



News from Hydro

Energy savings through innovative façade systems

Oslo (2005-08-05): From the magazine “Green Futures”, UK

By Matthew Jones

Cladding commercial and administrative buildings used to be as simple as clothing their structural elements in stone or some other weatherproof material. While durability, aesthetics and cost were key criteria in the choice, energy efficiency was often lower down the list.

These days architects, engineers and their clients are becoming smarter at specifying façades, prompted by rising energy costs, greater environmental awareness and legislative measures to improve the energy performance of buildings.

Cladding systems, too, are becoming more sophisticated. The best of the new generation of curtain wall designs minimise the need for artificial heating, cooling and lighting systems, benefiting both the environment and the occupants of large buildings.

Architects first started taking serious note of energy saving techniques in response to the spiralling energy prices of the early 1970s. While the raw economic reasons remain compelling today, the emphasis has also shifted since the 1997 Kyoto Protocol to cutting greenhouse gas emissions.

Energy waste in buildings, alongside transport, is one of the biggest contributors to carbon dioxide emissions and one of the key target areas for reductions.

According to BRE, the leading British building research organisation, non-industrial buildings such as offices, schools and homes account for up to 50 per cent of a country’s primary energy consumption, depending on where in the world they are. The European Union estimates that about 45 per cent of its carbon dioxide emissions are generated through energy use in buildings, and from next January façades used in member states will be required to contribute to overall energy savings in buildings.

“If we’re to hit our climate change commitments, good cladding systems are an integral part of a building’s ability to deliver the intended carbon savings. The overall performance of buildings will increasingly return to the better design of their fabric as people realise they can’t just rely on mechanical services within them,” says Nick Jones, principal consultant at the BRE’s environment division.

Norsk Hydro, the Norwegian metals and energy group, is one of the companies at the forefront of modern façade design. Over the past 18 months it has developed an aluminium and glass curtain wall system capable of saving up to 50% of primary energy use and introducing natural ventilation even into high-rise office blocks.

The system, known as *TEmotion*, incorporates all the components necessary to heat, cool, ventilate, shade and light a building within the façade. Automated controls enable efficient operation of the system while also allowing individual regulation of the indoor climate.



HYDRO

News from Hydro

T*Emotion* has the option of including photovoltaic cells that can generate enough energy to make the building potentially self-sufficient and its modular design minimises energy use during construction.

Werner Jager, managing director of Norsk Hydro's building systems research unit, says the reduced use of artificial light and air conditioning – in some cases no air conditioning at all may be necessary – has been shown to significantly increase comfort levels among building occupiers. He also believes the façade system is environmentally friendly on a whole life cycle basis, in spite of the high initial energy consumption associated with aluminium smelting.

Up to 85 per cent of the aluminium content in façades is already recycled and T*Emotion* components are designed to be easily separated, which will increase recycling rates in the future, he says.

So far eight T*Emotion* projects are at the consultation stage, and Mr Jager estimates the initial capital cost should be roughly the same as for buildings designed with standard façades.

“The fact that all the building services are integrated in the façade means you can do away with suspended ceilings or double-constructed floors, offsetting the higher cost of the system. In the long term there are clear advantages for operating and maintenance costs as well as for the environment.”

Contact

Telephone
Cellular
E-mail

Kristin Brobakke
+47 22532744
+47 91840681
Kristin.Brobakke@hydro.com

Hydro Aluminium
Drammensveien 264
N-0240 Oslo
Norway
Telephone: +47 22 53 81 00
Fax: +47 22 53 27 25
www.hydro.com