



**SUSTAINABLE  
PLACES**

**2018** June 27-29, 2018  
Aix-les-Bains, France

# WALL-ACE – Nouvel Wall Insulation Systems

Real scale testing of aerogel based wall products



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# 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



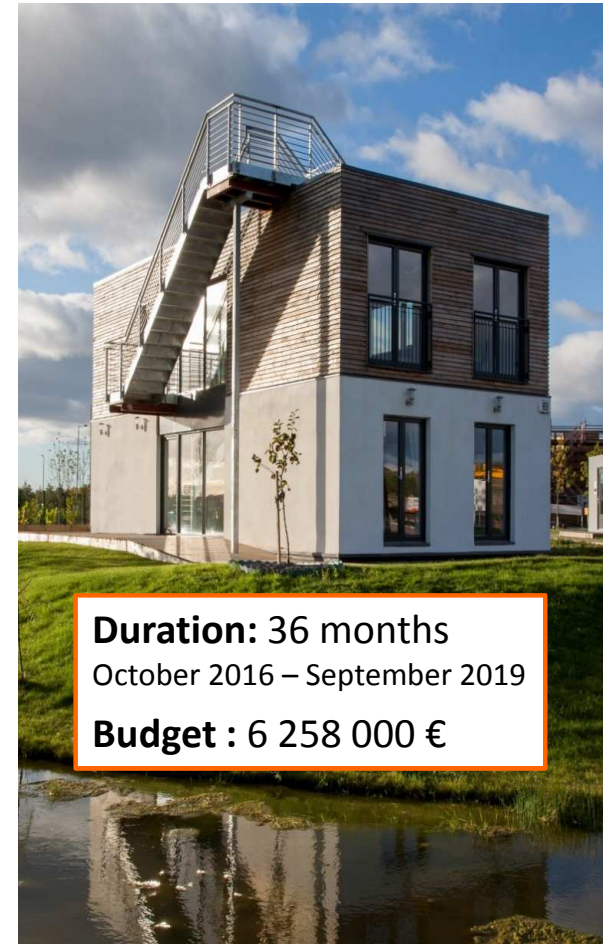
PRESERVES INDOOR AIR QUALITY



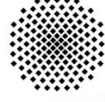
NON-FLAMMABLE MINERAL MATERIAL



SUSTAINABLE



**Duration:** 36 months  
October 2016 – September 2019  
**Budget :** 6 258 000 €



University of Stuttgart  
Germany



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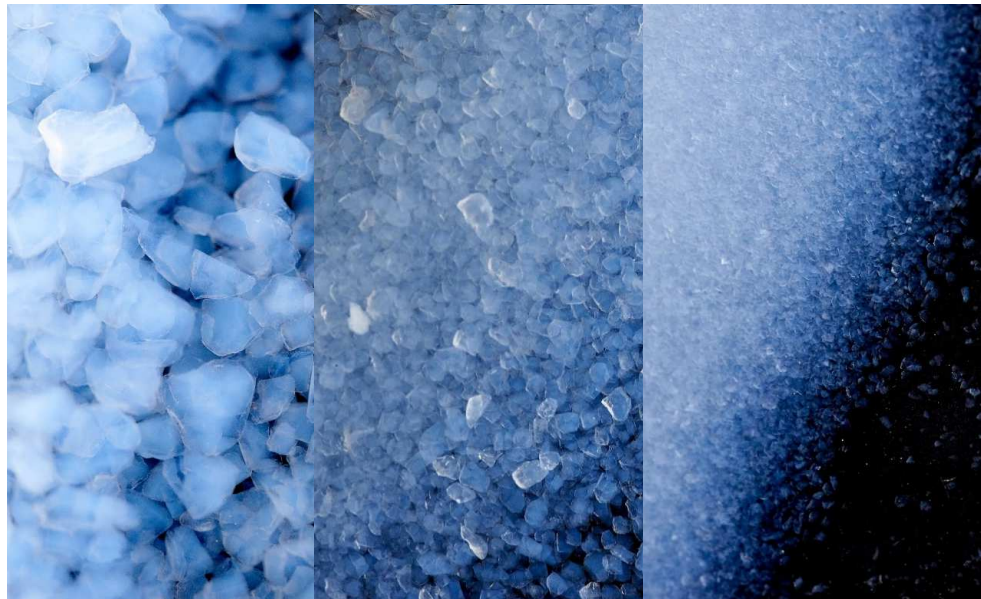
June 27-29, 2018  
Alicia Billis, France



