The green light for green buildings—retrofitting Europe

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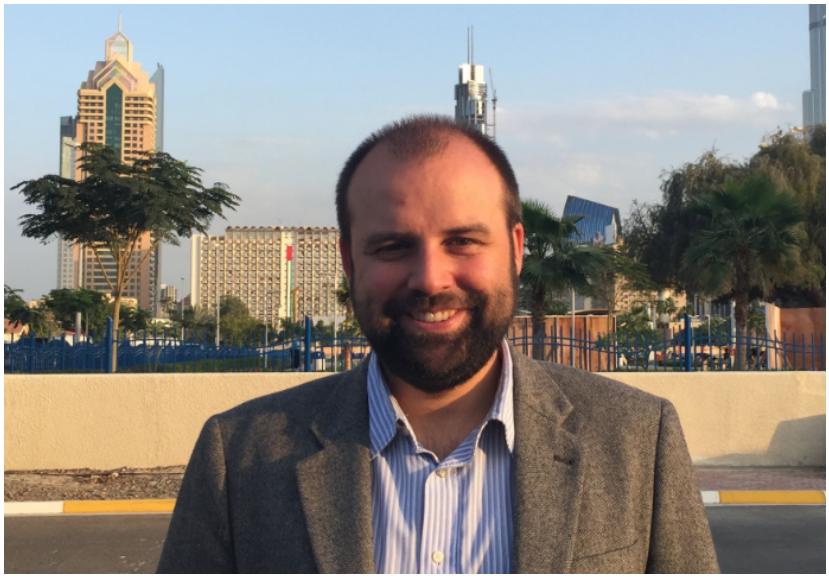

Credit: Youris.com

Retrofitting public buildings is crucial to meeting Europe's energy efficiency goals. But can new knowledge in retrofitting be replicated across the EU?

The move to energy efficient buildings is on. **Two European directives** are gently nudging things along by requiring that 3 percent of public buildings be renovated every year and that public buildings be almost energy zero by 2018.

A consortium of European researchers called BRICKER is trying to nail down the challenging combination of retrofitted technologies to suit different public buildings in different climates.

Their approach consists of bringing together existing and innovative technologies, both active and passive, in a modular retrofitting system. The aim? To halve annual energy consumption, with the initial investment paid back within seven years.

We talked to consortium member Pablo de Agustin from the company Tecnalia, in Spain, to find out more about retrofitting buildings on a pan-European scale.

Can any building be retrofitted, even old buildings?

We have the flexibility to consider the building we're going to retrofit and which technologies can be applied. Passive technologies that reduce heating and cooling demands can be easily integrated into any type of building because they are mounted on the façade or on the roof.

Older public buildings represent our cultural heritage, so implementing any kind of energy retrofitting in these buildings is more delicate. In Bricker, the ventilation parts of

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the windows are integrated into the frames, so they are not visible from outside. We also have phase change materials integrated into foams that go in the ceiling.

The active technologies such as the biomass boilers and solar collectorscan be more intrusive and require larger spaces. For example if a building doesn't have a special room in the basement, you might require a small building nearby to host the active technologies.

Or maybe you don't have enough space to deploy solar collectors on the roof or on land nearby. Or maybe you're in a Northern European country in a high density urban area, so solar collector isn't a good option, but you have enough space in the basement for a sizable biomass boiler. So in each case we can adapt the system to the needs and characteristics of the buildings but also to the local climate.

How can retrofitting buildings go mainstream?

We're developing a replication plan. This will include classifying the different building types and assessing the potential value and impact of the BRICKER retrofitting package. Once we're clear about how much energy will be saved using renewable sources, and about the expected cuts in CO_2 emissions, we can draw up a roadmap for replication.

We're now working on three demonstration sites involving three public building owners. These partners have hundreds of buildings. If the demos are successful, they will be interested in having a replication plan for the rest of their buildings. We're talking about 1,400 buildings!

Our aim is to come up with some guidelines on how to implement BRICKER in different types of buildings and climates across Europe. But first we need to ensure that we have a good system with attractive economic and social benefits.

Is it hard to get everyone on board?

The difference between public and private building owners is that time scales are longer when working with public authorities. That's one of the obstacles that we are finding. It can be slow getting the authorizations and starting the works.

On the other hand, public authorities are usually more willing to take the risk of innovating. It helps them align with the public directives that the politicians are promoting. Public buildings are expected to set an example for society and the construction sector. So if retrofitting is a success in public buildings it could attract the private sector.

What does all this mean for the wider society?

Although the big goal of the project is to reduce annual energy consumption by 50%, the benefits of this go beyond saving money. We're not just consuming less energy; we're moving from conventional electricity and fossil fuels to much greener sources.

We can generate heating, electricity and cooling from renewable sources like biomass and solar, and reduce CO_2 emissions dramatically. Turning buildings into green buildings adds value in social and economic terms.

Green buildings not only fulfil the ever stricter directives but also provide added value to the building developer or owner, if compared with the rest of the market. This is something that we will see more in the future in the European market in the private sector.

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