JEC WORLD 2025
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REWIND

EFFICIENT DECOMMISSIONING, REPURPOSING AND RECYCLING TO INCREASE THE CIRCULARITY OF END-OF-LIFE WIND ENERGY SYSTEMS.

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Hello! NICE TO MEET YOU.

I'm IRENE MARTIN,

CHEMICAL RECYCLING SPECIALIST AIMPLAS

You can find me at LinkedIn

Or by writing to me at **imartin@aimplas.es**

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🌎: https://www.aimplas.es

What is AIMPLAS?

Spanish **Technological Center** with 35 years of experience in plastic sector.

We work with **all sectors** related to **plastics materials**.

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1.

INTRODUCTION

Project Background

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ON GLOBAL SCALE:

- It's estimated that **millions of tons** of composite materials are **currently in use**.
- **Circularity** of wind turbine blades is basically **close to zero** today.
- the Cost-Efficient **recycling** of composite materials remains a **challenge**.

2.500.000 Tn

Currently use in WTBs.

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350.000 Tn

Will be decommissioned in 2030.

IN EUROPE:

- Tons of EoL **Wind Turbines Blades** (WTBs) are expected to be **decommissioned** within a **few years**.
- **Prohibition** of composites **landfilling**.

CURRENTLY RECYCLING METHODS

- Low TRL.
- High Energy consumption.
- Long processing time.
- Toxic emissions.
- Low mechanical properties in r-fibers.

Economically
Technically
Unattractive.

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THE CONCEPT:

1.- DISMANTLING.

2.- QUALITY INSPECTION.

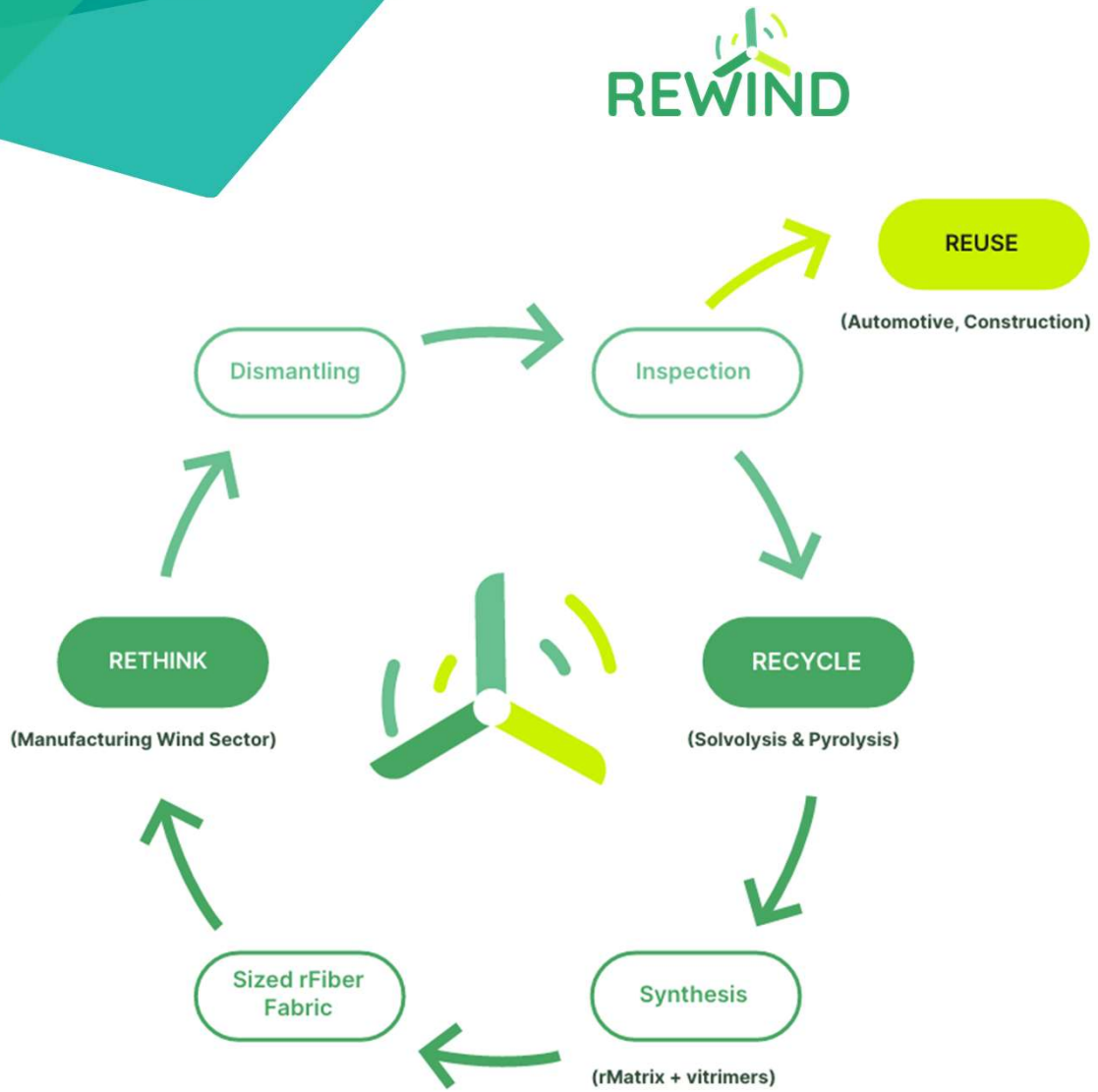
3.- REUSE BY “UPCYCLING”.

