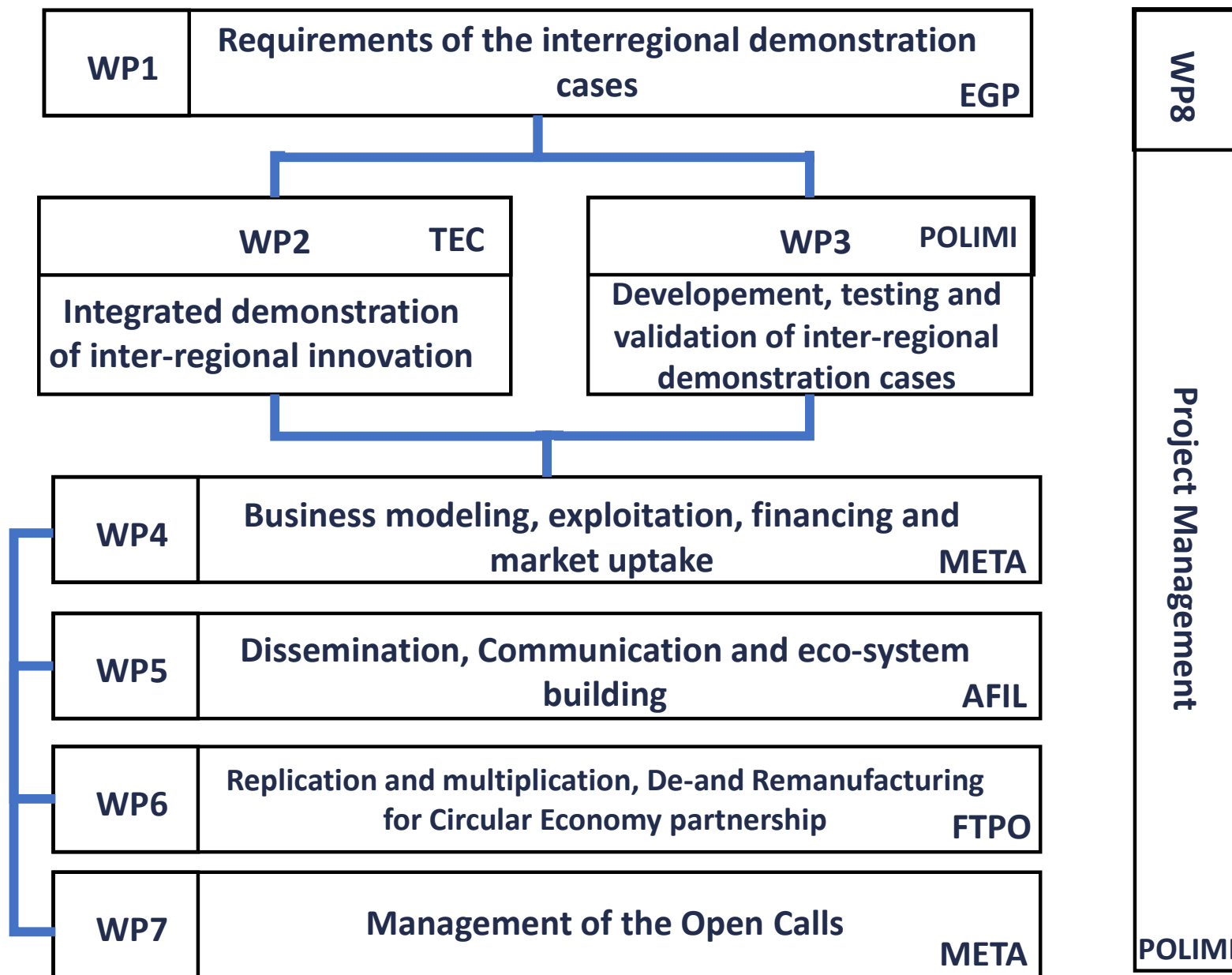


NON-TECHNICAL ENABLERS:

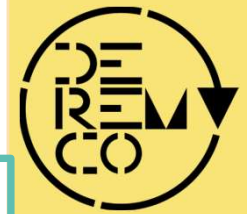
- ▶ Achieve large scale replication and multiplication by exploiting the capabilities of the Vanguard Initiative “De-and Remanufacturing for Circular Economy” network
- ▶ Boosting the industrial uptake within the local eco-system, implementing actions designed by public administrations and institutions, 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.

