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School of the Future – Frontrunners made in Denmark

Researchers in Denmark are heading towards new school renovation concepts. «It is easier to gain people`s attention for the need to change and to significantly increase the quantity and quality of energy-efficient retrofits in Europe, when public authorities have a good approach. » Kirsten Engelund Thomsen is a Senior Researcher at the Aalborg University, the Danish Building Research Institute (SBi) and she has been working in different European research projects for years in order to initiate the necessary change.



Picture: Kirsten Engelund Thomsen
Source:
www.fbbb.dk/Reportage%20fra%20Skolekonference

One of these projects is the FP 7 project «School of the Future» (2011-2016) aiming at zero emission school buildings with good indoor environment. Currently, Kirsten Engelund Thomson is finalizing the work in this European research and demonstration project. Four best practice examples have been realized in different countries – but all of them with the same ambitious goals: The reduction of the total energy use up to factor 3, an improved indoor environmental climate and the implementation has to be achieved within max. 100 €/m² additional costs.



Picture: Hedegaards School in Ballerup before renovation (Source: Ove Mørck, Cenergia)



Picture: Hedegaards School in Ballerup after renovation (Source: Ove Mørck, Cenergia)

The works on the Danish demonstration project Hedegaards School in Ballerup have already been finished in 2012. Kirsten and her research teammates were integrated right from the beginning. They made serious investigations of the existing school building, developed innovative concepts together with industry partners and the monitored the project afterwards. The project team brought the potential of such school renovations to the light and demonstrated the benefits of a holistic renovation concept. Measurements one year before and two years after the renovation

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proofed the achievement of the predicted reductions for energy and heating: The total energy was reduced by the factor 3. The importance of a «soft landing» into operation was seen: Kirsten and her teammates accompanied the school in the first two years after renovation in order to check and adapt the functioning of the systems.

Further information

School of the Future http://www.school-of-the-future.eu/index.php/about

Demonstration project Hedegaards School, Ballerup

http://www.school-of-the-future.eu/index.php/ballerup-denmark

Another important European research platform where Kirsten Engelund Thomsen is engaged in is the IEA International Energy Agency. The project «Annex 61 – Development and Demonstration of Concepts for Deep Energy in Governmental/Public Buildings» (2013-2016) is set up on the Building and Community Systems (EBC) Collaboration Programme. Most often, public clients have to make technical and procedural decisions; they struggle to moderate users` participation and moreover they have to set up the financing. Annex 61 aims to overcome barriers in the decision-making process and to find new business models for the renovation of such public buildings.



Picture: Stengårsdskolen i Egedal before renovation (Source: Ove Mørck, Cenergia)



Picture: Stengårsdskolen i Egedal after renovation (Source: Ove Mørck, Cenergia)

Egedal Municipality – with its town of Stenløse - is such a client – and contributed with the renovation of the Stengårsdskolen school in the town of Stenløse. At the Stengårsdskolen school building Kirsten and the Danish team helped to develop a holistic renovation concept and supported the public client in the concept, planning and implementation process. The result is convincing: A façade renovation with new windows, the improvement of roofs and floors, the renewal of buildings services and the installation of a new ventilation system with heat recovery. And on top: a new photovoltaic system with an annual production of about 173 MWh. And here as well the monitoring was very important. It helped to check and adapt systems and demonstrated the achievement of the calculated figures and predicted reduction goals.

Further information

Website Annex 61 http://iea-annex61.org/

Demonstration project Stengårsdskolen, Stenløse

http://www.google.dk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwjb5KaMi47MAhXoHpoKHZX4DroQFggaMAA&url=http%3A%2F%2Fwww.sdu.dk%2F-%2Fmedia%2Ffiles%2Fom_sdu%2Finstitutter%2Fiti%2Fforskning%2Fnato%2Barw%2Fliterature%2Fder%2Bch-15-027.pdf&usg=AFQjCNGRAOroJoAsCcl8c34kHyywPbA2KQ&bvm=bv.119408272,d.bGs

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http://vbn.aau.dk/da/persons/kirsten-engelund-thomsen(033950b4-8a4f-4cf2-b301-2de3663974aa).html

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