

Gothenburg Takes the Lead in Low Energy Preschools and Schools

The City Premises Administration in Gothenburg builds and manages public premises for the municipality eg schools, preschools and retirement homes. The high ambition for the construction and renovation of properties means that the City of Gothenburg today is a leader in Sweden in terms of energy efficiency. Today the City of Gothenburg builds the largest number of low energy preschools in Sweden and has an ambitious plan for existing buildings to be renovated in an energy efficient manner. The work includes training and support for tenants, pupils and staff and continuous development where new technologies are tested and evaluated eg Net Zero Preschool and Positive Energy School.

Highly energy-efficient new buildings

Since 2008 only highly energy-efficient new buildings are built - in line with passive house standard and with half the energy consumption required by national mandatory building regulations. The rate of new construction is very high in Gothenburg and today the city holds the largest number of highly energy-efficient municipal premises in Sweden. Furthermore, we are investing in solar energy - both photovoltaic cells and solar thermal collectors. A Net Zero Preschool is in operation for a few years and a Positive Energy School is planned.

The Net Zero Preschool (i.e. a building that over a year produces as much energy as the building requires during the same time) was inaugurated in April 2013. It hosts six preschool units with a total of 120 children. It's a two storey building with an excellent energy performance and a very low need of supplied energy. The energy that still is needed will be compensated by photovoltaic energy produced on site. The main purpose of the projects was to make a full-scale analysis of the possibilities of creating climate smart public buildings with very high energy performances. The analysis includes effects on lifecycle costs, overall energy system, emissions of greenhouse gases, indoor climate and pedagogical activities (usability).

The Positive Energy School (i.e. a building that over a year produces more energy than the building requires during the same time) is planned to be inaugurated in a few years. A great part of the energy need will be locally produced on site by solar energy (both photovoltaic panels and thermal collectors) and the solar heat will be stored in a sand layer under the buildings to be used during the cold part of the year. The main purpose of the projects is to make a full-scale analysis of the possibilities of creating climate smart public buildings with very high energy performances and a great part self-supplied of energy. The analysis will include effects on lifecycle costs, overall energy system, emissions of greenhouse gases, indoor climate and pedagogical activities (usability).

Upcoming projects. As buildings become more energy efficient in the operating phase, the focus will fall increasingly on reducing energy and carbon footprint in buildings lifecycle. Research is underway

to increase knowledge about the "embedded energy" contained in the materials, etc. that the houses built by.

Improved energy efficiency of all existing buildings by strong leadership

In January 2014, the Energy Efficiency Plan 2020 was adopted by the City Premises Committee. The plan indicates in detail the various energy efficiency measures needed, covering a number of key areas during the period of the plan. The plan specifies who is responsible for initiating and carrying out the actions, as well as resources required. It serves both as a written policy and budget as well as the basis for monitoring target achievement. Not least the plan synchronizes energy efficiency measures with other planned measures in the properties and shows what additional operations that has to be done to meet energy and climate targets (see other actions)

To ensure that energy refurbishment gives the expected effect the City Premises Administration works systematically with the training of staff in charge of operation and maintenance of the properties. The actual energy consumption in redeveloped properties is monitored regularly.

Energy Wise tenants

Much of the energy used in a building is connected to the activities in the premises. The City Premises Administration has been working for 10 years with energy saving in cooperation with tenants and by simple behavioral measures been able to reduce electricity consumption by 10 percent in average. The next step is an energy educator who will work with the tenants' energy behavior and develop the concept, reach more schools and engage pupils and staff to save energy.

Concrete examples of actions is a web-based training on energy produced for preschools. An energy game (an app for preschool children) has been developed in cooperation with the Academy and will be launched in autumn 2015. Together with the city districts an E-learning training program has been developed to encourage the staff to save energy.

More information:

Short film about energy efficient preschools (in English):

https://www.youtube.com/watch?v=8QcTDVST_8

City Premises Administration web page (in Swedish):

<http://goteborg.se/wps/portal/enheter/fackforvaltning/lokalforvaltningen>

Article about award received for outstanding work on climate change (in Swedish):

http://www.vartgoteborg.se/prod/sk/vargotnu.nsf/1/miljo_o_kretslopp,tuffa_krav_pa_energismarta_lokaler_belonas_med_ny_klimatutmarkelse