

# Driving innovation through European research projects

**VEEP, RE<sup>4</sup>, ENDURCRETE**



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## 01. VEEP PROJECT

The VEEP project and its achievements.

## 02. RE<sup>4</sup> PROJECT

The RE<sup>4</sup> project and its achievements.

## 03. ENDURCRETE PROJECT

The Endurcrete project, goals and progress

## 04. ABOUT US

FENIX TNT s.r.o.

## 05. CONTACTS

FENIX + project coordinators



**Cost-Effective Recycling of CDW in High Added Value Energy  
Efficient Prefabricated Concrete Components for Massive  
Retrofitting of our Built Environment**

## THE CHALLENGE

Develop and demonstrate a series of technological solutions for the **massive retrofitting of our built environment**, aiming at cost - effectively reducing building energy consumption.



## THE VEEP ANSWER

The ambition of the VEPP project relates to different aspects - technological & processes development and to new materials & products development. The precast concrete element solutions were conceived both for new building envelope and for building envelope refurbishment.

# ABOUT THE PROJECT

01

consortium

15 partners from 7  
countries

02

total budget

€ 4 929 753,75

03

coordinator

RINA CONSULTING

04

call

H2020-EU.2.1.5.2.

05

demonstration

Spain, the  
Netherlands

06

duration

1 October 2016  
31 March 2021

## TECHNOLOGIES

The **Advanced Drying Recovery (ADR)** mobile technology equipped with dynamic air sifter that allows to sift also moist materials..

The **Heating Air Classification System (HAS)** technology is used for the valorisation of the fine fraction aggregates (0-4mm) and can destroy undesirable C&DW contaminants via a pilot plant.

## MANUFACTURING & PRODUCTS

Innovative Plastic Formworks.



Two **novel multilayer Precast Concrete Elements** eco-designed for both renovation and new building applications.

## MATERIALS

**New concrete formulations for normal and light-weight concretes** presenting mechanical properties and durability suitable for the precast concrete.

**New and green cement formulations.**

**A greener and more resistant Silica Aerogel.**



# THE VEEP IMPACT

- CO<sub>2</sub> savings, energy savings and higher resource efficiency - contributing to a resource-efficient and climate change resilient economy.
- Creation of new value chains - expanding the size and attractiveness of C&DW recycling and reuse for energy efficient buildings construction and refurbishment.
- High replication potential of the solutions obtained, with the possibility to export EU technology worldwide – replication assessment done.
- Contribution with viable technologies that have the potential to significantly change practices of the construction industry towards circular economy practices.
- Improvement of innovation capacity of the construction sector to stimulate new growth and jobs creation.



**Solutions for high-quality recycling of CDW**



## THE CHALLENGE

Development of energy-efficient building concepts using **new or adapted prefabricated components**, allowing the **reuse and recycling** of different **materials and structures** while reducing energy use and minimising environmental impacts

minimum share of recycled materials in final product of **at least 10-15 %**



## THE RE<sup>4</sup> ANSWER

Development of a **fully prefabricated, energy-efficient, easy-dismountable, and reusable building** made of concrete and timber components **containing up to 65% by weight of CDW-derived materials and structures.**

# ABOUT THE PROJECT

01

consortium

13 partners from 7  
countries

02

total budget

€ 5 117 523,75

03

coordinator

CETMA

04

call

H2020-EEB-2016

05

demonstration

Italy, UK, Spain,  
Taiwan

06

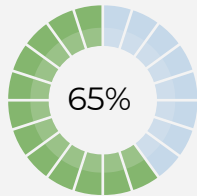
duration

1 September 2016  
29 February 2020

# THE RE<sup>4</sup> PILLARS

## CDW management

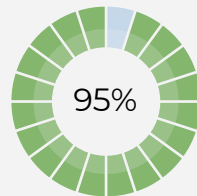
- Stakeholders engagement
- DSS for CDW estimation and management
- New attractive business opportunities
- New technical profiles (CDW managers)



