

Many tongues, one voice, one common ambition

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There is much need to develop energy efficient solutions for residential buildings in Europe. The EU-funded project, MeeFS, due to be completed by the end of 2015, is developing an innovative multifunctional and energy efficient façade system to retrofit residential buildings. The biggest challenge is that the project is a consortium assembling sixteen partners from nine countries with quite different climates and building traditions. To work efficiently in and with such a large and diversified group of nationalities and organisations, structures that are both rigid and flexible are needed. The new system must thus be modular to become applied in a large number of European climate situations.

The project aims to support collaborating in the decision making process and for the design stage. "Each work package is led and coordinated by the most experienced partner in its field. "The work packages to develop the façade system components are running parallel: technologies integration, structure design, facilities integration, electronic control, material development," explains Isabel Lacave, expert in eco-efficiency and comfort, at the technological innovation division of the coordinating partner Acciona Infrastructure in Madrid, Spain.

She notes: "A close contact between the work package leaders is very important, as the designs interact and affect each other." For example, structure design is narrowly related to material development. "Each work package team has its own work plan," she explains, "The work plans are reviewed every six months to reach challenging objectives. Decisions are

taken by a multidisciplinary team and communicated right away to the whole consortium."

The collaborative work between designers and manufacturers has led to the development of the structural frame of the modules and panels, which is based on innovative composite materials. It can easily be adapted to the building dimensions, to the assembly system and complies with all the mechanical requirements, while being adaptable to the manufacturing requirements.

This collaborative work also led to the decision of integrating the climate system in the building envelope. One expert commends this integration approach. "It is not a bad idea to integrate the [climate system](#) in the building envelope," says Hans Buitenhuis, managing partner at consultancy and engineering firm DWA in Bodegraven, in the Netherlands. "Provided that the envelope has an excellent thermal quality and the smart control of solar light and heat entry is a main function. If this is done well, heating and cooling are barely necessary. Integration in the envelope also strengthens the possibilities for an industrial approach and the use of Cradle-to-Cradle-principles," Buitenhuis tells [youris.com](#).

He also thinks the industry can offer a more innovative dynamism than traditional construction companies can do. "A wide, international course of action enlarges the chances to find solutions that can be used in several countries. For the industry, investments in product development in production facilities only become attractive when there are prospects for large volumes and market shares in several countries. This is a main challenge. Too many European projects remain stuck in desk research or a handful of pilot projects."

By comparison, the project consortium deliberately decided to showcase its activities to demonstrate how concrete its findings are. The project

team is aware that these could have direct influence in success or failure of the façade products on the market. No better proof is that 1,000 m² of façade will be fitted in actual residential building in Mérida in Spain. Their innovative components are compliant with regulations. And all the potential issues arising with the solution developed under the project have been detected at the beginning of the design process, whereas its performance is being continuously performed.

Another expert positively contrasts the approach compared to other similar projects. "Industrialised envelope systems for retrofitting buildings are arising all over Europe now," comments Michael de Bouw, project leader at the BBRI division Sustainable Development and Renovation in Brussels, Belgium and coordinator of the Brussels retrofitting project AIM-ES. "The project, by contrast to most of the other emerging approaches, takes this opportunity not only to speed-up and to deepen the rehabilitation process. But [it also] to turn the typical approach of a building's skin –a passive and mainly protective building layer– upside down," he adds.

The project researchers literally 'activate' the envelope of the building. Not only by integrating existing technologies or new energy and ventilation modules. But also by implementing an intelligent control system and building energy management system. "The latter seems to be both the strength as well as the weakness of the project. The high-tech aspect makes it very fancy and differentiates it from all other envelope systems. As it can monitor and steer in a detailed manner the façade's functioning, in order to adapt it to each possible situation," de Bouw tells youris.com.

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