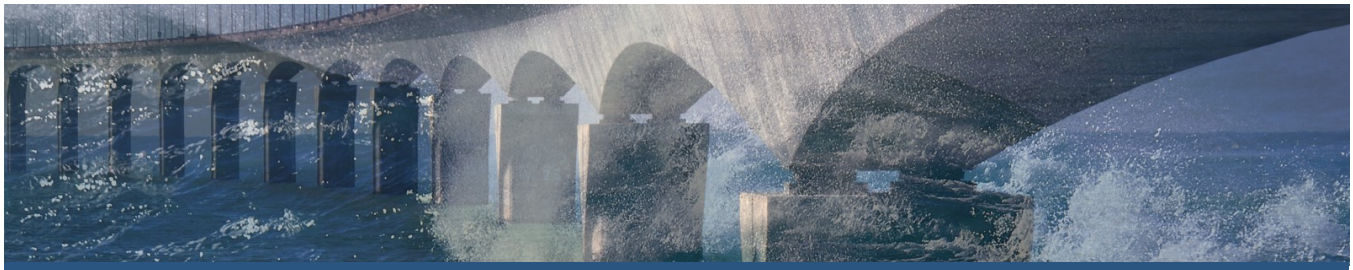


LORCENIS

LOng Lasting Reinforced Concrete for ENergy Infrastructure under Severe Operating Conditions

What?

The main goal of the LORCENIS project is to develop long lasting reinforced concrete for energy infrastructures under severe operating conditions with lifetime extended up to a 100%.

Why?

As population is steadily growing, there will be an **increasing demand for energy** worldwide in the coming 30 years. New infrastructure projects for energy require long service life spans (up to 100 year), even under **extreme operating conditions** like acid attack, chloride attack etc. However, conventional concretes are not able to withstand these severe conditions, leading to **high maintenance costs** and even **failure** of the construction.

How?

1. development of multi-responsive **nano-materials** based on 4 technology groups (self -sensing, internal curing, self-sealing and self-healing)
2. incorporation of the nano-additives into the **concrete**, resulting in **tailored properties** and improved performance of the final bulk reinforced-concrete working under severe conditions.
3. development of advanced multi-scale (from atom- to macroscale) software for **modelling** and **end-of-life prediction** of the tailored reinforced concretes under the severe condition of chloride ingress.
4. **prototypes** will be designed, built, tested and monitored under severe operating conditions
5. assessment of **environmental impacts**, **costs** from cradle to grave and **risks** based on Safe-by-Design principles.

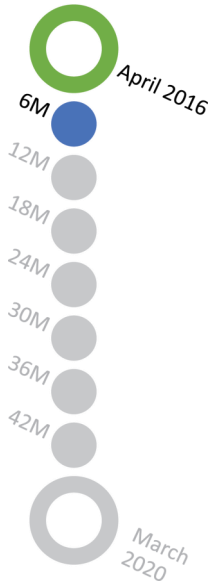
Dissemination

The dissemination and exploitation plan will trigger the awareness of LORCENIS results towards potentially interested parties (industry groups, geographical markets, the academic community…).

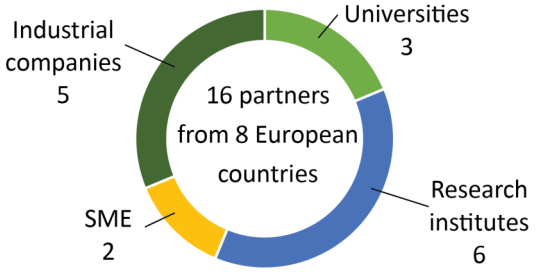
Several tools will be used to successfully distribute the project results, the fundamental scientific, the technical knowledge and the developed technology: website, newsletters, poster, presentations….

Progress M1-M6

- Synthesis and characterization of the nano-additives to be incorporated into the concrete by different partners
- Establishment of liaisons with external experts from Nano-Safety-Cluster in order to take care on safety and health aspects of new admixtures
- Review of durability analyses and requirements for the various exposure scenarios
- Design of several concrete mixes to be used in the various exposure scenarios
- Exchange of information about computational infrastructures (software, tools) and experience in internal data sharing
- Gathering information about data acquisition methods for the Safe-by-Design (SbD) principles and LCA inventory
- Listing the dissemination activities in a first awareness and dissemination plan
- Design of a poster showing the basic features of the project.



Partners in LORCENIS



Contact

Project leader: Christian Simon

Email: Christian.R.Simon@sintef.no

Phone: +47 93811275

This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA No. 685445