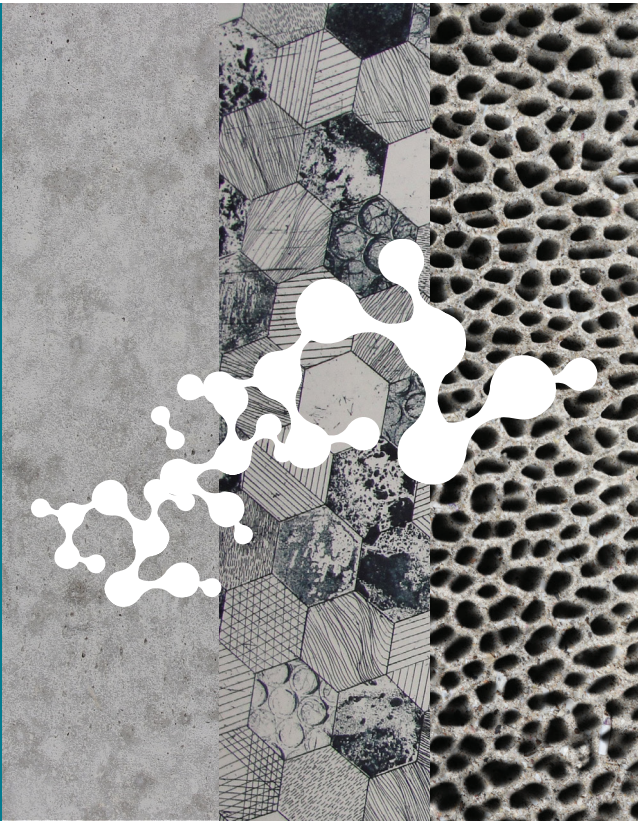




LIGHTCOCE

**Building an Ecosystem
for the up-scaling of lightweight
multi-functional concrete
and ceramic materials and structures**



Ecosystems for advanced materials

Contents

This is the first edition of the newsletter related to LightCoce Project.

This issue is dedicated to the presentation of the project and an introduction to the advantages of creating ecosystems to develop advanced materials. Moreover, a summary of the dissemination activities run by the partners is made and the main progresses made by the project are stated.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814632.

LightCoce Newsletter n° 1
December 2019



What is LightCoce project?

LightCoce is a research project funded by the European Community under the H2020 program, with the aim of creating an ecosystem of business innovation capable of upscaling and testing new multifunctional lightweight materials for SMEs.



How LightCoce helps you overcome complex standards and regulations?

Standardization and regulatory compliance are key issues for further exploitation and commercialization of innovations. Testing will be in alignment with international standards (CEN, ISO, ASTM, etc.) and regulatory framework aiming to develop products towards EU standards.



Which is the target market of LightCoce?

LightCoce can address different types of customers such as: Banks, Funds / Investors, Incubators / Accelerators Public Bodies and Owners of Infrastructures Research institutes / Universities, Large Enterprises, SMEs, Startup / New Ventures Industrial Associations or Groups Raw Materials Providers.



Do you need to innovate your business?

Innovation services are open access under specific fees to all parties, such as: development of business model, marketability assessment, suggesting technology to enable your value proposition or embodying it in a product/service in favour of the user, ensuring the proper protection of the IP developed and identifying the funding opportunities at local or EU scale.



Can large-scale modeling help you evaluate new opportunities?

The Modeling Group focuses on process modeling and simulation through the development of holistic models of processes through multi-scale modeling of materials and unitary operations. Moreover, predictive modeling at different levels will be implemented to generate a chain of models that lead to full-scale simulation of real structures, to evaluate the overall performance of solutions at a global level.



Which professionals can benefit from LightCoce services?

The relevant reference markets are different, such as: Constructions industry, Bricks and Tiles industry, Aerospace industry, Automotive industry, Defense industry.

Ecosystems for advanced materials

Open Innovation Test Beds

An Open Innovation Test Bed (OITB) is a set of entities, providing common access to physical facilities, capabilities and services required for the development, testing and upscaling of nanotechnology and advanced materials in industrial environments. The objective of the Open Innovation Test Beds is to bring nanotechnologies and advanced materials within the reach of companies and users in order to advance from validation in a laboratory (TRL 4) to prototypes in industrial environments (TRL 7).

Open Access in this context means that any interested user, from Europe and beyond, can access the test beds' facilities, capabilities and services independently of whether this user is part of an Open Innovation Test Beds Horizon 2020 consortium or not.

