

METABUILDING 1st GROW / HARVEST CALL : MEET THE WINNERS !

Eco-sustainable Block for the Construction Sector with high percentage of Recycled Glass Fiber Reinforced Polymers coming from Wind Turbine

SECTORS INVOLVED : Construction · Circularity & Recycling



ITALY



POLAND



CENTRO DI RICERCHE EUROPEE DI TECNOLOGIE DESIGN E MATERIALI

METABUILDING Innovation
Stakeholder providing
technical support | ITALY

"EDILPRECOMPRESSI would increase the offer on the market with both, a "base" product with high mechanical performance, and a "greener" one which, with similar characteristics, has recycled materials inside and improved thermal insulation properties."

Luigi Cisotta · EDILPRECOMPRESSI

"ANMET will have the opportunity to expand its reference market by developing a low-cost secondary raw material, coming from end-of-life wind farm blades, that can be used as lightweight aggregate for the production of concrete products in the construction sector."

Marcin Sobczyk

PRZEDSIĘBIORSTWO WIELOBRANŻOWE ANMET ANDRZEJ ADAMCIO



Project idea

The general objective of the project is developing solutions that aim at supporting the green transition of the construction sector and identify an alternative use of recycled glass fibres as a secondary raw material.

The project idea is to design and develop a prototype of building blocks with improved thermal insulation and good mechanical properties based on cement mixture and aggregates of various granulometry coming from the recycling of EoL wind turbine blades.



The project is funded through the H2020 – INNOSUP program directed by the EUROPEAN Innovation Council and SMEs Executive Agency (EISMEA)

Partner involved

Partner Leader



SME 1 (Italy)- Specialized in the production of prefabricated building components such as beams, slabs, and blocks.

The aim of Edilprecompressi is to evaluate the possibility to develop a new eco-sustainable building block replacing a high percentage of natural aggregates with recycled GFRP coming from EoL wind turbine. The role of the company in the project is to provide, as end-user/cement-based blocks manufacturer, the desired technical performances of their product and to produce samples or specimens necessary for the execution of characterization tests.

Consortium partners



SME 2 (Poland) – Specialized in recycling waste (scrap of composites, steel, aluminum, copper, etc.). The company is engaged in the recycling of composite wind turbine blades at the end of their life.

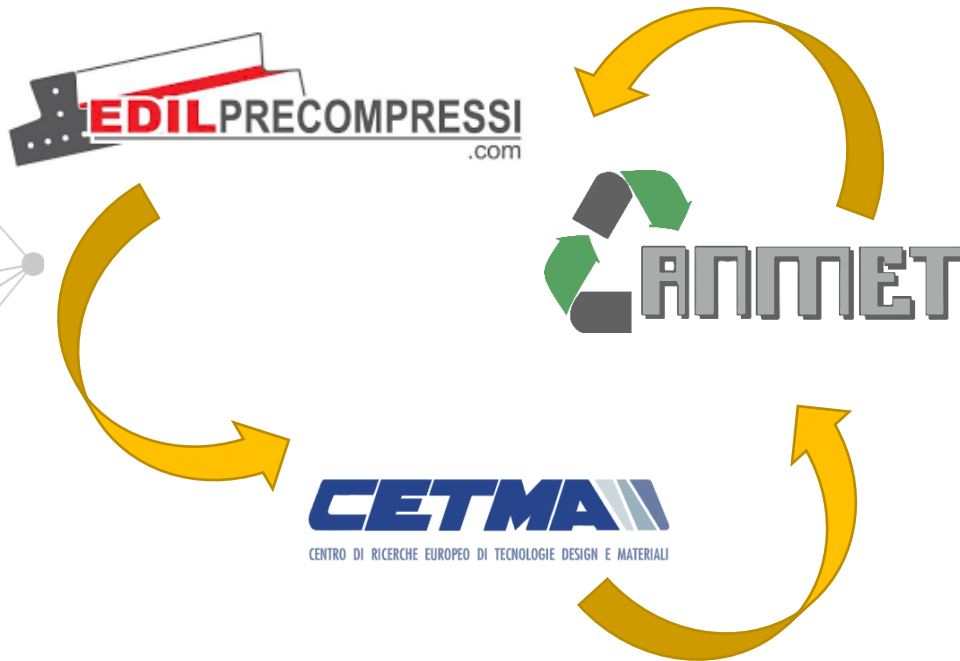


Service Provider (Italy) – Research and Technology Organization with know-how in the development of new materials and processes, according to the circular economy criteria and a strong experience in R&D collaboration with SMEs

