

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

GreenDealles

High Quality Recycled Steel Fibres and Recycled Tyre Materials to Increase Concrete Performance and Sustainability

SECTORS INVOLVED : Construction · Circularity & Recycling



FRANCE



ITALY



POLITECNICO
DI TORINO

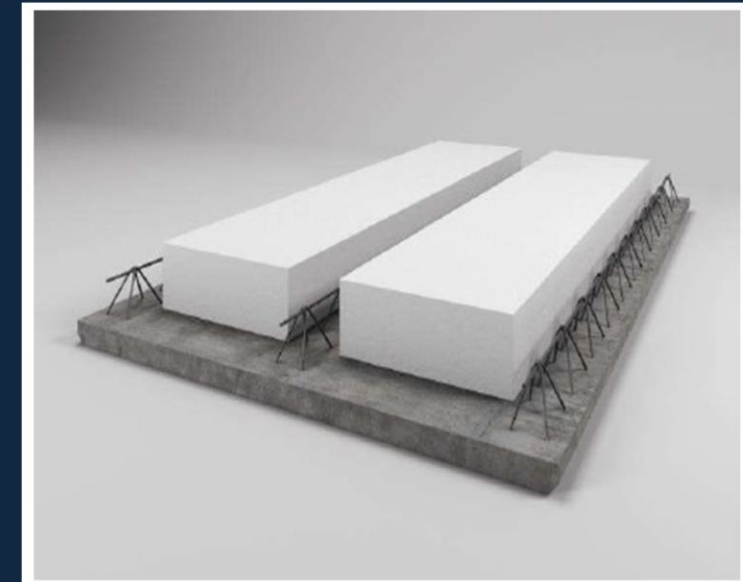
ITALY



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A part of the traditional virgin components of concrete and reinforcing bars of this slab, will be substituted by rubber and steel fibres from end-of-life tyres."

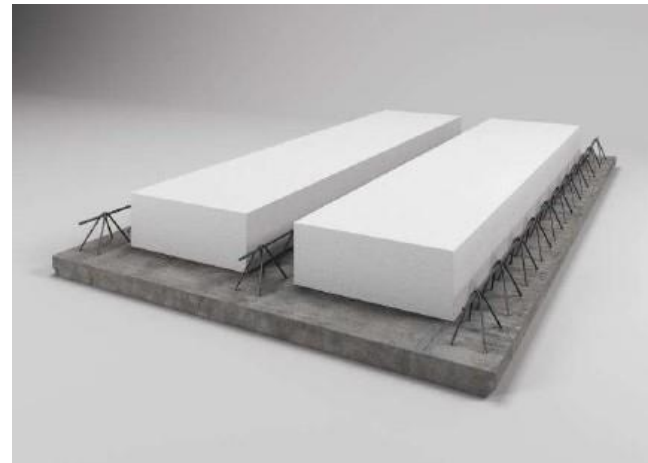
*Ettore Musacchi
ETRA · President*



Objectives

The aim of this project is to create a prototype of a new predalles slab used to cast partially precast floors of civil and industrial buildings.

In this slab, herein called “**GreenDealles**”, a part of the traditional virgin components of concrete and reinforcing bars will be substituted by steel fibres from end-of-life tires.



Target Audience

This project is addressed to:

- **Construction Companies**
- **Architects & Engineers**
- **Concrete producers**
- **Recyclers**



Funding

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 873964”.



ETRA

ETRA is an independent, member-driven European Association open to those involved in the diverse activities that contribute to the 'tyre recycling industry'. ETRA has been working since 2006 in R&D projects on Recycled Tyre Materials (RTMs) in concrete.

<https://www.etra-eu.org/>



BOTTA

Botta Prefabbricati is an Italian SME that has been working in the construction sector for over 100 years.

In this field, Botta Prefabbricati has also started a research activity on new prefabricated products with the aim of developing solutions capable of satisfying the growing demands of sustainability and safety, as in the case of the predalles slab.

