

## Welcome to the 4th BRICKER project newsletter



In late September, we held our General Assembly and project meeting in Liège where one of the BRICKER demo sites is located. Momentum is gathering as the project reaches its half-way point. The groundwork undertaken during the first stages of BRICKER is now being consolidated and put to use as some of the interventions begin. Other works are still in the preparation stages, as procurement continues and shipping of components is being organised.

In addition to the retrofitting proper, our focus is more than ever on outreach. Our thoughts are turned to how we can touch not just the traditional stakeholders, but also the wider community. We will also be stepping up the news about the works on our website and making our presence felt at major building events alongside our fellow projects [A2PBEER](#) and [RESSEEPE](#). All this momentum is building up at a time when the COP21 is set to take place in Paris before the end of the year. Let us not forget that projects like ours are the building blocks of a greater common goal of sustainability, and that replication is our key goal. COP21 will undoubtedly give further impetus and credibility to our work, but we have to strive to get our message (and methodology) across efficiently on our own too.

It is therefore with great expectations that we look forward to getting all the interventions underway to produce an actionable BRICKER system to replicate.

Best wishes,  
Juan Ramón de las Cuevas  
*Project co-ordinator*

## News and Interviews

### The BRICKER consortium convenes in Liège in late September for its 3rd project meeting and general assembly



Beyond the overview of work packages, the three-day gathering featured the project's 3rd exploitation workshop, the content of which was put together by the newly established exploitation board (with ACCIONA, STEINBEIS and TECNALIA).

## Ventilation through breathing windows



### **A technology recovering low-temperature waste heat and turning it into electricity is gaining momentum**

Heat loss is one of the main challenges in power production—be it from both conventional and renewable sources. The trouble is that the wasted energy often stems from limitations of the power conversion process. In a typical gas or coal-fired power plant, about 40% to 50% of the input energy from the fuel is wasted as heat. In a typical combustion engine, the loss is even larger: almost 65% is lost in exhaust gases and in the engine cooling circuit. In industrial processes, a lot of heat is also wasted under the form of hot fumes or liquids.

## Power supply without extra fuel



### **Innovative solutions offer decentralised ventilation integrated into building features**

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 both 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.

### Aerating windows



**Heat recovery ventilation can be integrated into windows, walls, shutters, and heating and cooling units. HRV provides fresh air and improved climate control, while also saving energy.**

In winter, fresh outdoor air is filtered, freely preheated and supplied to the room for the benefit of the occupants. At the same time, an equal quantity of waste air is extracted, cooled and transferred outside. The same heat transfer takes place inversely in hot conditions (summer).

## In the spotlight

### GREENCOM



Greencom is an SME that was founded in 2008 by Luc Prieels. It specialises in the study, design, development and manufacturing of **decentralized balanced (double flow) ventilation systems with high performing heat recovery exchangers** that can be integrated in the building envelope. They are suited for mass production. Greencom has a strong technological expertise in the field of decentralized balanced ventilation dedicated to room ventilation in residential dwellings and small offices buildings. Greencom has the capacity to build and operate experimental facilities and already demonstrated the feasibility of high effectiveness and compact ventilation units. The technology developed by Greencom already demonstrated that windows air vent can efficiently integrate heat recovery functionalities that permit coherent energy-efficient retrofitting of existing buildings with acceptable air indoor quality without impairing too much the energy demand associated to ventilation. Its technology is protected by patent and models. Specific areas of expertise within Greencom are: HE modelisation, prototyping and fabrication; Fan study, measurement and integration, Design of moulded pieces including high thermal properties (PS, EPP, etc...), Electronic components integration, Aesthetic and design concerns, Filters study, characterization and measurement.

The Bricker project aims to enhance the energy efficiency of the building and Greencom's responsibility is to lead the development of an innovative aerating window. This ventilation system integrated into the building envelope limits the ventilation lost due to its high heat exchanger efficiency. Greencom also participates in the construction of the 22 units that are being implemented at the demo-sites.

*BRICKER is a huge opportunity for us to develop a "small tertiary" unit, able to equip classroom, offices, meetings room, etc... One of the project's demo sites – a technical college – offers an appropriate setting where we can integrate, test and evaluate the benefits of our new system.*

Jonathan Martens,

R&D engineer at Greencom



The **Energy Systems Research Group of the Thermodynamics Laboratory of the University of Liège** comprises 3 postdoctoral researchers, 13 PhD students, two research engineers, three technicians and one professor.