Maximizing virgin material replacement

## CDW recycling

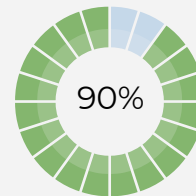
- RE<sup>4</sup> advanced sorting technologies
- Compliance assessment and definition of new quality classes
- RE<sup>4</sup> materials and prefabricated elements



Improving recycling rate

## CDW reuse

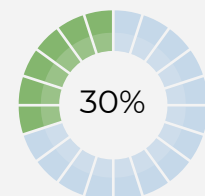
- Disassembly strategies
- Innovative design concepts for prefabricated elements
- Innovative design concepts for a fully prefabricated, easy dismountable RE<sup>4</sup> building (flexibility: climate and structural requirements)



Reusable structures from RE<sup>4</sup> building

## CDW perception

- Performance assessment
- Certification and standardisation strategies
- Life-cycle analyses and HSE (including s-LCA)
- Training videos for students and young technicians



CO<sub>2</sub> savings

# THE RE<sup>4</sup> ACHIEVEMENTS

...a fully REcycled house? YES, RE<sup>4</sup> can! - fully prefabricated and 100% reusable building

- RE<sup>4</sup> design for a fully prefabricated and 100% reusable building
- RE<sup>4</sup> digital tool
- RE<sup>4</sup> deconstruction strategy
- RE<sup>4</sup> sorting system for HQ CDW-derived aggregates
- RE<sup>4</sup> CDW quality classes
- The RE<sup>4</sup> materials, elements and components (replacement rate up to 100%)



# THE RE<sup>4</sup> ACHIEVEMENTS

Hans Sauer Award 2020 - DESIGNING CIRCULARITY IN THE BUILD ENVIRONMENT in the category **Tools | Materials | Methods**.



DGNB Sustainability Challenge winners! The RE<sup>4</sup> project won the DGNB Sustainability Challenge 2020 in the “Research” Category!



EU Web Awards 2019 - RE<sup>4</sup> project website nominated and among finalists in the Better world category!



RE<sup>4</sup> project showcased as a success story of the H2020 programme!



**endurcrete**

**New Environmental friendly and Durable conCrete,  
integrating industrial by-products and hybrid systems, for  
civil, industrial and offshore applications**

## THE CHALLENGE

Develop a NEW cost-effective sustainable reinforced concrete for long lasting and high impact applications.



## THE ENDURCRETE ANSWER

Integration of novel low-clinker cement including high-value industrial by-products, new nano and micro technologies and hybrid systems ensuring enhanced durability of sustainable concrete structures with high mechanical properties, self-healing and self-monitoring capacities.

# ABOUT THE PROJECT

01

consortium

16 partners from 12  
countries

02

total budget

€ 5 912 001,27

03

coordinator

HEIDELBERG CEMENT

04

call

H2020-EU.2.1.3.