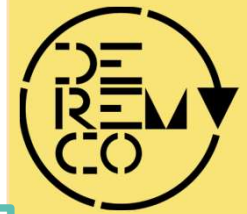
Input materials will be largely based on EoL wind turbine blades and treated through mechanical grinding, while reprocessing will be carried out with a hybrid textile/composite technology that may lead to a variety of products with technical specifications met with lower virgin fiber content (0-30%)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

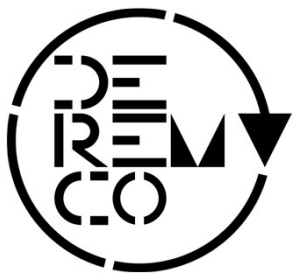
Long fiber and matrix de-manufacturing, textile reprocessing and re-use.

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%



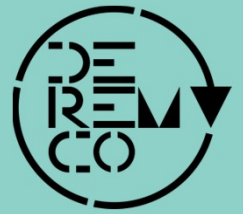


De & Remanufacturing for Circular Economy Investments in the Composite Industry

Management of the Open Calls



Goals:



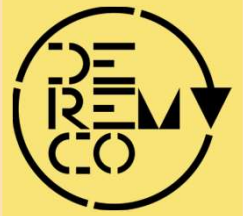
«Creation of an ecosystem supported by a specific capacity building program, that will recruit stakeholders as multipliers to attract other potential users

....

- **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 (**September 2024 – January 2025**)
- Minimum of 21 funded projects



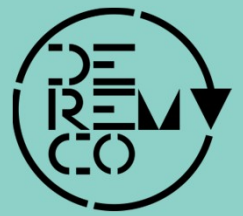
Funding third parties: GENERAL ASPECTS



- 2 Calls (**September 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").



Goals – Looking for solutions:



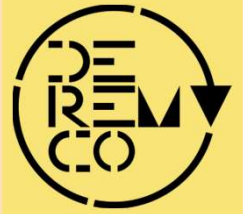
- **Input** – Developments in new or enhanced materials eligible for treatment using DeremCo technologies encompass a diverse range, such as:
 - *Polyamide (PA)*
 - *Recycled glass fiber mat (rGF matt)*
 - *Technical fibers including glass, carbon, and aramid*
 - *Carbon fiber*
 - *Components fabricated with polyester resin filled with long glass fiber*
 - *Natural fiber composites*

- **Process** – Complementary technologies, integrating IT solutions, play a pivotal role in the DeremCo project. Targeting specific segments of the process for enhancement, including:
 - *Waste processing and preparation for recycling*
 - *Reprocessing processes*
 - *Injection molding*
 - *Mixing technology*
 - *RTM/Vacuum Infusion/Closed Molding Processes*
 - *rCF yarn*
 - *Weaving*
 - *Compounding methods*

- **Output** – Innovative products leveraging DeremCo materials are poised to make significant strides across various sectors, including:
 - *High-performance products (mechanical, thermal, etc.)*
 - *Furniture sector (both private and public)*
 - *Exhibit and retail sector*
 - *Caravaning industry*
 - *Building and construction sector*
 - *Outdoor furniture*



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:
 - **SPAIN**: Basque Country
 - **ITALY**: Lombardy, Umbria; Lazio
 - **FINLAND**: Länsi-Suomi
 - **SLOVENIA**: Estern, Western
 - **AUSTRIA**: Upper, Lower, Carinthia
 - **BELGIUM**: Flanders
 - **PORTUGAL**: Centro

Note:

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



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

- NDA signature
- 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.





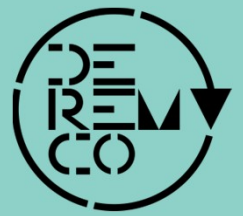
Some information about First Open Call

Documents prepared:

1. Open Call text with integrated the Guide of Applicants
2. Technical annex
3. Proposal template
4. Guide for evaluators
5. NDA
6. Draft of the sub-grant agreement



Some information about First Open Call

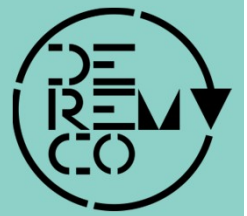


- **Open Call opening June (M19), closing September (M22)**
- **Help Desk** provided with the support of the partners
- **Application received: 22**
- **SMEs: 29**
- **Eligible applications: 19**
- **Collaboration activated with another I3 project** for external evaluators
- **Number of total evaluators: 17**

- **Evaluation procedure** completed
- **Consensus meeting** completed
- **Signature of the contract** in progress



What next



2nd Open Call (almost) launched (Deadline January 2025)



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THANKS

DOES ANYONE HAVE
ANY QUESTIONS?



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Co-funded by
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