The laboratory research group has a long recognized experience and expertise in the field of **Energy & Buildings, HVAC systems**, both with experimental and numerical approaches. In addition, research in the field of **ORC systems** has been carried out for more than 10 years. Various low-capacity ORC prototypes and expander prototypes have been developed in the lab for research applications or for industrial partners, and the group has participated to the development of a 1-MWe ORC module for waste heat recovery.

Numerical simulation models of HVAC systems and components have been developed and validated through different experimental projects. Such models were used successfully to define their architecture and to optimize their operating conditions. Today the Laboratory is focusing part of its research activities on control aspects, with a view to maximizing their performance in off-design conditions as well as ensuring their reliability and automation.

In the field of energy performance of buildings, the research unit is mainly working on the coupling between HVAC systems and building envelopes, with a focus on Demand Side Management.

ULG has an active role in R&D and as such participates in many areas of BRICKER, such as the development of the aerating window, the simulation of small-scale power plants including ORC systems and the development of building energy simulation models.

*Through BRICKER, we have a framework for using cutting-edge technology to reduce energy consumption at the Belgian demo site - the Institut Supérieur Industriel Liégeois (ISIL). The project means that we are not doing this alone, but alongside like-minded partners who in turn are benefitting from our own knowledge and experience fed into one of the project's demo sites.*

Vincent Lemort,

Professor in thermodynamics at ULG

website: [www.labohtap.ulg.ac.be](http://www.labohtap.ulg.ac.be)

## News from the BRICKER network

### Paper on BRICKER presented at the AIVC Conference in Madrid in September



The annual [AIVC conference](#) is a major event for the ventilation industry. This year's edition took place on 23-24 September in Madrid and featured a presentation from BRICKER partners [Greencom](#) and [University of Liège](#) (ULG). Delivered by Samuel Gendebien (ULG) and co-authored by Vincent Lemort (ULG), and Jonathan Martens and Luc Prieels (both from Greencom), the presentation described the new prototype for single room ventilation with heat recovery as developed under BRICKER.

The paper presented the specifications and the final characteristics of the developed device before explaining the coefficient of performance. It also highlighted investigations to determine flow rate delivered by the device, and concluded with a comparison of measured and predicted performance.

[Learn more](#)

### Researchers' Night



**As part of the European Researchers' Night, an event was held and co-organised by BRICKER partner [FBK](#) which was the stage for a series of presentations by young scientists.**

One of these presentations was the work of students on placement at FBK and they won first prize out of twenty four contenders, much to the delight of their host organisation of course.

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## Meet us at events

### IBPSA 2015 Building Simulation Conference



This international conference is organised by the Building Performance Simulation Association (IBPSA) with the aim of advancing the multifaceted building energy analysis and performance simulation. It will be attended by BRICKER partner [Özyegin University](#) who is involved in the Turkish demo site.



Hyderabad, India, 7-9 December

### BUDMA – International Construction and Architecture Fair



This trade fair is one of the biggest industry events in Central and Eastern Europe and is dedicated to architects, contractors and property developers. [PURINOVA](#), who provides materials expertise in BRICKER will be attending this event.



Poznan, Poland, 2-5 February 2016

## European BIM Summit



This summit will include conferences, paradigm case studies, and practical workshops. The most interesting experiences and latest advances in BIM based on managing the information generated over the lifecycle of a construction project. The event is designed to reach out to all sub-groups of the construction industry including decision-makers.



## Ecobuild

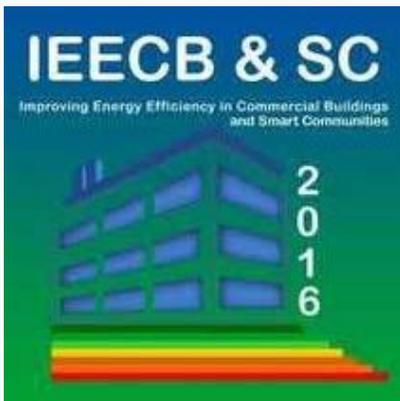


This is the world's biggest even for sustainable design, construction and the built environment. It covers the whole of the construction industry including refurbishment, public and commercial buildings as well as materials.



London, UK, 8-10 March 2016

## IEECB&SC'16 – Improving Energy Efficiency in Commercial Buildings and Smart Communities



This conference, in its 9th edition, focuses on both commercial and public non-residential buildings. It brings together investors, property managers, building technology researchers and equipment manufacturers and utilities.



Frankfurt, Germany, 16-18 March 2016



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