4.- RECYCLE.

5.- NEW SYNTHESIS → NEW R-PRODUCTS.

6.- R-FIBER FUNCTIONALIZED.

7.- RETHINK→ NEW ECO-DESIGNED WIND BLADES.



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2.

OBJECTIVES

General & Specifics

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- **MAIN OBJECTIVE:** Increase the **circularity** of End-of-Live **composite materials**.
- **SPECIFIC OBJECTIVES:**

01. Demonstrate efficient technologies for decommissioning EoL wind turbines and sorting.

02. Repurpose of EoL composite in industrial applications (automotive, construction)

03. Develope cost-effective composites recycling technologies to improve properties and performance of the retrieved materials.

04. Produce good quality yarns and fabrics from the recycled fibres coated with the appropriate sizing.

05. Use secondary raw materials (recycled fibres and resins) for the manufacturing of new composite within wind energy sector.

06. Improve environmental & economic sustainability of processes and products.

07. Maximize socio-economic impact of REWIND, including stakeholder engagement and social acceptance.

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3.
METHODOLOGY
Key Activities & Actors

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Team Presentation (Participants)

AEMAC
SPAIN (MADRID)
Spanish Composite Materials Association.

AIMPLAS
SPAIN (VALENCIA)
Research in Plastic and Related Materials Association.

ALKÈ
ITALY (PADUA)
Electric Vehicles Manufacturer.

BCIRCULAR COMPOSITES
SPAIN (BARCELONA)
Advanced Materials from End-of-Life CFRP Development.

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Team Presentation (Participants)

CIAOTECH

ITALY (ROMA)

Consulting company in public financing and innovation.

COMPOSITE PATCH

SPAIN (SAN SEBASTIAN)

Composite “in-situ” Repair System Manufacturer.

DITF

GERMANY (DENKENDORF)

German Institute for Textile and Fiber Research.

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Team Presentation (Participants)

HOCHSHULE PFORZHEIM

GERMANY (PFORZHEIM)

German University of Applied Sciences.

IPC

FRANCE (BELLIGNAT)

Industrial Technical Center for Plastics and Composites

MILJØSKARM

DENMARK (KONGENS LYNGBY)

Specialized in recycling composite products.

(Acoustic and thermal insulation).

NATIONAL UNIVERSITY OF ATHENS @ R-NANO Group

GREECE (ATHENS)

Research Lab of Advanced, Composite, Nano Materials and Nanotechnology from UA.

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Team Presentation (Participants)

SUEZ

FRANCE (PARIS)

Water treatment and waste management.

TEKNIKER

SPAIN (SAN SEBASTIAN)

Advanced Manufacturing technologies, Surface Engineering, Product Engineering.

TPI COMPOSITES

TURKEY (IZMIR)

Composite Wind Blades Manufacturer and Repairer.

