

PROTOTYPE

Prototypes performance will be firstly tested on the future façade test bench of Nobatek allowing a setting step. Two pilot buildings will be renovated with E2VENT systems. One is in Gdansk, Poland, and another in Burgos, Spain, in order to test the E2VENT system in two different climates. During the monitoring the potential users, financers, and partners will be consulted to develop a solution matching market needs.



Demo building in Burgos, Spain

Demo building in Gdansk, Poland

Façade test bench of Nobatek with the E2VENT system

PARTNERS



Energy Efficient Ventilated Façades

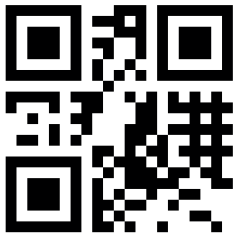
Energy Efficient Ventilated Façades for Optimal Adaptability and Heat Exchange enabling low energy architectural concepts for the refurbishment of existing buildings.

HORIZON 2020 RESEARCH PROJECT

This project is supported by the European Commission under the Energy Theme of the Horizon 2020 for research and Technological development.

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WWW.E2VENT.EU



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INTRODUCTION

E2VENT will develop, demonstrate and validate a cost effective, high energy efficient, low CO₂ emissions, replicable, low intrusive, systemic approach for retrofitting of residential buildings, able to achieve remarkable energy savings, through the integration of an innovative adaptive ventilated façade system, including:



Smart modular heat recovery units which improves Indoor Air Quality while minimizing energy losses



A latent system using PCM that allows thermal storage mode for the reduction of energy peaks



Cost-effective, easy to install, high performance adapted products for external thermal insulation



A smart building management system enhancing the user experience and allowing future adaptability

ARCHITECTURAL OBJECTIVES



- Easy to install, easy and affordable access for maintenance
- High adaptability degree (different scenarios and climate zones)
- Building's aesthetic and durability improvement, social value increase

ENVIRONMENTAL OBJECTIVES



- Combining energy efficiency and innovative technologies
- LCA approach for the lowest possible environmental impact
- Improving air quality and users' comfort
- Global evaluation parameters (total CO₂ emitted, total energy consumption, etc.)

TECHNICAL OBJECTIVES



- SMHRU to recover heat from ventilation and LHTES to store energy in order to reduce heating and cooling needs
- Global piloting of the E2VENT module by a BMS using various sensors

ECONOMICAL OBJECTIVES

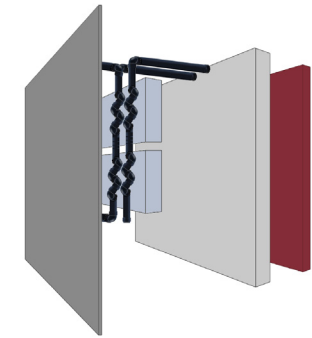


- Modular system for industrialization and cost effectiveness
- Increase of economic value of property
- Offer a complete installation, use and maintenance guide

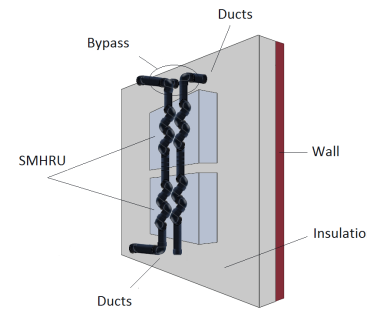
DESCRIPTION

The **E2VENT system** is an external thermal building refurbishment solution with external cladding and air cavity that embeds different breakthrough technologies that will ensure its high efficiency:

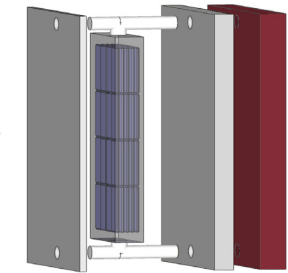
- A Smart Modular Heat Recovery Unit (SMHRU) for the air renewal allows the heat recovery from the extracted air using a double flux exchanger. Indoor Air Quality is ensured while limiting the energy losses.
- A Latent Heat Thermal Energy Storage (LHTES) based on phase change materials will provide a heat storage system for heating and cooling peak saving.
- A smart management that controls the system on a real time basis targeting optimal performances. It will embed new sensors, communicate with existing systems and recover predicted weather.
- An efficient anchoring system that limits thermal bridges and allows an easy and durable installation.



E2VENT system



SMHRU Smart Modular Heat Recovery Unit



LHTES Latent Heat Thermal Energy Storage

IMPACT

The proposed solution for building retrofitting should lead to **50% reduction** of primary energy needs and significant CO₂ emissions reduction. The main target of E2VENT system is the market associated to the retrofitting of **multistorey residential buildings** built in the 60's 70's. Those buildings are found in all Europe and can be characterized by their insulation weakness, bad air quality due to the lack of air renewal system and low architectural interest.