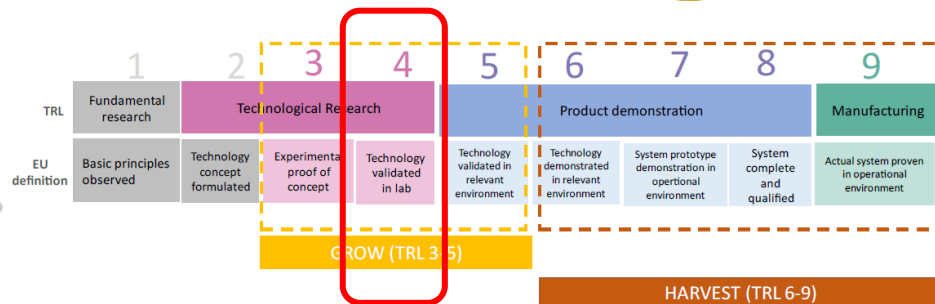


Aim of project

Aim of the project



- Development of a building material with good mechanical properties that incorporates recycled materials from wind turbine sector (Edilprecompressi)
- Evaluate the usability of recycled glass fibers composite, produced by ANMET, in the construction materials sector
- Expand the application sectors of recycled glass fibers composite to include the construction materials sector (ANMET)
- Add a new building material with good percentage of recycled materials (Edilprecompressi)
- Solve the problem of the end of life of the wind turbine with a view to the circular economy.



TRL target: 4

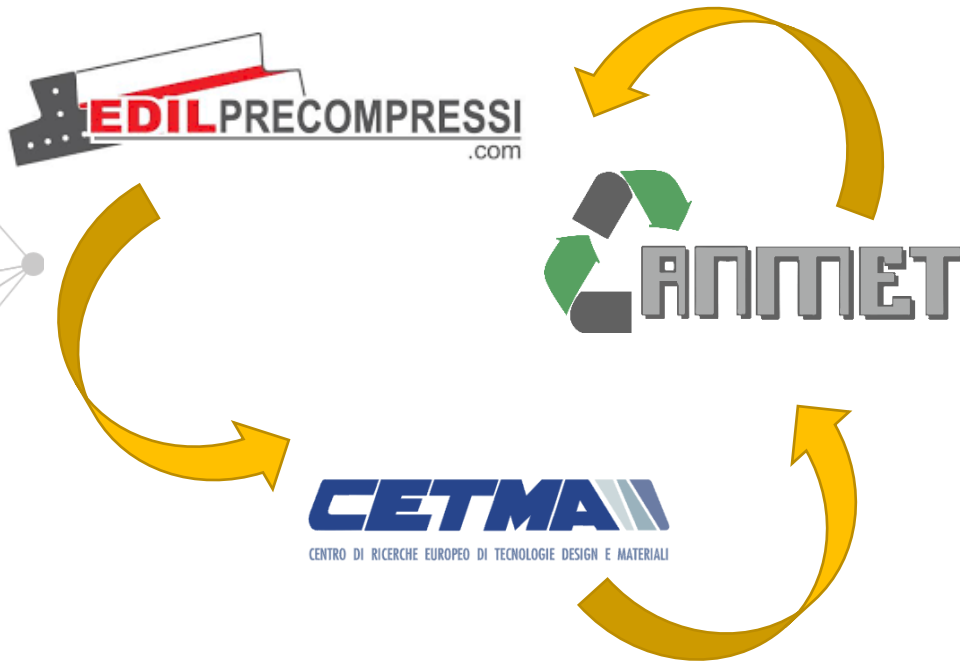
Duration:

6 Months

Sectors Adresses:

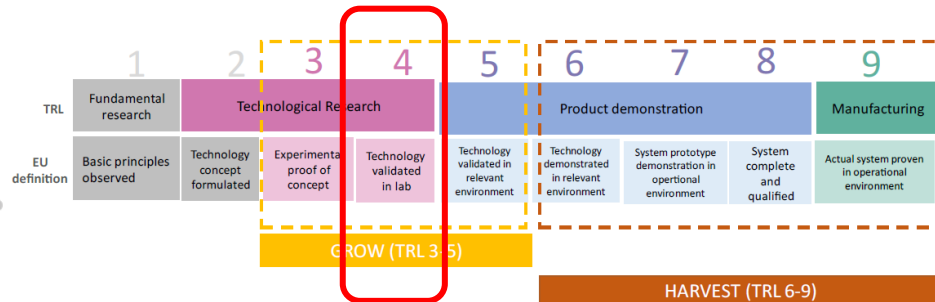
Construction, Circularity&Recycling

Aim of the project



To achieve this goal, **recycled glass fibres**, in form of powder or aggregates provided by **ANMET**, will be studied and characterized.

