Solid Life Project

Solid Life project overview

Project Management

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With the contribution of the LIFE financial instrument of the European Community

Solid Life Project

LafargeHolcim

bre

Solidia Technologies

3 Partners – 3 nationalities

Project budget : 3,8 M€

Project funding: 2,2 M€

Duration: 35 months

Start date: 15/06/2016

End date: 30/04/2019

LIFE15 Project

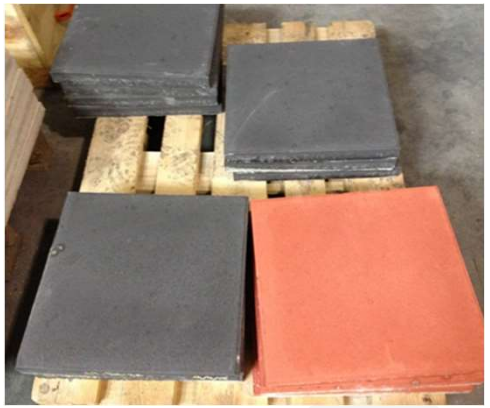
SOLID LIFE Project

A new class of lower-carbon products

The Solid Life project intends to show industrial feasibility to produce Solidia Cement™ and Solidia Concrete™ precast products offering:

- Equivalent or reduced costs,
- Superior strengths & aesthetics performances,
- **Up to 70%** reduction in CO_2 emissions

compared to conventional Portland precast concrete elements.



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Solidia Cement: a Low-Calcium Silicate Cement (CSC)

Who is Solidia Technologies?

- US start-up founded in 2008
- Funding: $80 Millions from investors
  - Kleiner Perkins Caufield & Byers, Bright Capital, BASF Venture Capital, BP Ventures, LafargeHolcim, Total, Air Liquide, Oil & Gas Climate Initiative…

Development of a non-hydrating binder that reacts with CO_2 for precast concrete

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Solidia Technologies solution

Technical solution: cement & concrete

- Same raw materials

- Same kiln

- Same mix components
- Same mixer
- Same cycle time

- Same forming casting
- Same cycle time

- CO_2-Curing
- Reduced curing times (24 hours vs. 28 days)

CO_2 emissions at cement plant reduced by 250 kg (per ton of clinker)

Up to 300 kg of CO_2 permanently stored in concrete (per ton of cement used)

Solidia Technologies

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EU expectations in the LIFE framework

- **Demonstration** at industrial scale
- **Validation of technical & economic** viability
- **National & transnational** character
- Focus on **Energy intensive industries** to reach EU 2030 targets
- Innovative and **cost-effective technologies**, with the objective of **reducing the GHG emission** intensity of **manufacturing and process industries**
- Focus on the design, development and implementation of breakthrough solutions mainly **via demonstration** program with a **long term impac**t, including in **real industrial environments**
- Activities are **expected to be led by industries** involving partners and technology providers
- Demonstrate the **viability of new low-carbon technologies**
- Projects should deliver **economically viable solutions** and technologies or **new raw materials** that allow a **reduction in specific GHG** emission intensity **by at least 15 %**

TRY TO ANSWER A MAX. EU TECHNICAL CRITERIA

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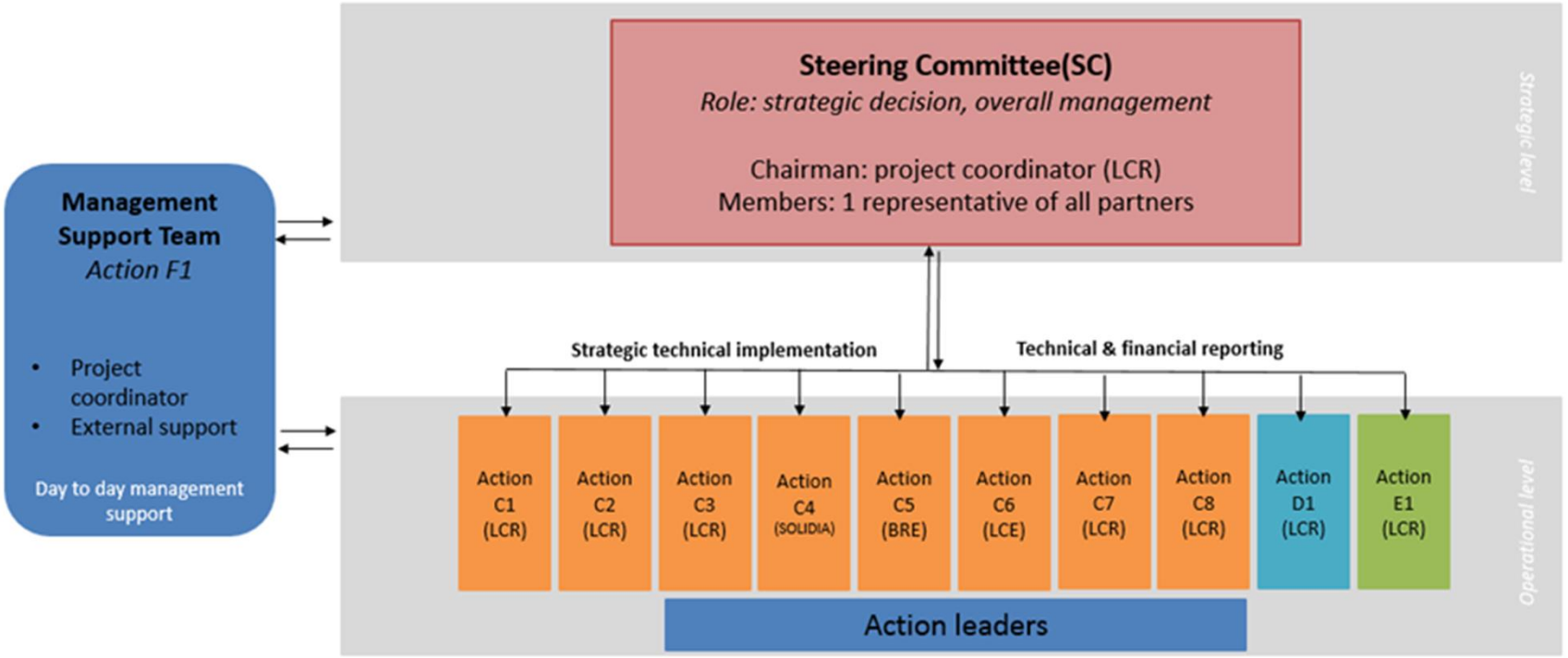
Project Management

