WALL-ACE – Nouvel Wall Insulation Systems

Real scale testing of aerogel based wall products

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SUSTAINABLE
PLACES
2018 June 27-29,2018
Aix-les Bains, France

Need for new solutions

- Develop high energy efficient mineral based materials
- Strongly reduce the energy consumption and CO2 emission
- Improve indoor air quality
- Improved durability and sustainability
- Develop affordable and high replication potential for Europe
- Test, asset the products and systems in real condition and at building scale
- Certification and standardization of high efficient new systems

Wall·ACE

Development of 5 mineral insulation products based on:

Product properties

- TOP INSULATION PERFORMANCE
- SUMMER COMFORT
- PRESERVES INDOOR AIR QUALITY
- NON-FLAMMABLE MINERAL MATERIAL
- SUSTAINABLE

Duration: 36 months
October 2016 – September 2019

Budget : 6 258 000 €

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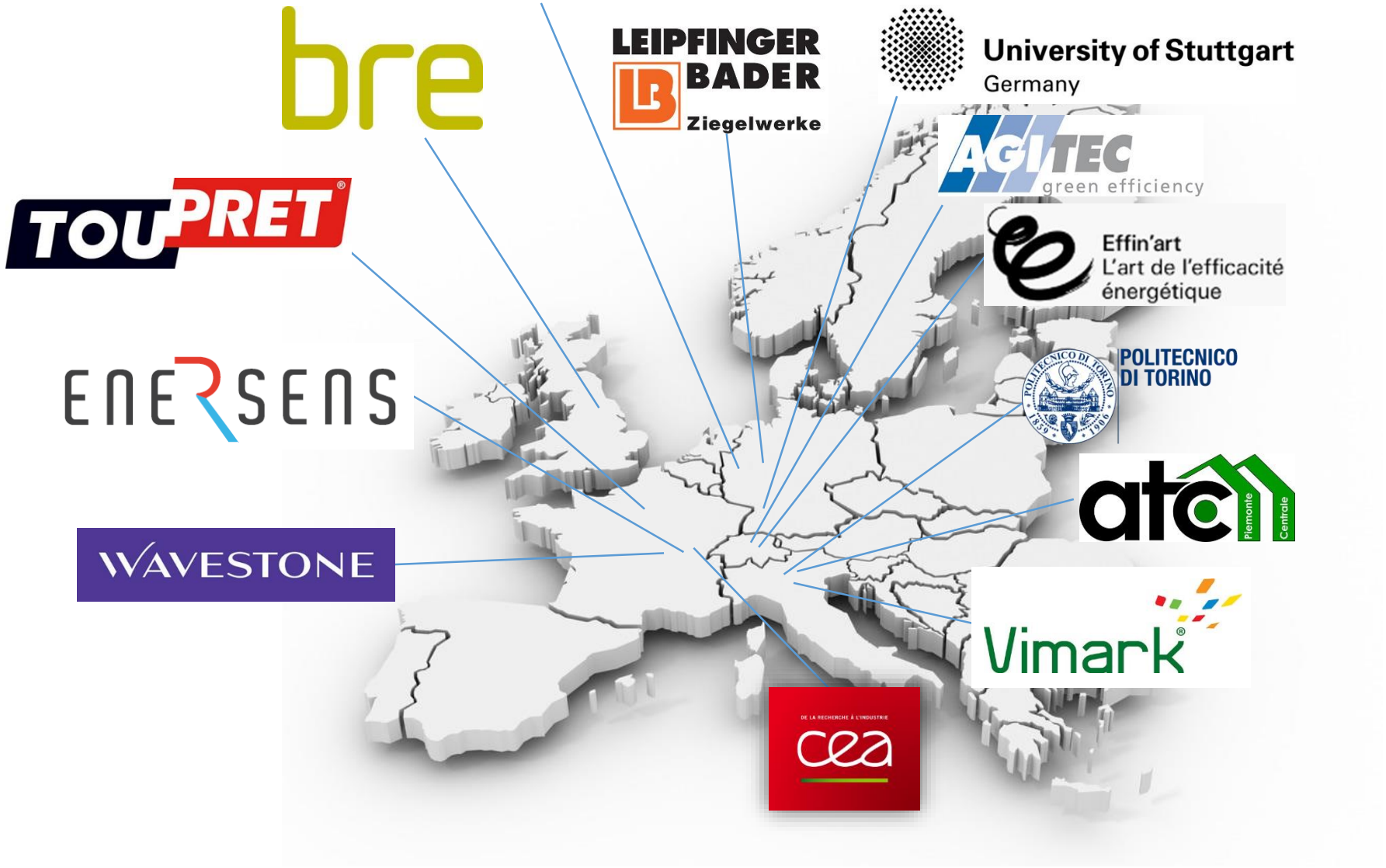
Wall·ACE

