

Study Tour Program/Compendium in the framework of the Baltic Sea NGO Cooperation on Sustainable Energy in Buildings – 2016 in Belarus - Latvia - Russia - Denmark - Norway

February 22, 2016

Energy Information and Energy Renovation in Copenhagen, Denmark

Mobile Sustainable Energy Exhibition

"Energitjenesten", the local action arm of the Danish NGO "SustainableEnergy" has mobile exhibitions that are used to promotion of energy efficiency in households, at schools etc.

One of these exhibitions is based at "Energitjenesten Sjælland" in a suburb of Copenhagen. This exhibition is, among others, used at events, where energy renovations are promoted for dwelling, usually private houses. The exhibition includes:

- Relevant leaflets and fact sheets on energy renovations and other energy efficiency
- Exhibition of solar cells
- Exhibition elements such as windows, solar heating, insulation materials, efficient light bulbs, do-it-yourself house energy check, and others
- CO₂ meter, which is a transparent tube, in which the visitors can put colored balls. The number of balls illustrate visually, how much co2 is emitted by the visitor in a year.
- Children activities such as a generator-driven racing course, water pump and others, where the children produce the energy by turning handles.



*Pictures from the mobile exhibition
"Climate Caravan"*

Environment and Energy Center Høje Taastrup

One of the local organisations connected with the Danish NGO "SustainableEnergy" is running a center for environment, repair, reuse and sustainable energy near the Høje Taastrup railway station. In the center it is possible to get help to repair and reuse a number of household equipments, electronic devices etc. The center has also information on energy efficiency and renewable energy and organises a number of events on many aspects of green lifestyle.



*Picture from Environment and Energy Center in Høje Taastrup
at a book launch, October 2015*

Energy Renovation of Apartment Blocks in "Gadehavegaard", Høje Taastrup

The 987 apartments in the social housing "Gadehavegaard" (part of social housing association "Demoa") were built 1977 - 1982 and needed renovation. It was then decided to make a very extensive renovation to make the buildings conform with the "passive house" standard with very low energy demand (annual heating demand reduced to 15kWh/m²). This included outside insulation, inclusion of balconies in heated space, windows, new/renovated ventilation and others. In this way the flats could save 85% of the heat demand and the saved heat will give savings for the inhabitants that will compensate for the payback of the extra investments.



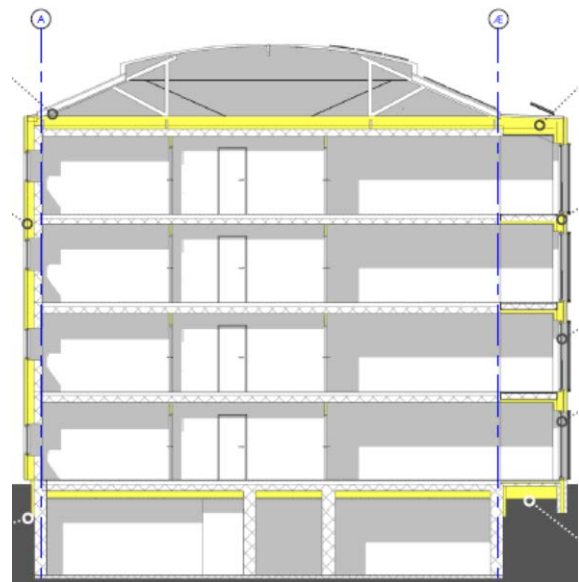
Apartment block before renovation.



Installation of outdoor insulation

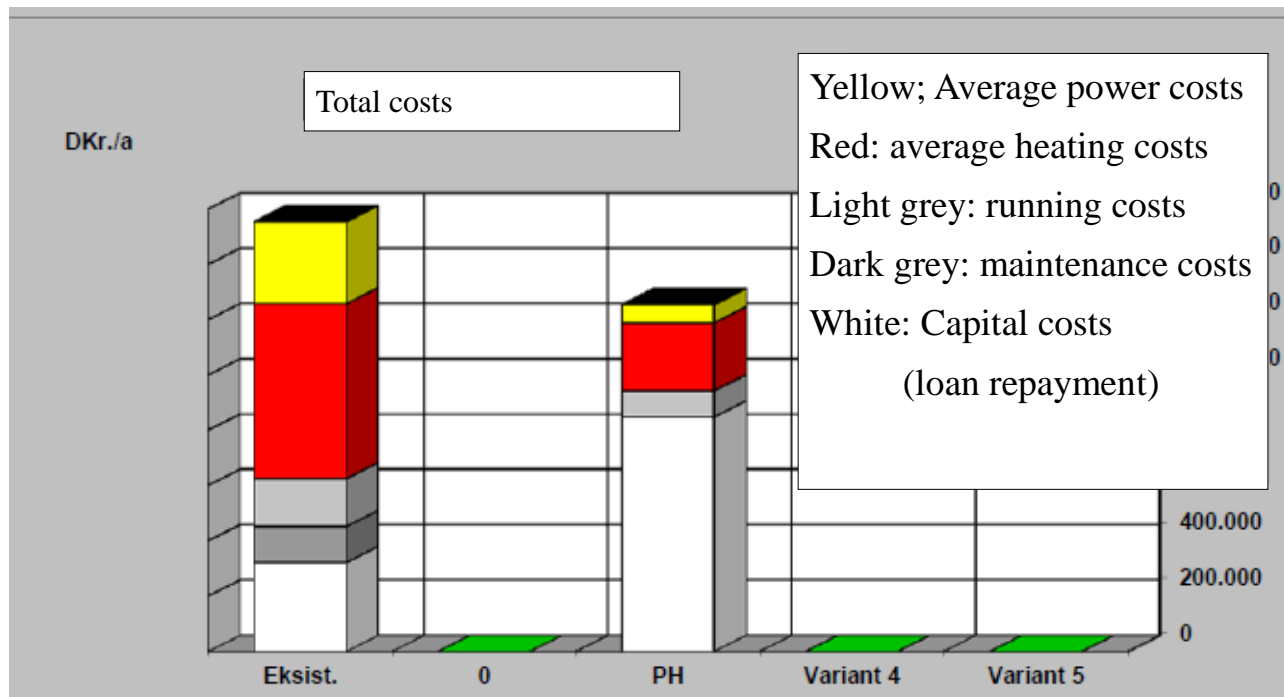


Apartment block after renovation



Cross-section of building after insulation (insulation is yellow). Former balconies are to the right. Observe also roof and floor insulation.

The renovation costs were 282,000 DKK/flat of which subsidies paid 42,000 DKK and the remaining 240,000 DKK were paid with savings and a loan. This should be compared with the necessary replacement of windows and doors that were estimated to have an investment of 74,000 DKK/flat. The extra costs are to be saved by savings on energy bills and on reduced maintenance costs. The graph below shows the changes in running costs with the renovation.



Graph of annual costs of block of flats for existing situation before renovation and with passive house renovation.

The renovation was planned in cooperation between the inhabitants, represented by the local board of the housing association, the housing association administration (Domea) and the architect office "Bjerg Arkitektur". The planning process, including applications for subsidies and some unexpected delays took about 4 years while the period with physical construction took 15 months (from August 2014 to November 2015).

Pictures and graphs are courtesy of Bjerg Arkitektur, see website: www.bjerg.nu

The study tour was part of the Baltic Sea NGO Cooperation Project on Sustainable Energy in Buildings coordinated by INFORSE-Europe (www.inforse.org/europe). The project is supported by Nordic Council of Ministers 2016.

More information on the project http://www.inforse.org/europe/se_buildings_project.htm