Access should be granted at fair conditions and pricing and with transparent and mutual obligations with regards to, for instance, security, safety and intellectual property rights. Users can be individuals, teams and institutions from academia, research organisations, small and medium enterprises and industry, from the public as well as the private sectors. Via a Single Entry Point, the users would be offered complete and transparent information about the facilities, capabilities and services provided by the Open Innovation Test Bed.

LightCoce

During the last decades a trend towards the use of lightweight materials in constructions and infrastructures, as well as for the aerospace, automotive and defence industry is observed. Lightweight durable components are easy to transport, handle and install and demand less operational energy reducing substantially their environmental footprint, as well as the relative costs. Among other materials, concrete and ceramics are on the focus of interest due to their wide range of applications and their durability.

Based on end applications lightweight attributes must be coupled with enhanced properties and multifunctionalities, such as high wear and mechanical strength, self-sensing, self-cleaning properties, which can be achieved with the addition of nanoparticles (NPs) to formulations (e.g. Al₂O₃, TiO₂, SiC, CNT). However, pilots are bulky and expensive facilities which in most of the cases require upgrades to be modular and flexible in application, while administrative burdens often delay project kick-off and funding gaps are difficult to overcome, making the majority of the already existing efforts to remain on a lab or in restricted pilot level with limited exploitation capacity for further industrialization.

The main objective of the LightCoce project is to cover the gap in the upscaling and testing

of multifunctional lightweight concrete and ceramic materials by providing open access to SMEs and Industry to Pilot Lines (PLs) through a one stop shop ecosystem consisting of upgraded Pilot Lines (including three clusters of PLs; a. Concrete, b. Conventional Ceramics, and c. Advanced Ceramics), characterisation & testing facilities, process modelling, quality assurance and monitoring, and standardisation, safety and innovation management services that will be accessible to the interested stakeholders (clients) at fair conditions and cost.

The ecosystem will be reached from customers through a single-entry point (SEP). The value proposition of LightCoce is based on four main elements of high value for business and in particular SMEs, namely access to Pilot Lines and associated technology and competence (including IPs), access to network, access to finance and access to international markets.

In this framework, the overall objective of LightCoce is to create the European wide reference network of Pilot Lines for the development, expertise, technology validation facilities and transfer services to industry and SMEs for advanced materials applications ranging from constructions materials (bricks, ceramic tiles, concrete blocks), and infrastructures (ready mix concrete, prefabricated components), to high tech applications in automotive and aerospace industry. In this respect the LightCoce

consortium consisting of 26 organizations has been formed by well recognized and world leading experts in their fields: 5 Large Enterprises, 1 Association, 8 RTDs and 12 SMEs, spread across 9 countries has been organized around a core group of partners which are the owners of the different Pilot Lines and the organizations in charge of delivering the key services to guarantee financial sustainability; a second group of partners represent an initial layer of customers and end-users for the test beds facilities and will co-invest their resources to support in the upgrade of the facilities and the launch of pilot projects.

Eu Countries

09

Pilot Lines

05

Organizations

26

Milions Euro granted

11

**Millions Euro euro
total turnover after 5 years**

39

**Millions Euro generated
by the end users after 5 years**

48

Breaking News



Innovation Talks, November 15th

LightCoce project has been presented by the coordinator Maria Taxiarchou during *Innovation Talks*, a divulgative event held in Padua on November 15th. Professor Taxiarchou's intervention was preceded by a brief presentation of the OITB initiative by the Project Officer Maria Moragues and followed by the presentation of the other four OITB projects on lightweight materials. The event, which was attended by over 70 people, hosted also a round table with stakeholders from the local innovation community (Competence Center, Scientific Park, Digital Innovation Hub) who discussed together with the OITB project coordinators on the possible interactions between European and local innovation actors.



OITB clustering meeting, November 14th

On November 14th, the first OITB clustering meeting was held in Padua and the four projects working on lightweight materials participated: LightCoce, LightMe, LEE-BED and Oasis. Project Officer Maria Moragues opened the workshop presenting the current framework related to the OITB initiative and representatives of the four projects discussed about the role of the SEP, Business models for the OITB, pricing policies, IP protection and customer awareness. Within LightCoce's consortium, representatives of Unismart, NTUA, Axia and Sustainable Innovations attended.