quick-mix

HORIZON 2020



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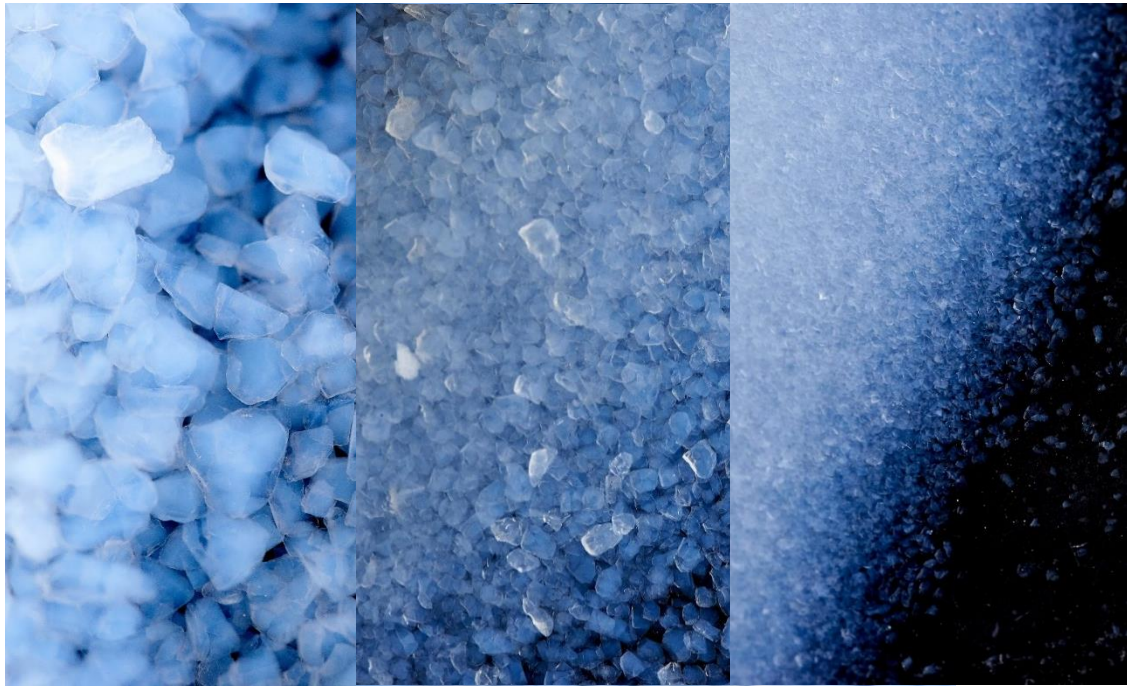
Silica aerogel

Kwark® is a **high performance silica aerogel material** developed and made by **ENERSENS** according to a patented process. It is an exceptional material resulting from many years of research and is the **best thermal insulation material**. Comprised of a very light amorphous silica structure, it contains more than 95% captured air in nanometer-sized pores. This air-filled structure gives it the lowest thermal conductivity "λ" known to date.



Advantages

Low thermal conductivity	**0,012 W/(m.K)**
Wide temperature range	**-160 à 350 ° C**
Hydrophone	
Respiring	
Low density	***70 kg/m³***
Acoustic insulation	

