

ReSHEALience is a project with a duration of 48 months, starting in January 2018, and a budget of 5,557,595.50 €.

> GENERAL OBJECTIVES

1 **Increase significantly the durability of concrete** to decrease maintenance and reduce consumption of resources. This innovative and sustainable material is defined as Ultra High Durability Concrete (UHDC).

2 **Quantify and predict the durability of UHDC structures** in different service conditions when subjected to Extremely Aggressive Exposures (EAE).

3 **Validate the capacity of the UHDC** and the new developments, through 6 pilots (TRL6-TRL7) covering two strategic sectors where the material is expected to add high value and generate large impacts.

The project is oriented to support two EU strategic priorities (SP):

BLUE GROWTH

The development of the high blue economy potential is promoted with pilot 3 (Offshore energy, embracing wind, wave and tidal), pilot 4 (aquaculture infrastructures) and pilot 6 (coastal protection).

GREEN GROWTH

Move towards an energy efficient economy is faced through applications for geothermal and biomass power plants (pilots 1, 2), and efficient use of resources retrofitting of existing structures (pilot 5).

> 13 PARTNERS

COORDINATOR



POLITECNICO
MILANO 1863

BANAGHER
PRECAST CONCRETE



Ben-Gurion University
of the Negev

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

Rover
MARITIME

enel
Green Power

RDC

L-Università
ta' Malta

PENETRON
ULTRA CONCRETE PROTECTION

UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

enerOCEAN

RIA

PREFFOR
PREFABRICADOS FORMEX

TECHNISCHE
UNIVERSITÄT
DRESDEN

> WORK PACKAGES

1 Ethics (Leader: PoliMi)	2 Project management (Leader: PoliMi)	3 Rethinking structures in XS/XA (Leader: RMW)
4 Concept and development of UHDC (Leader: UPV)	5 Quantification of UHDC improved long-term durability performance (Leader: CSIC)	6 Modelling long-term durability of UHDC materials and structures (Leader: TUD)
7 Business opportunities of the developed UHDC materials and structural solutions (Leader: STRESS)	8 Validation and proof of concepts in real-site durability conditions (Leader: EGP) (pilots)	9 Dissemination and exploitation of results (Leader: RDC)

RESHEALIENCE
Ultra High Durability Concrete

QR PROJECT
NEWSLETTER
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This project has received funding from the European Union's Horizon H2020 research and innovation programme under grant agreement N° 760824

<https://uhdc.eu>

RESHEALIENCE
Ultra High Durability Concrete

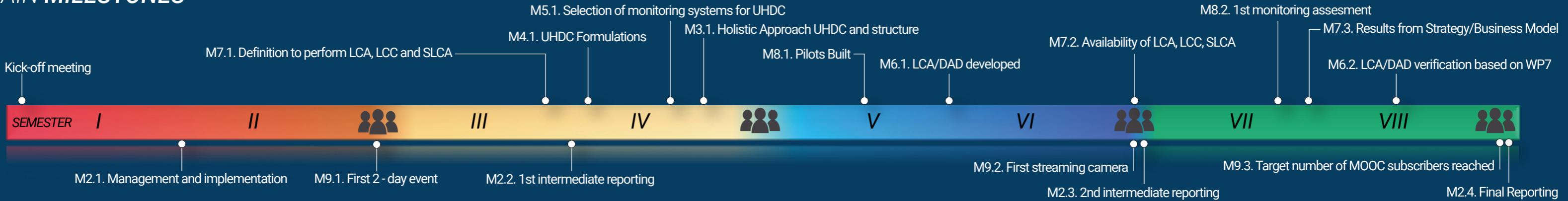
Rethinking coastal defence
and green Energy Service infrastructures
through enHancEd durAbiLity high-performance
fiber reinforced cement based materials

760824. H2020-NMBP- 2016-2017, RIA

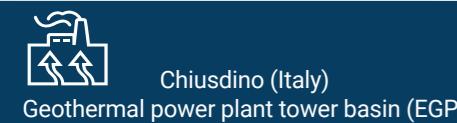
> 5 KEY PERFORMANCE INDICATORS
FOR EACH SPECIFIC OBJECTIVE AND ITS TARGET VALUE

KPI 1a TRANSPORT PROPERTIES 100% improvement in un-cracked state	KPI 1b CHEMICAL ATTACK RESISTANCE 30% improvement in cracked state	KPI 2a SERVICE LIFE 30% of increase of service life	KPI 2b MAINTENANCE COST 50% reduction of costs	KPI 3 ACCURACY 75% of accuracy for any modelling	KPI 4 BUSINESS PLANS 8 One per industrial partner	KPI 5 COMMUNICATION OBJECTIVE 300 subscribers per year to the newsletter
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> MAIN MILESTONES



> 6 PILOTS



ACID ATTACK

Cooling tower fluid collection basins are critical due to the fluid aggressiveness and environmental risks

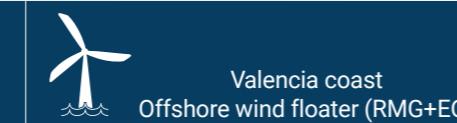
Reduced size basin (7x20m) close to an operating basin and fed with a side stream



ACID ATTACK

In drilling sites a residue basin is used during the mud recycling. Basins are chemically and mechanically stressed due to frequent cleaning

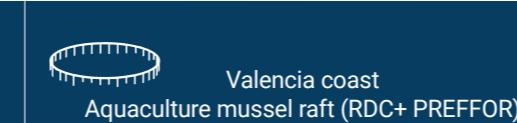
A full scale mud basin will be built to service an operating geothermal drilling site



CL INDUCED ATTACK MEDITERRANEAN SEA

UHDC reduced size floater for off-shore wind towers in the Mediterranean coast to reach TRL6

Reduced size floater for offshore wind turbines. The pilot will be done with a scale 1:5



CL INDUCED ATTACK MEDITERRANEAN SEA

UHDC mussel farming raft. Durable substitute of traditional wooden rafts

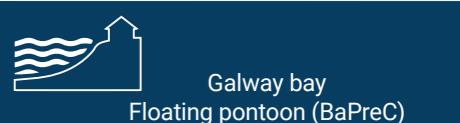
Full-scale farming raft with a length of 27m in Valencia Port: UHDC precast pre-stressed beams



CL INDUCED ATTACK

Concrete water tower from 1st half of the XX century with severe degradation

Repair of Water Tower close to the sea, using UHDC and Textile Reinforced UHDC



NORTHERN ATLANTIC CL and LOW TEMPERATURE ATTACK

Precast floating pontoons along the British Isles coast. Current design foresees HPC and high covers

9m long and 3m wide precast floating pontoon low-thickness textile reinforced UHDC and lower costs