

Ventilation through breathing windows

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Centralised ventilation systems that exchange heat between the air inside and outside a building often come with a lot of silver-coloured pipes and shafts. By contrast, compact and decentralised ventilation systems, which are distributed throughout a building, can provide a real added-value in terms of design, comfort and energy efficiency. Now, an innovative solution offering decentralised ventilation can be integrated into building features. It is called the Green Ventilation system and works by balancing the inbound and outbound air flow in such a way that it reduces heating and cooling requirements—a principle called balanced heat recovery. The advantage of this system is that it can be added to building envelope components such as windows, walls, insulation materials, terminal heating and cooling units and lintels.

In this interview, Jonathan Martens, R&D engineer at Airria, located in Ans, near Liege, Belgium, explains how his company's systems can make a difference.

What's the benefit from breathing windows compared to conventional ventilation technologies?

The major difference brought by our Green Ventilation technology is that it is decentralised. The air comes in and out at the same spot. There is no need for tubes or shafts to transport the air from one place to another. Architects, who wish to avoid visible technical elements in their design, find this technology handy. This also means fewer costs for installation and for maintenance, as alternatives solution do, every five weeks

Are the actual technical performances such that users will feel the difference?

The fact that our system does not transport air between rooms also means that the noise level is generally lower than with conventional systems. By contrast to a centralised system, users will hear the bathroom ventilation, both in the bathroom and in the bedroom because of the pipes. Instead, with our system, users will only hear it in the bathroom. And, last but not least, our systems save significantly more energy than ventilation systems without heat exchange.

How much energy is saved?

We don't aim to compete with expensive centralised systems with heat recovery, which save more energy than our system because they are much bigger. But in comparison to extraction systems often used in residential homes, we save a lot of energy because these systems do not recover heat. It is difficult to put a number on the exact savings, but our own estimates suggest that the price difference is earned back after 8 to 10 years thanks to energy savings.

Is your system easy to install?

Yes, of course. Ease of use is a key element for us to ensure wide adoption of our system. Regular installers can install it like a shutter above the window casing, right on the building site or in their factory. Once the window is placed, the separate units only need to be inserted into the casings. The only thing required is an additional electrical connection. Ventilation is controlled remotely.

Has this technology already been tested outside the

lab?

The technology is being tested in the Belgian-based AIRRIA Ventilation laboratories. And it is going to be validated in a real environment at one of the three showcase sites of the European project BRICKER, whose aim is to reduce energy consumption of existing public buildings, by using cutting-edge technology.

Namely, as project partners, we are involved in the renovation of the Institut Supérieur Industriel Liégeois, a department of the Haute École de la Province de Liège. All together, we will provide 22 units—two for each window—for four rooms, with a total number of 11 windows. Two of these rooms are regular classrooms, one is an office and one is a chemical laboratory. We are expected to deliver out our units by the end of September 2015.

How likely is it for your technology to become mainstream, and if so, what are the drivers for adoption?

Decentralised [ventilation](#) will gain greater importance on the market in the future. Today, our alternative, which is still in its infancy, starts to be known by among people who are not experts in the field. Also we notice that in Germany, 80% of the double air flow systems that are sold are decentralised.

The biggest driver towards mainstream use is the legislation. It is now mandatory to ventilate new buildings and large renovation projects. Another very sensitive point is its cost. We always try to be competitive against that of a centralised system. At the moment, we are cheaper for a small amount of rooms; say one or two, because a centralised system has a lot of fixed cost. For a regular house of between six and eight rooms,

we are competitive, mostly a bit more expensive. But then again, our advantage is that there are no pipes, shafts and false ceilings.

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