About RYMYC

RYMYC (**https://www.rymyc.it**) is an Italian SME that has been working in the recycling of carbon fibre sector since 2016. RYMYC focused its R&D in the recycling of carbon fibre and in the transformation of it into nonwoven and short cut recycled carbon fibre. RYMYC has installed a plant suitable to recover carbon fibre from out of date prepreg, manufactured materials out of spec and other cf cured materials, from which RYMYC plant removes resins and sizing and then transform the material with the 500t/year capacity textile plant into short cut or nonwoven with recycled carbon fibre. RYMYC has obtained the authorization to receive carbon fibre waste, according to EU rules and the aim is to create circular economy around carbon fibre reducing waste impact and finding new applications of the new materials realized with recycled carbon fibre. As main partner of this project, RYMYC intends to support a new production process aimed at marketing dry mix mortars (i.e., "MoRe R&C") capable of satisfying the Green Public Procurement.

About Polityecnico of Turin

Politecnico di Torino **(https://www.polito.it)** has 11 multidisciplinary Departments with 2,500 people working on R&D activities in all the fields of Engineering, Architecture and Design. It provides its own scientific skills to companies interested in innovation, through research and consultancy services with a multidisciplinary, multiservice, and customer-oriented approach. The aim is to meet the needs of companies to solve complex issues by supporting them with tests, numerical analysis, and prototyping. In this specific project, MastrLab of Politecnico di Torino will be involved in the project. It is an official laboratory that comply with Law 1086 of 5/11/1971 "Rules for reinforced concrete, normal and prestressed, and steel structures". MastrLab is based in the Department of Structural, Building and Geotechnical Engineering and occupies an area of about 2000 square meters on two floors. MastrLab will support RYMYC and ETRA for designing and producing "MoRe R&C", by measuring the mechanical and ecological properties of the new plaster.

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ETRA 25 YEARS
EUROPEAN TYRE RECYCLING ASSOCIATION

RYMYC

POLITECNICO DI TORINO

MoRe R&C Project

Mortars with Recycled Rubber & Carbon

www.etra-eu.org

About Tyre Recycling

Post ConsumerTyres are an important worldwide waste stream generated every year. Just in the EU, Norway, Switzerland and UK 4,2 million tonnes of EOL tyres are produced 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 Aggregates

The World Economic Forum defines the scarcity of raw materials, the reduction of construction and demolition waste, the reduction of the greenhouse gas emission, and the capability of facing to extreme events as the megatrends for shaping the future of construction industry. In other words, the production of more sustainable and resilient products are the main challenges of the construction sector. Accordingly, Green Public Procurement (GPP) is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact than those having the same primary function that would otherwise be procured. At the national level, most EU Member States have published GPP policy, which outlines a variety of actions either in terms of overall procurement, or for individual product and service groups. For instance, in Italy, mortar used in public constructions must contain more than 5% of recycled materials. Currently, industries cannot easily satisfy this requirement, especially for mortar and plaster. Indeed, it is a common opinion that cement-based composites made with secondary raw materials, are of low quality and unsafe. Moreover, a production based on a circular value chain is more difficult to be applied by the construction industry than a linear value chain. Indeed, more stakeholders, such as recycling companies, are inevitably focused on the production process and in obtaining material and products of same market of the original value chain, which generate the waste that has been recycled. In other words, although green mortars and plasters are largely required by the market, construction industry cannot offer them because both production and supply chain have to be innovated, and be stimulated to multi material approach.

Project summary and main objectives

The aim of this project is to tailor new cement-based mixtures used to cast structural and non-structural plasters for civil and industrial buildings. In these mixtures, herein called “MoRe R&C”, part of the traditional virgin components of mortar will be substituted by waste materials in accordance with the circular economy approach. More precisely, through the activities related to the management and recycling of rubber and carbon, coming from end-of-life tires and from waste carbon fiber composites, respectively, “MoRe R&C”aims at introducing new pre-mixed mortars within the construction industry. By reusing waste or end-of-life materials as components for new industrial products, both the global performances and the resilience of building products improve. The interest in “MoRe R&C”is determined by the growing need of the building industry in responding to the demand for materials with limited environmental impact and life cycle, such as those required by the European Green Public Procurement in the field of designing and constructing new public buildings, and in the renovation and maintenance of the existing ones.

About 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 is the result of a project created in 1990 and funded in 1992, to bring together the disparate elements of tyre recycling in Europe.

ETRA members reflect both the public and private sectors involved in the environmentally safe treatment and use of post-consumer tyres. Policy and decision makers as well as those charged with organising and connecting the links in the recycling chain are represented. With a focus on material recovery, ETRA members include material producers (i.e., granulaters, compounders) and users (e.g., civil engineers, product manufacturers), as well as collectors, manufacturers of recycling equipment, research and training bodies, product developers and users of new technologies.

ETRA has been working since 2006 in R&D projects on Recycled Tyre Materials (RTMs) in concrete. It has a deep understanding of tyre recycling process, quality of materials obtained and procedure to improve and control quality. ETRA has good contacts with tire recycling value chain and end-users and high networking capacity. ETRA, thanks to its central role in tire recycling sector, will make available rubber aggregate complying with quality specifications defined in the project. ETRA will disseminate the results targeting both tyre recyclers and precast concrete producers.