1st Plenary Meeting, June 27th-28th

On June 27th and 28th, the LightCoce project consortium has conducted its first plenary meeting at the premises of the Institute of Ceramic Technology (ITC) hosting 50 participants from consortium members and invited guests. Throughout these two days, different working groups have discussed the advances made in the various tasks of the project, and discussed important strategies to keep the progress of the work in various fronts. The consortium have been invited into two interesting visits focusing on the ceramic industry. The first visit guided the consortium through the ITC ceramic testing and characterisation infrastructures. An other visit was held at the KERABEN facilities dedicated for the production of ceramics.



Technical Seminar Organized by the ASHRAE Hellenic Chapter, March 21st

On March 21st 2019 the LightCoce project was presented at the Technical Seminar Organized by the ASHRAE Hellenic Chapter. It was an honor and pleasure for LightCoce to be part of this Seminar since it was attended by the ASHRAE President Sheila J. Hayter. Her Presidential talk was orientated towards "Building Our New Energy Future", meaningful contribution and collaboration schemes have been discussed. ASHRAE published in 2018 the International Green Construction Code Powered by Standard 18.9-1-2017 which addresses some of the LightCoce sectors, NTUA, AXIA and the ASHRAE Hellenic Chapter will work towards the liaison and bridging #US and #EU towards the sustainability of the Construction Sector Shaping tomorrows build environment.



LightCoce Kick Off Meeting, January 23rd-24th

The kick-off meeting of the LightCoce H2020 project was held in Athens, on 23rd-24th January at the premises of the project coordinator, the National Technical University of Athens (NTUA). During this two-day meeting, the consortium has discussed the overall project objectives and tasks, including detailed presentations of the five pilot lines provided by the project partners, as well as the test cases that will be implemented by pilot users for the validation of the ecosystems' operation. A number of services have been considered in order to create an attractive and win-win innovation journeys for customers, scaling-up in size and ambition and fully enabled by the project's pilot plants.



Open Innovation Test Beds – Introduction, Solutions and Networking Workshop, April 2nd

The "Open Innovation Test Beds – Introduction, Solutions and Networking" Workshop took place in Brussels, 2nd April 2019. Under this workshop 4 OITBs funded under the topic DT-NMBP-01-2018 were presented. The OITBs will provide European-added value by offering upscaling services, including EU regulatory compliance checks, to users independently of their geographical location. This first workshop therefore focused on bringing together representatives from all OITBs funded thus far so that they may begin to share approaches, exchange best practices and provide feedback as they proceed in establishing these services.

Welcome to LightCoce partners 4 / 26



Unismart Padova Enterprise

Unismart is the wholly-owned subsidiary of the University of Padova in charge of managing all the technology transfer and innovation consulting activities directed to companies, industrial associations, professionals, investors, banks, and other public and private bodies – both on a national and international scale. UniSMART is the one-stop-shop to systematically commercialize the most promising multidisciplinary research results and intellectual property.

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National Technical University of Athens

NTUA is the oldest and most prestigious technical university in Greece with 9 schools. Under LightCoce the Laboratory of Metallurgy, part of the School of Mining and Metallurgical Engineering will collaborate with The Laboratory of Reinforced Concrete (LRC) of the School of Civil Engineering and the RNanolab. NTUA will be the project coordinator and also owns Pilot Line 1 on smart lightweight concrete & components.

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Aercrete Technology AB

Aercrete Technology AB is a Swedish developer and manufacturer of machinery, equipment and chemistry for production of foam concrete, a.k.a. cellular lightweight concrete (CLC). Aercrete Technology AB was founded in 2001, and currently the have in their portfolio a variety of products, including Aercrete 625 TM and Aercrete FG-6 TM, which represent state-of-the-art in foam concrete process control due to the superior patented mixing technology not available from any other manufacturer worldwide.

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Advanced Material Simulation

Advanced Material Simulation S.L. is a high technology SME company, focused on Materials Modelling, Material Characterization, Numerical Simulation, optimization and machine learning. AMS is formed by a multidisciplinary team of PhD level experts in civil and materials engineering with a huge experience on Material Science, Solid Mechanics, Structural Integrity, Fracture Mechanics and Mathematics and provides specialized services in engineering, R&D, consulting and training.

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Inspiration

**“They swore by concrete.
They built for eternity. ”**

Günter Grass

Connect with us!

Are you eager to know more
about the state of the art of lightweight
concrete and ceramics?

Are you a professional or a company
providing services that LightCoce
might need?

Are you an expert in the field
of lightweight materials?

Contact us to share your
feedbacks and ideas
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LightCoce Project

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