- Steering committee in between partners every 6 months
- Main achievements related to each action with defined action leaders
- Involvement of the partners
- Common web plateform to share data related to the project
- Additional meetings if blocking points



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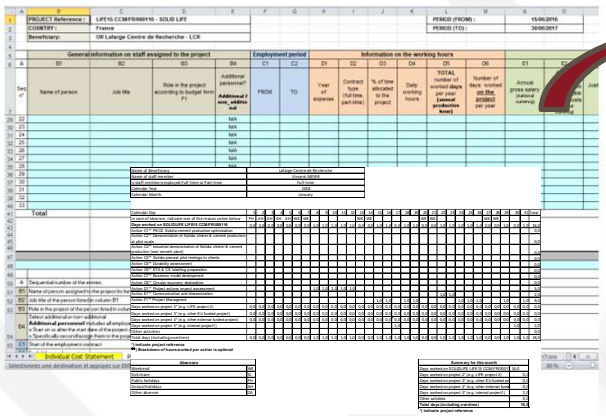
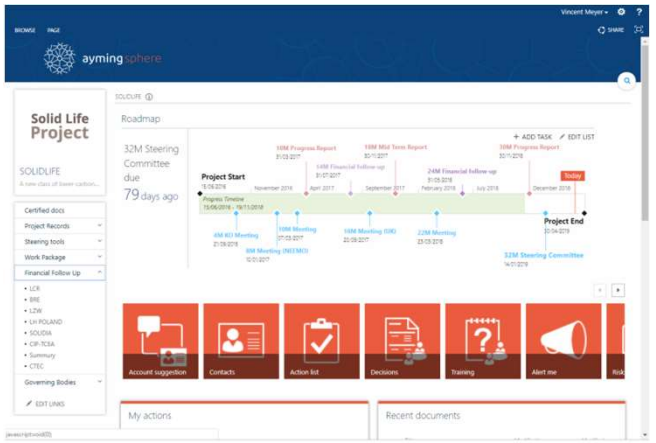
Budget and financial aspects

- **Before each steering commitee meetings:**
  - Filling of excel expenses sheets from all the partners
  - Filling all invoices with the right reference to the project (project stamp if necessary)
  - Filling timesheets every months and transfer on the web platform
  - Internal software to follow time of co-workers, create a specific project code/number for the european project
  - Budget deviations are allowed to a certain extent and when well justified





Store all papers from all partners regularly on a web platform that everyone can reach

➔ Easier for intermediate reports, EU visits and final finacial audit

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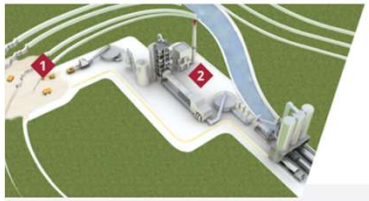
Reporting and communication



SOLIDIA, A LOW CO_2 SOLUTION
From the cement plant ...

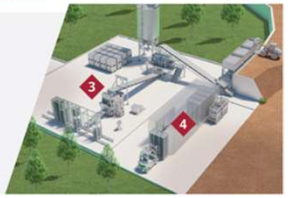
- Raw mix using less limestone than OPC → less CO_2 emissions than OPC
- Solidia Cement produced at lower temperature: lower fuel consumption and CO_2 emissions reduction

30% CO_2 emissions savings can be achieved at cement production level

... to the Precast plant

- Precast elements using same raw materials as OPC
  Same precast process except for the curing part
- Solidia Cement reacts with CO2 during curing, not with water. Temperature and humidity atmosphere equivalent to OPC.