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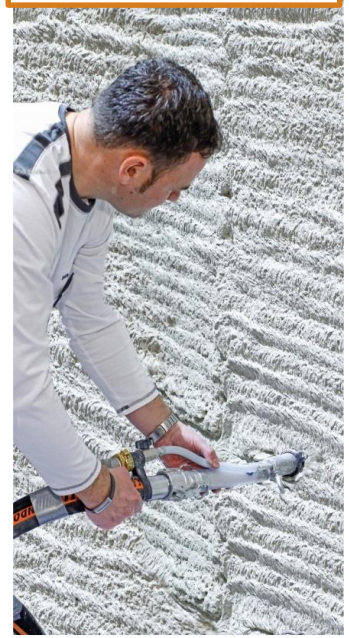
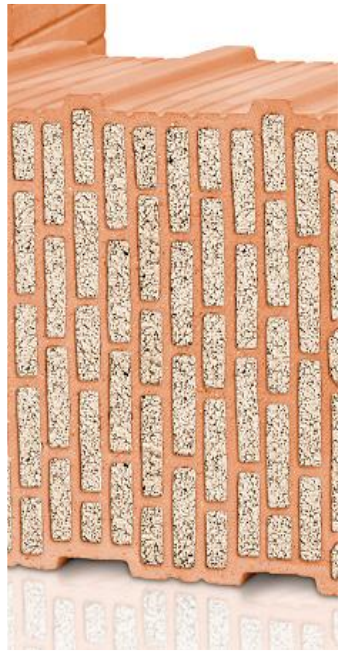
The 5 innovative products

External High Performance Insulating Render



Insulating Bricks



Internal High Performance Insulating Plaster

Thermal Coating Finishing

Insulating Patching Filler

quick-mix

LEIPFINGER BADER Ziegelwerke

Vimark

Vimark

TOUPRET

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Products

KWARK AEROGEL
Low thermal conductivity, Wide temperature range, Hydrophobic, Breathable, Low density, Sound attenuation

EXTERNAL HIGH PERFORMANCE INSULATING RENDER
Non-flammable material, High resistance, Extreme low thermal conductivity, Completely mineral

HIGH PERFORMANCE INSULATION MATERIALS FILLED BRICKS
Construction of modern low-energy and passive houses, Increase in the energy efficiency of the brick units, Lower production costs, Space savings

Wall-ACE
Novel wall insulation systems

INTERNAL HIGH PERFORMANCE INSULATING PLASTER
Low thermal transmittance, Rapid installation, For new and existing buildings, No VOC emissions

THERMAL COATING FINISHING
Reduction of cold wall sensation, Thermal comfort, Control of surface vapor condensation, Mold growth limitation, Low thermal transmittance

INSULATING INTERIOR PATCHING FILLER
Fix all minor and major defects and imperfections, Delete thermal bridges, Two times more efficient than standard patching fillers, No VOC emissions : product based on mineral compounds

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Measurement of hygrothermal performance

University of Stuttgart
Germany

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POLITECNICO DI TORINO

TOUPRET

POLITECNICO DI TORINO

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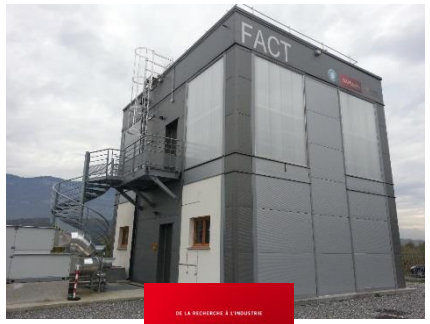

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Vimark

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Vimark

- **Hygrothermal performance**
- **Water vapor permeability**
- **Indoor air quality**
- **Sustainability**

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Demonstration on real buildings

Flat retrofitting
Italy- Turin

BRE's Innovation Park
Scottland- Glasgow

INCAS house at CEA
France - Chambéry

Current identified building (still modifiable)
AGITEC
Switzerland

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1ST Installation of Aerogel Plaster at Vimark Factory

- Vimark reached the first formulation of the aerogel-based thermal insulating plaster and of the aerogel-based coating finish. The first installation test at VIMARK factory demonstrated that the thermal plaster is ready to be optimized for industrial production and it is suitable for pumping machine application. The material can reach high thicknesses, > 5 cm, without sliding or detaching.
- Several types of Kwark particle size have been tested to reach the perfect combination of mechanical resistance and thermal performance. The final product is designed to show a thermal performance 30% better than non-aerogel based insulating plasters on the market.
- The product is specifically designed for application in indoor environment, and it is suitable for historical and heritage buildings.

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1st demonstration at ATC's building in Torino, Italy

- In 2017 installation of indoor thermal plaster in an apartment by Vimark
- Thermal performance test by POLITO

Project perspectives

Project's end: October 2019

➔ Industrial partners willing to reach the market quickly

Tools:

➔ Marketing mix

➔ Users' guide supply for clients and end users

➔ Communication plans

➔ LCA

➔ Certification of new products

➔ Business plan at the end of the project for further collaboration between industrial partners

Thank you for your attention

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