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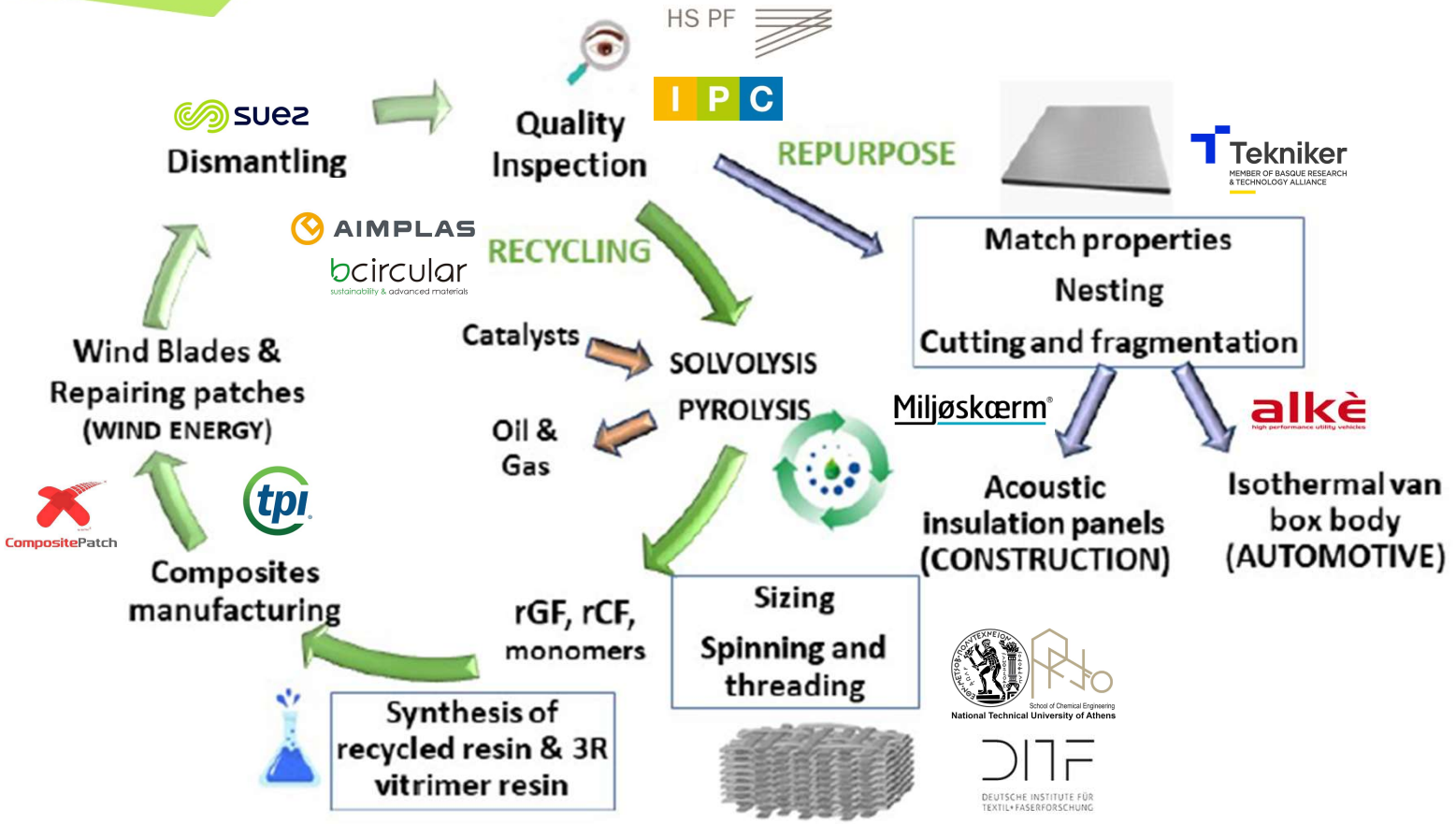
REWIND

Dissemination, Communication and Exploitation

The aim of REWIND is to develop critical technologies for dismantling WTBs and implementing new methodologies for composites repurposing and recycling to increase their circularity, raising the industrial applications of the EoL composites and avoiding the current landfilling or incineration.



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4.
MILESTONES
Expected Outcomes & Impact

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ROADMAP

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MILESTONES

M1.1 & M1.2 – WP1	M2.1 – WP2	M3.1 & M3.2 – WP3	M4.1 & M4.2 – WP4	M5.1, M5.2, M5.3 – WP5	M6.1 – WP6
Non-damaged and dismantled EoL wind blades Robustness of Material Model to predict residual mechanical properties of damaged parts.	New repurposed demostrators of composite.	Demostration of pyrolysis at pilot level. Yarn, fabric/mat samples from R-fibres and R-resins availability	Selection of secondary raw materials for WP4 demostrators. New demostrators of recycled composites.	Definition of indicators in the ecodesign tool. Combined LCA & Technical assesments of the technologies. Data inventory for LCA of final demostrators.	Advanced Exploitation and innovation strategy defined.

