

Revamping existing buildings to make them energy efficient

March 17 2014, by Koen Mortelmans

Tackling energy loss from buildings is one of the key objectives to reach greater sustainability, when it comes to energy consumption. The EU-funded BRICKER project aims to develop ways of reducing energy consumption by 50% in existing buildings, within the next four years. Specifically, it will turn public buildings in Spain, Turkey and Belgium into showcases to demonstrate the level of energy savings that can be achieved. Project coordinator Juan Ramón de las Cuevas Jiménez, is a mechanical engineer and a member of the Energy Efficiency Installations group at the technological centre of Spanish building contractor company Acciona, based in Madrid. He talks to youris.com about ways of improving energy efficiency in buildings.

What are the main trends in making buildings more sustainable?

Trends include the reduction of energy consumption through insulation and the use of energy from renewable sources, such as solar, biomass and [geothermal energy](#). The market is moving towards low-energy consumption buildings. This is covered in the project.

What is the key aspect that makes this project unique?

It combines different active and passive technologies to achieve [energy efficiency](#), in an innovative way. The main breakthrough will stem from

the development of an innovative trigeneration system for simultaneous generation of power, heating and cooling. Its power capacity will be around 150 kW and its thermal capacity, around 600 kW.

How will you implement this solution?

To produce the activation heat for this system, we will use roof mounted parabolic solar collectors, working on a higher-than-usual temperature, at about 250 to 270 °C. This system is already used in industry, but not yet for [public buildings](#).

Which other measures are you planning to use?

In the best practices book that the project is planning to publish, we will take into consideration the renewable resources locally available in each region. We will use biomass boilers, generating heat from biomass, geothermal district heating and absorption chillers, which use a heat source providing the energy needed to drive the cooling system. This technology already exists, but installations will be tailor-made for the project.

Passive technologies include new aerating windows, with an integrated, newly patented electronic heat exchanger, new PIR (PolyIsocyanurate)-based insulation foams with embedded phase-change materials (PCM's)— which are substances capable of storing and releasing large amounts of [energy](#)—and state of the art ventilated facades, commercial windows and insulation panels.

All in all, some technologies we use are already on the market, some are innovative. It remains a challenge to integrate both in real demonstration buildings.

Are retrofitted buildings a better solution than building entirely new and more efficient buildings?

We made calculations to prove that a 50% reduction of [energy consumption](#) is possible with retrofitting, starting from old and non-efficient buildings. The investment levels in such measures are limited to about 20% of the price to build a new similar building.

Provided by Youris.com

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