05

demonstration

Spain, Norway,  
Croatia + Italy

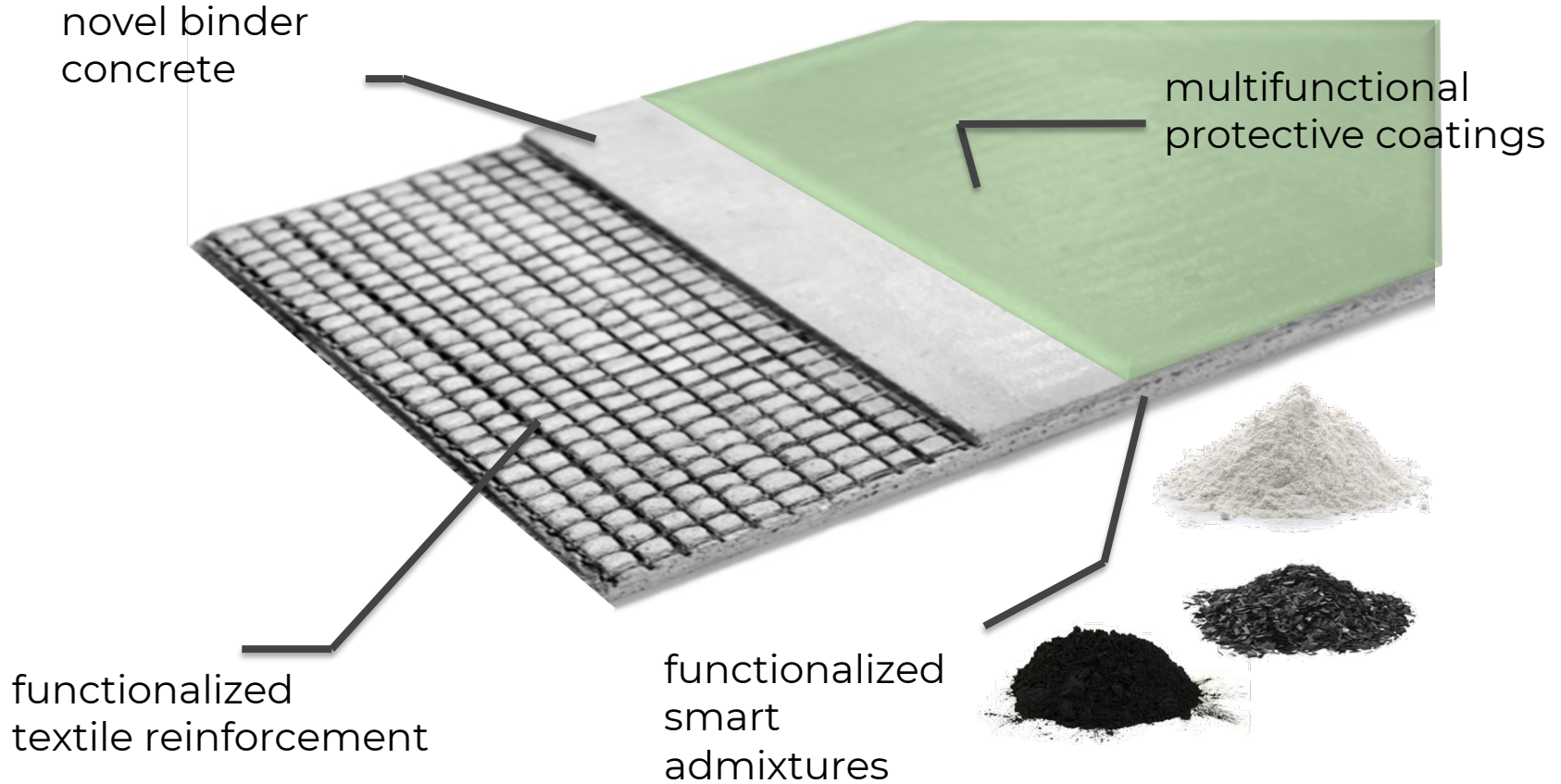
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duration

