

# Industry visions on R&D for better buildings in the future

The programme of the 33<sup>rd</sup> AIVC Conference began with a panel discussion facilitated by Kirsten Engelund Thomsen from SBI, Denmark.

REHVA Journal had an opportunity to have a short interview with the panellists, experts of leading companies in energy efficient technologies.

## REHVA Journal presented the following four questions to the experts:

- 1 What challenges do you see for the next 10 years (2020 objectives) and beyond (2050) in research and development in the building sector?
- 2 What are to your mind the major barriers to innovation e.g., legislative issues, calculation methods, costs, etc.?
- 3 What are the ways to explore to overcome the barriers?
- 4 What would be your suggestions to improve the quality of works (e.g. training and qualification of craftsmen)?



**Mrs. Lone Feifer**  
Strategic Project Director  
VELUX Group

1 It is a fact that most of the buildings that have already been built represent a very large part of our future building stock. So I first and foremost believe that it is important to keep a long-term focus on finding and developing solutions that will ensure that the existing building stock lives up to the 2020 objectives and - further ahead - the goals for 2050.

Renovation of the current building stock represents a large economic potential and an enormous job creation potential. We are, however, faced with the challenge of

scarce public funds. One answer to that challenge is to activate the large sums accumulated in private foundations and pension funds throughout Europe.

In terms of technology, the solutions are already here, but to meet the challenges of the future, we have to find a way to implement them in today's buildings. In other words a public demand must be created.

In that perspective it is important to not only focus on the energy efficiency of buildings, but to also secure a healthy and comfortable indoor climate with fresh air and daylight. One of the solutions is to promote the use and development of ventilative cooling in buildings.

The implementation of a number of mechanical solutions like air conditioning is constantly increasing. Those are solutions that use a lot of energy and do not necessarily provide the buildings with sufficient air quality. One of the major challenges is to secure that more environmentally and healthier solutions such as ventila-

tive cooling is reflected in government regulations, promoted by the building industry and demanded by the public - the people who will be living in the low-energy buildings of tomorrow.

**2** One of the biggest barriers to create more sustainable living in buildings is that promotion and implementation of the technology requires financing - financing of theoretical studies, test buildings and usability tests. This is also why it is important to promote a public awareness and demand for the solutions.

Building regulations also represent a barrier. Often they do not allow new technology to be implemented and they are often based or focused on quantitatively designed values instead of qualitative objectives. Strict rules and a one-sided focus on minimising energy consumption can create major barriers to the development of sustainable living in low-energy buildings.

**3** First of all, we have to show and not only tell about the need for new ways of building houses. In the VELUX Group we've done this through the project Model Home 2020. In the project we've built

six experimental low-energy buildings that are used by ordinary people. The houses have demonstrated the benefits of such technologies as ventilative cooling.

Through Model Home 2020 we learned that another benefit is that experimental building projects also encourage creativity and innovation because the focus on single technical values is redirected into looking at the building from more holistic and qualitative perspectives. This of course speaks highly for allowing a more experimental approach in today's building regulations.

**4** In my opinion we need to focus on promoting simple solutions based on good building physics instead of over-complicated, maintenance-demanding systems.

In addition to training of craftsmen, there should also be increased focus on the installer's ability to advise the private buyer to make the right choices. In the ideal world the installers must have both relevant and updated knowledge on how to build low-energy buildings that also deliver a sufficient indoor climate with plenty of fresh air and daylight.



**Claus Bugge Garn**  
Rockwool

**1** In Europe we have app. 200 million dwellings, and we are constructing app. 1 million new dwellings per year (0.5% from total number). The new dwellings are mainly an expansion of the total building mass and not a replacement of existing buildings. Even if we from tomorrow only constructed nearly zero energy buildings; we would not reduce the energy consumption in buildings; but only maintain it at the current level

The focus, in order to fulfill 2020 and 2050 targets set by EU, thus have to be on how to make a deep renovation of existing building stock. We need to deeply renovate app. 2.5 - 3% of our existing dwellings per year; equal to app. 6 - 9 million dwellings. This is more than

a doubling of the existing renovation rate; and the existing renovations are not focused on energy efficiency. This can only be done if new long-term financing mechanisms are put in place; such as the suggested "pay as you save" schemes.

These renovations will have to be done with craftsmen without expertise in energy efficiency; ventilation and indoor air quality; and with low education levels. By far most of the renovations will be done; without having a building engineer involved in optimizing the solutions.

We thus need to develop standardized "fool-proof" methods that can be installed by an untrained workforce.

**2** The biggest barrier to innovation in the European construction industry is probably building traditions. The construction industry is a very conservative industry that do not "like to experiment"; especially within the private home sector. Building investments are very high; and often a once in a lifetime decision; and we thus do not like to experiment. This combined with the rather low knowledge level in the construction industry; makes it very difficult to introduce innovations.

**3** History has shown that the most efficient way to control and change the construction sector is via legislation (building codes). It is expected in the construction industry that a number of requirements have to be fulfilled when construction a new building or when making a major renovation. In general the construction sector strives to fulfill requirements.

**4** There is no doubt that there is a strong need for training of craftsmen. The question is however how to get this training organized in an efficient

manner. The construction industry consists mainly of very small companies; and in general a rather untrained workforce, often with language barriers due to many nationalities involved.

I believe that the best way to secure sufficient qualifications is by introducing authorization requirements for companies within the construction sector. Meaning that in order to bid for a construction job; the company needs to have an authorization. In order to have this authorization; the company needs to document that the craftsmen have received sufficient training.



**Lars-Åke Mattsson**  
Lindab Ventilation AB

**1** The challenge is very difficult and has a lot of approaches and a lot of stakeholders. The easiest part is to develop relevant products and systems that work and have a great impact on the energy consumption and at the same time gives an excellent indoor air quality with productive, healthy and happy people.

I see the following items as problems in the current situation and challenges for the future improvements:

- Building owners should have relevant information on the consequences of their decisions so that the final building with its systems meets the expectations.
- The current systems are not always sustainable and not based on life cycle cost analysis.
- The building systems are not always easy to operate, and may not operate on optimal way.
- There must be an organisation that is able to maintain and service the system and takes the responsibility of proper operation.
- If the system is broken there must be an organisation that can help the building owner and reset the system.
- Designers have to have more responsibility on the performance on system level so that that all

technical equipment fit together and operate optimally in the building.

- The contractor has to be educated and informed by the designer so that systems are installed as designed and operate as intended.
- The politicians should create the business environment such that it is advantageous to meet the environmental targets.

**2** The biggest barrier is the fact that supplier that has the cheapest product will win the project. The system of procurement is often very complicated and many involved can make money on a project that is right on the lowest limit of the regulation.

**3** The most important issue is knowledge, all the way from the house owner to the politicians and the whole building industry. To educate everyone cannot be done by a single company. This can only be done by clusters of organizations like AIVC, Tightvent, REHVA, local branch organisations.

The certification like LEED, BREEAM are quite new systems that enable the house owner to buy a house with a level of predefined requirements without being an expert himself.

Another idea is to change the way of procurement so that the builder must take care of the operating costs the first five years or similar.

**4** To improve the quality of the work is extremely difficult and has to be looked on from a holistic view and see it all the way from school, and the education material to certified installers and certified companies and associated salary systems. To make a reformation like this has to involve politicians, governmental school board, unions and employers confederation. ☞