The carbon footprint can be reduced by up to 70% vs OPC

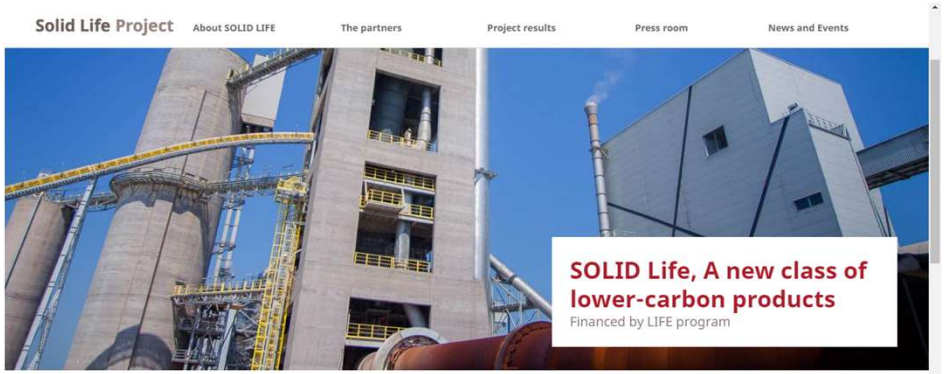


Reporting & communication to EU:

- Make it clear and easy to read!
- Anticipate delays from your partners and intrenal delays for validation
- Help of NEEMO to pre-read the reports
- Put details in milestones & deliverable reports and synthesis in intermediate reports
- Deviations to intial plan: amendments need time but are sometimes necessary, NEEMO is there to support you. If justified, no problem!

External communication:

- Be ready to communicate heavily on your project, mandatory for EU:
  - Brochure
  - Layman report
  - Noticeboard
  - Conferences
  - Videos
  - Website
- Ensure your organization is aligned with this and that you involve the right persons to do these tasks: webmaster, communication agency…



Since signing a joint development and commercial agreement in 2013, LarfargeHolcim has worked closely with Solidia Technologies to develop cement and concrete solutions employing mineral carbonation for the precast industry.

Solidia Cement™, a non-hydraulic binder, is produced using the same raw material as Ordinary Portland Cement (OPC) in existing cement kilns. The key difference is that the Solidia binder is produced using less limestone and at lower kiln burning temperatures. This translates into reduced CO_2 emissions during cement manufacturing (30% reduction). Solidia Concrete™ is made from of a mix of the non-hydraulic binder, Solidia Cement™, aggregates and sand. Water is used for shaping. The mixture is placed in a curing chamber filled with CO_2 to create a more durable product than traditional concrete. The curing process captures up to 300 kg of CO_2 per ton of cement used. Combined, the production of Solidia Cement™ and Solidia Concrete™ reduce the carbon footprint of concrete up to 70%, compared to OPC products.

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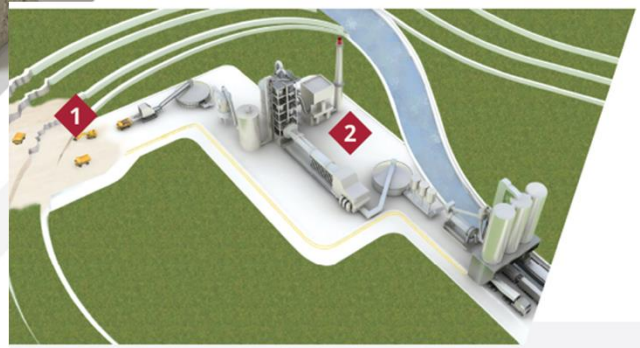
Solidia low carbon binder: from cement to precast industry

- *On the cement side:*

More than 30 plants assessed at lab scale

4 plants assessed at pilot scale

3 times 5000t produced worldwide



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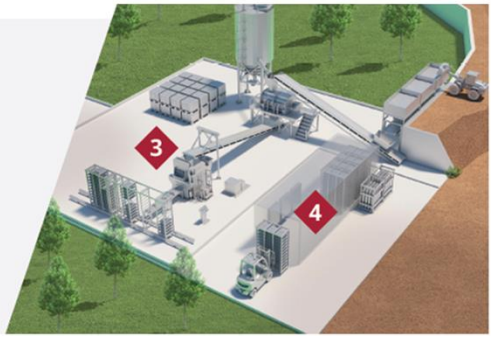

Durability & Market Acceptance:

- ETA for the cement on-going
- Long-term durability assessment

- *On the concrete side:*

More than 50 pilot tests worldwide

3 industrial pilots installations

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Thank you for your attention
With the contribution of the LIFE financial instrument of the European Community