



Energy-efficient renovation in Helsinki

The general manual for low-energy building for public premises in Helsinki was published in 2009. Later on in 2010, more specified manuals for HVAC, architecture, electricity and building automation were prepared.

Energy efficiency has been developed and systematically taken into account in the City of Helsinki's construction work ever since the 1970s. The new manuals set specified target levels for different types of public buildings. The energy consumption analysis is already defined in the preparation and planning phase. The manuals also require the use of renewable energy, energy efficient technical equipment and lighting. A lot of emphasis has been put on proper monitoring conditions and usability. These manuals should be applied to all new buildings and renovations, so that the energy consumption can be roughly halved in new public premises. For renovation projects, the target is a 40% decrease in energy consumption compared to normal renovation procedures.

Case: Käpylä Primary School

One of the first energy-efficient renovation sites is Käpylä Primary School, which is one of the biggest schools in Helsinki. It was elected as a pilot because there was already a strong need for renovation and the learning plan of the school supported environmental education.

The planning for energy-efficient renovation started in 2007, and building is to be finalised in 2010-2012.

Basic facts:

- Built in the 1950s
- Gross internal floor area: 7,840 m²
- Over 700 pupils and about 90 staff
- The school operates in 5 different buildings
- One of the first pilot projects of energy-efficient renovation in Helsinki

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The energy-efficient solutions of Käpylä:

- 170 mm more insulation for the facade (→ u-value 0,18)
- Renewing the windows (→ u-value 0,8)
- 600 mm of wool insulation in the roof (→ u-value 0,08)
- Decentralised and more efficient ventilation systems (SFP ≤ 1,8)
- Heat recovery systems in the shower and bathroom facilities
- Sensor system for carbon dioxide in the sports facilities
- Occupancy sensors for lighting and ventilation in the classrooms, daylight sensors

The solutions to enhance the monitoring and consumption-based energy usage in Käpylä were used widely. Information monitors were placed in the hall area, and corridors and stairs are equipped with occupancy and daylight sensors. Led lamps are used where possible. There is also a specified consumption monitoring of heat, ventilation and air conditioning in the kitchen and other school facilities. Much effort has been put into the modification and usability of the building

Conclusions

- The investment costs compared to "normal renovation procedure" are €0,86 million (additional cost 6%), but these improvements result in 30-40% better energy efficiency.
- Energy efficiency was already taken into account in the planning phase, so the consumption-based usage and energy savings are easier to apply
- The results of the Käpylä pilot will be exploited in future renovation projects in Helsinki