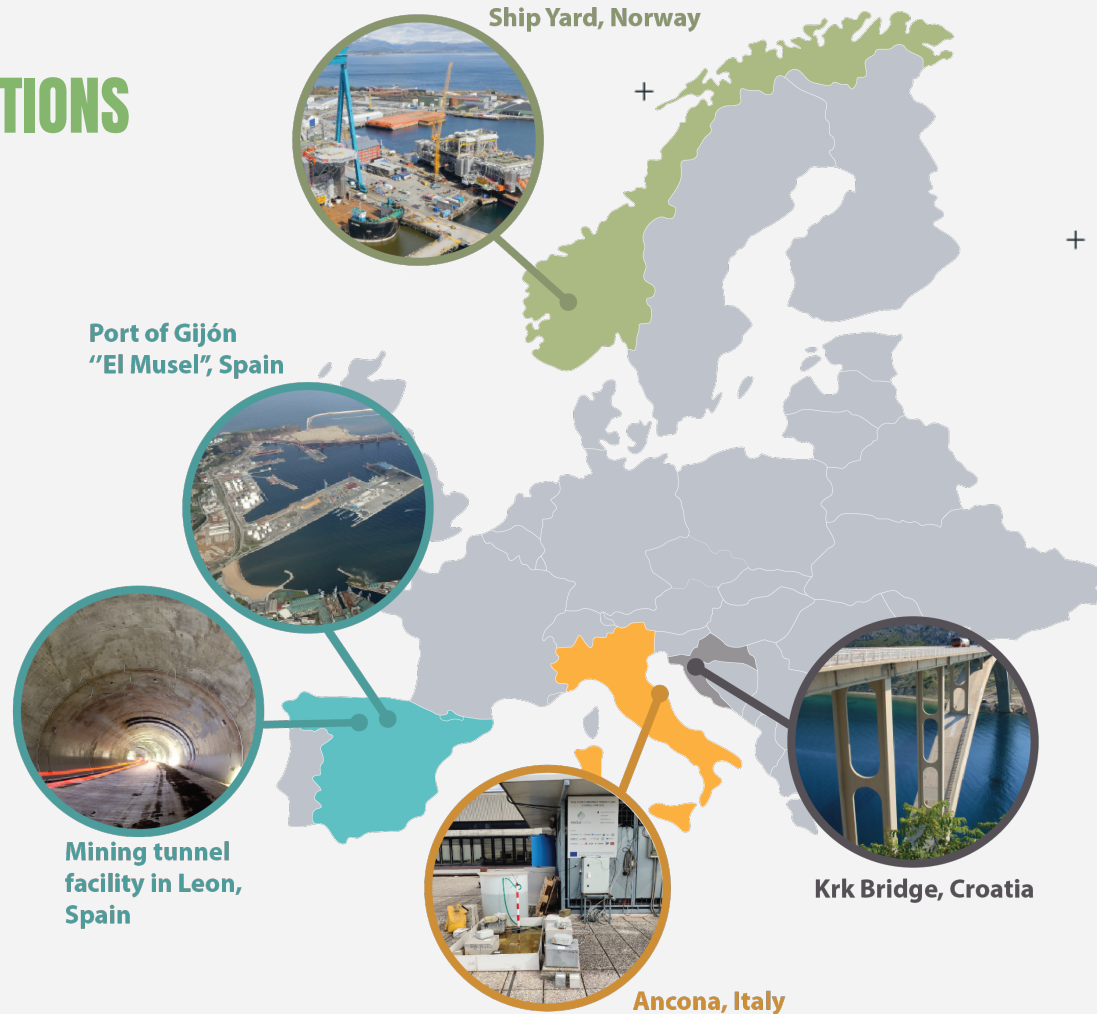
1 January 2018  
31 December 2021



# THE KEY TECHNOLOGIES



# THE DEMONSTRATIONS



# FENIX.TNT

tvořivost nad technologií

Consulting company established in 2007 with the main mission to help industrial and institutional clients implementing their innovation projects.

FENIX TNT provides a wide portfolio of services to help your research project to deliver what the market expects and properly communicate results to the public and customers.



BRNO | CZECH REPUBLIC

# SERVICES

## Management and funding

After many years of experience in EU funding schemes, project management, and proposal writing we can offer support services from the very beginning till the end of your project.

Funding advice  
Proposal support  
Project management

## Make an impact

We strategize using smart tools and global resources in order to increase the impact of our projects.

Website management    Videos  
Social media            Events  
Promo materials        Networking

## Go-to-market

We support innovators to develop their innovation management capabilities in order to increase their competitiveness and grow more effectively.

Market analysis & research    financial predictions  
Competitive analysis    Exploitation and IP management  
Business modelling      Data management plan  
Business plans and

# THANKS!



Do you have any questions?  
Follow our project updates

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