# 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/m<sup>3</sup>**
- Acoustic insulation



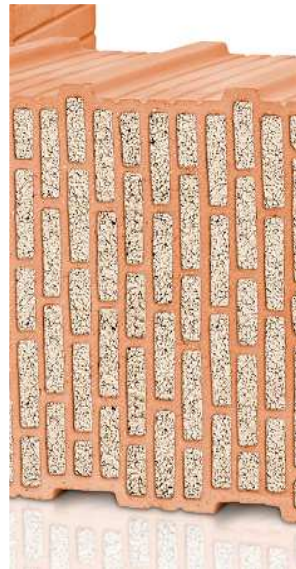
# The 5 innovative products

External High Performance Insulating Render



quick-mix 

Insulating Bricks



LEIPFINGER  
BADER  
 Ziegelwerke

Internal High Performance Insulating Plaster



Vimark 

Thermal Coating Finishing



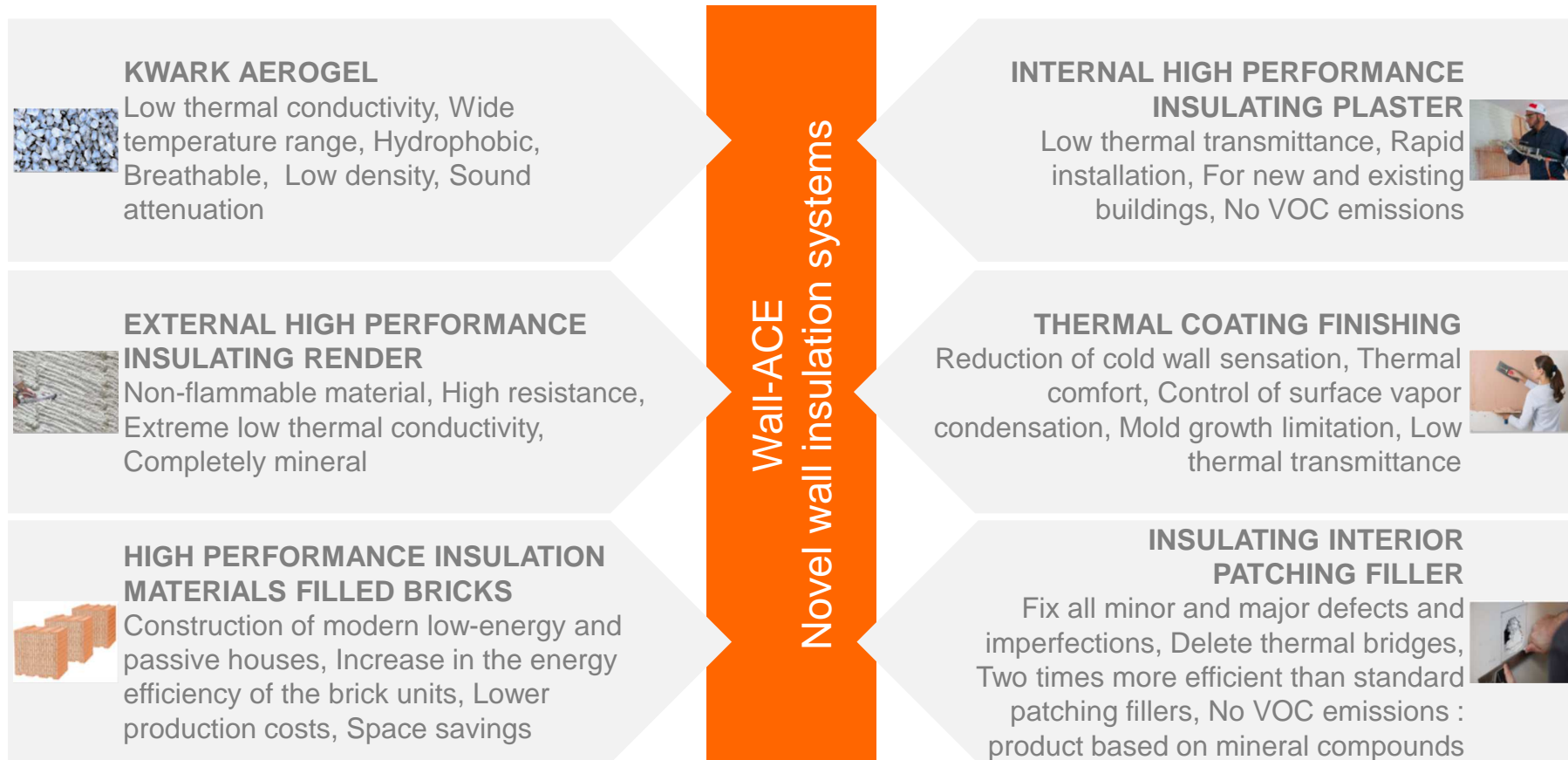
Vimark 

Insulating Patching Filler



TOUPRET 

# Products



# Measurement of hygrothermal performance



University of Stuttgart  
Germany

quick-mix



POLITECNICO DI TORINO

TOU·PRET



POLITECNICO DI TORINO

LEIPFINGER BADER  
Ziegelwerke



cea

quick-mix

Vimark



cea

quick-mix

LEIPFINGER BADER  
Ziegelwerke

TOU·PRET

Vimark



Hygrothermal performance



Water vapor permeability



Indoor air quality



Sustainability



# Demonstration on real buildings



Flat retrofitting  
Italy- Turin



BRE's Innovation Park  
Scotland- Glasgow



INCAS house at CEA  
France - Chambéry



quick-mix 

Current identified  
building (still  
modifiable)  
AGITEC  
Switzerland

# 1<sup>ST</sup> 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.



# 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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