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IMPACTS

1. Improve better **reciclability**.
2. Reduction in **energy demand**.
3. Reduction of **fossil-based** resins **consumption**.
4. Reduction of **virgin CF** and **GF consumption**.
5. Less **toxicity**.
6. Increase **shelf live** of **WTBs**.
7. Repurpose of EoL composite in **new** construction and automotive **applications**.
8. Use of **secondary raw materials** in composite manufactoring for the **wind** energy **sector**.
9. Real **circularity** for End-of-Live WTBs.
10. Increase the **European competitiveness**.
11. Reduction of **Greenhouse Gas** (GHG) **emissions**.

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The best way to predict the future is to create it.

- Abraham Lincoln -

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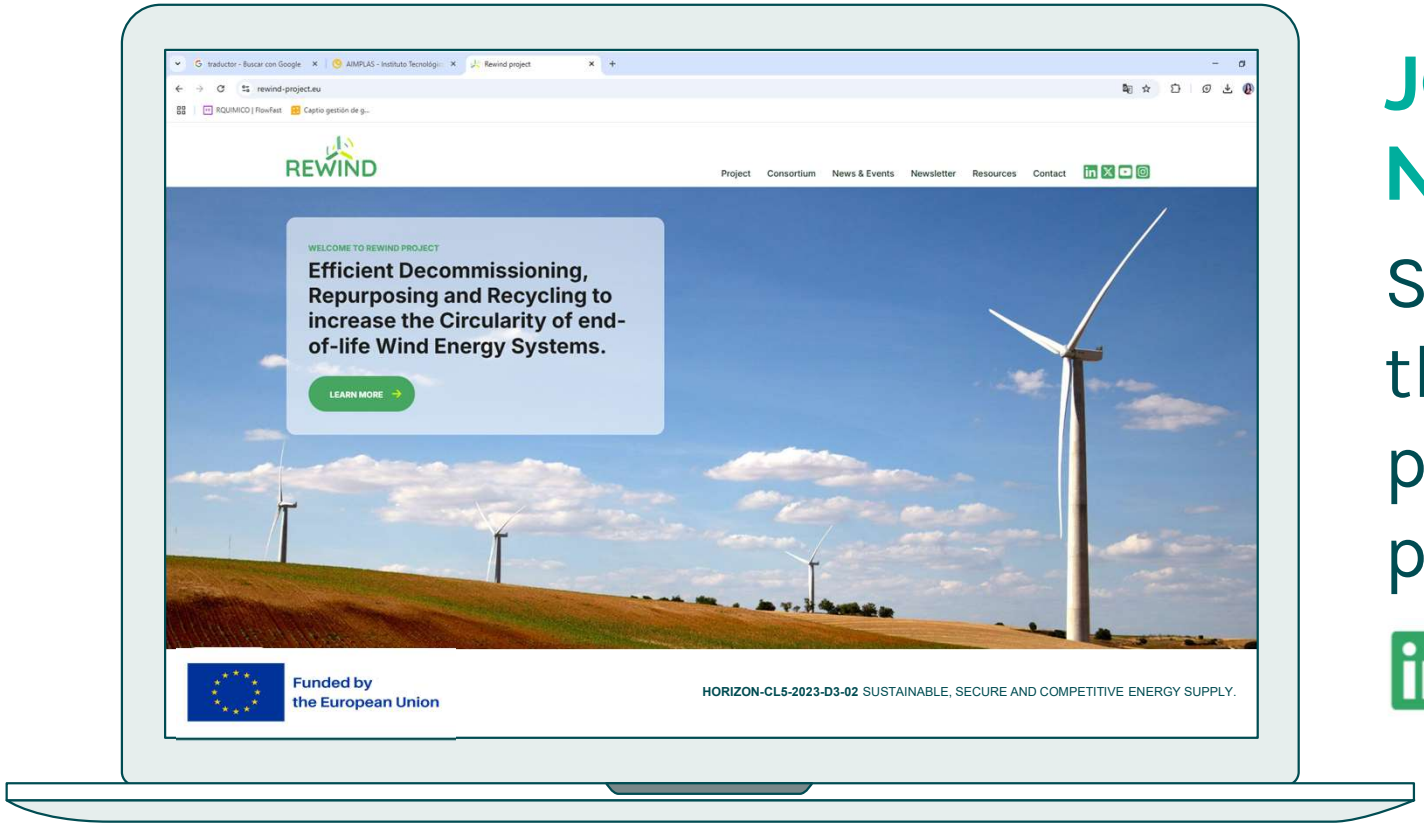
📖 WEB SITE: **https://rewind-project.eu**



JOIN TO OUR NEWSLETTER!

Stay informed about the latest news and progress on the project.

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