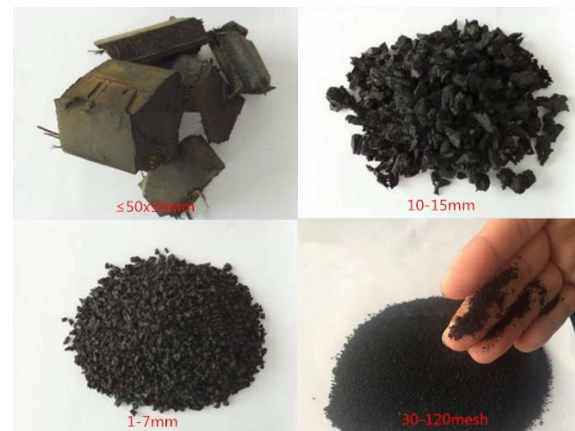
<https://www.bottaprefabbricati.it>



About Tyre Recycling

Post Consumer Tyres are an important waste stream generated every year in Europe and the world. 3,5 million tonnes of EOL tyres are produced in the EU every year. It is estimated that only 18 % of Recycled Tyre Materials are used in Building Construction. Still low, compared to the potential of the sector and compared for example to 39% of RTMs used in Sport sector,

Tyre recycling has some peculiarities that distinguish it from other recycling sectors, as Recycled Tyre Materials (RTMs) are not used to produce new tyres. RTMs produce new materials: rubber, steel fibres and textile fibres, that are used in many different products and applications, from roads and road furniture to sport surfaces, from building materials to infrastructure – and many others.



About Concrete

Concrete is a construction material composed of water, cement, aggregate (sand and Gravel), and additives made by:

- 6% air
- 11% portland cement
- 41% Gravel or crushed stone
- 26% Sand
- 16% Water

After water, concrete is the most widely consumed substance on Earth.

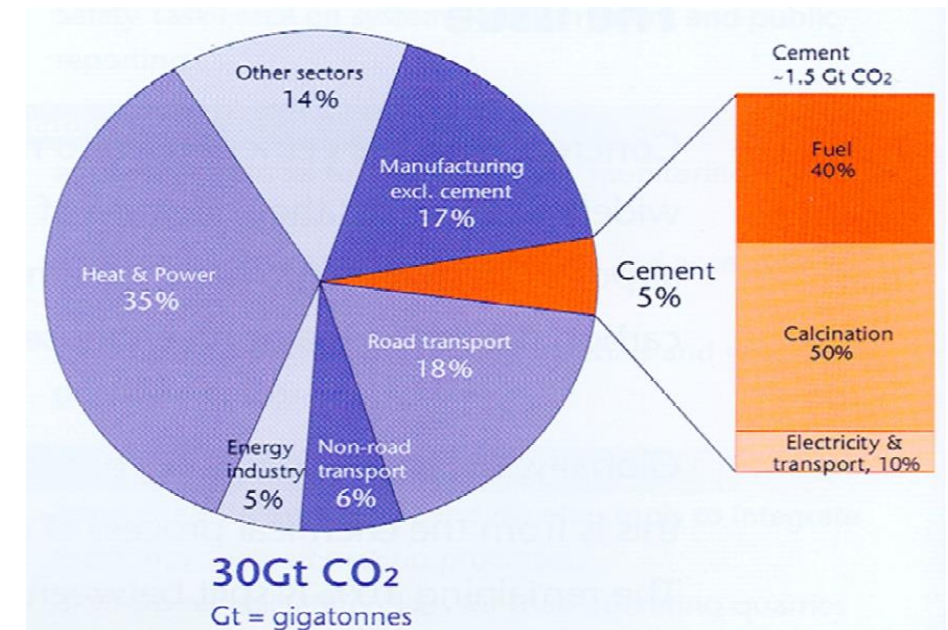


The impact of Concrete

Producing a ton of portland cement requires about 4 GJ energy, and releases about 1 ton of CO₂ into the atmosphere. Portland cement is responsible for about 5% of the global loading of CO₂ into the atmosphere.

Concrete components are consumed faster than they can be replenished (resource depletion). The world consumption of aggregates exceeds 40 billion tonnes a year. This is twice the yearly amount of sediment carried by all of the rivers of the world. It is possible to reduce CO₂ /kg by substituting the virgin components with recycled materials, such as:

- recycled concrete aggregate, in substitution of virgin normal weight aggregates
- Rubber (from end of life tires) in substitution of light weight aggregates
- Steel (from end of life tires) in substitution of steel or textile fibres in substitution of plastic fibers



In conclusion

The result of this project will be a new type of concrete and casting a new PREDALLE which have been called the “GreenDealles”.

The new concrete will satisfy non only the mechanical performances of the normal strength concrete currently used, but also the Green Public Procurement (GPP).

We are METABUILDER because we devote our efforts, in cooperation with other SMEs, to develop recycled materials to be used in building construction.

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