Subsequently mixtures with different weight percentages of **recycled GFRP** will be developed and finally these mixtures will be optimized in order to insert the maximum percentage of recycled material and to have good mechanical performances and improved thermal insulation properties compared with traditional cement-based blocks.



TRL target: 4

Main expected results

Task 1 – Technological – scientific scouting

Task 2 – Physical and mechanical characterization of the materials involved

Task 3 – Development of new mix design

Task 4 – Thermal and mechanical characterization of the new building material and prototype realization

TASK	M1	M2	M3	M4	M5	M6	Expected result	Status on M3
Task 1	█	█	█				Solution for fibers waste integration in building materials	Completed
Task 2		█	█				Properties of recycled fibers from GFRP waste and technological process for building block	Completed
Task 3			█	█	█		Mixtures incorporating recycled fibers	In progress
Task 4				█	█	█	Mechanical and Thermal properties of the developed mixtures	Started



Challenge and approach

Challenge and approach

The main challenge of the Project is to integrate recycled glass fibres coming from the dismantling of wind power plant wings into a new eco-sustainable block for the construction sector.

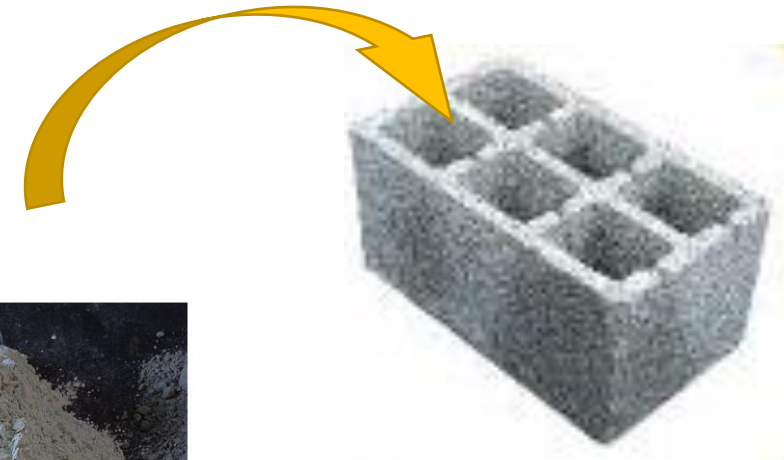
On the fibre side, the approach used consists in the morphological study of the recycled glass fibres or crushed GFRP granules to identify the shape more suitable to be properly integrated into the mixture that will be used to realize the building blocks.



On the blocks side, the approach was to identify the ideal aggregates size and percentage for integration into the mixture

Challenge and approach

At the end of the project the best mixture will then be chosen to be used in the Edilprecompressi production plants for the creation of prototypes of the same shape and geometry as those produced only from virgin material.





Benefit for construction sector

Benefit for construction sector

The implementation of the proposed solution will ensure the construction sector the presence of a new product with improved thermal insulation properties and at the same time high level of sustainability from an environmental point of view.

The greatest impact would derive from the definition of a recycling and mixing process suitable for the construction sector.

Thanks to METABUILDING

Edilprecompressi and ANMET are METABUILDER because, thanks to the financing received, can realise activities that they wouldn't be able to do without it



Edilprecompressi would increase the offer on the market with both a "base" product, with high mechanical performance, and a "greener" one which, with similar mechanical performance, has recycled materials inside and improved thermal insulation properties.



ANMET would open up new frontiers and new markets for their recycled glass fibres, with low production costs and large usable volumes.

...

➤ I am a METABUILDER because ...

“the future of the construction sector can only arise from research, innovation and collaboration between different sectors”

➤ The financing received from METABUILDING enables us to ...

“identify new ways to create new durable products for the construction sector from waste”



Contact person

Contact person



Reference contact

Eng. Luigi Cisotta - l.cisotta@edilprecompressi.com

Technical contact

Eng. Vito Tarantino - info@edilprecompressi.com



Reference contact

Dr. Marcin Sobczyk - m.sobczyk@anmet.com.pl



Reference contact

Eng. Riccardo Angiuli - riccardo.angiuli@cetma.it

Technical contact

Eng. Alessandra Ramirez - alessandra.ramirez@cetma.it



Thank you for your kind attention

www.metabuilding.com



METABUILDING Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 873964. The European Commission and the European Innovation Council and SME Executive Agency (EISMEA) are not responsible for any use that may be made of the information it contains. The sole responsibility for the content of this document lies entirely with the author's view.