



Viikki Environment House

– the office building with the lowest energy consumption in Finland

Completed in September 2011, the energy-efficient office building is used by the City of Helsinki Environment Centre and the University of Helsinki.

Total energy consumption: A+ level

-> Purchased energy consumption: 70 kWh/m² (electricity, cooling, heating and hot tap water).

-> Half of what is required by construction standards.

-> Implemented mainly by means of commonly-used technical solutions.

Free cooling, solar panels, natural daylight

The building's external heating requirement is very low. The building utilises district heating, which in Helsinki is based on the energy-efficient co-production of electricity and heat, whose utility rate is about 90%. The electricity and heat consumption and the building's own production of renewable energy can be monitored in its lobby and online at www.hel.fi/ymk.

The structures are energy-efficient:

- The windows are made of energy glass.
- The thermal insulation capacity of the walls is better than average.

Bedrock-based cooling is used to cool the premises:

- Cool water for cooling the building is obtained from wells drilled in the bedrock.
- The energy consumption is only a fraction of that of traditional compressor cooling.

Solar and wind power are also utilised for electricity production:

- The roof features solar panels and four city wind turbines.
- The south façade has been designed for the efficient utilisation of solar panels, which also shade the façade to prevent an excessive heat load in the summer.

- These renewable energy production systems cater for about 20% of the building's energy requirement.

The electricity and heat consumption has been reduced:

- Natural daylight is utilised by means of, for example, light shafts.
- The energy consumption for lighting is reduced by utilising presence control and LED lights.
- The ventilation system is zone-specific and equipped with efficient heat recovery.
- Special attention has been paid to the building's air-tightness.
- Only energy-efficient office equipment will be used. Night-time energy consumption by office equipment has been prevented.

Tap water consumption has been minimised by optimising the tap water network pressure and selecting low-consumption water fittings.

The energy monitoring system is highly advanced and extensive.

To reduce the harmful effects of traffic, more attention has been paid to pedestrians, cyclists and public transport passengers in designing the building. Cyclists have been provided with safe bike racks and efficient social facilities.

The design and construction were managed by the City of Helsinki's HKR-Rakennuttaja. The head designer of the building was Architect and Doctor of Technology Kimmo Kuismanen / Ab Case consult Ltd. The HVAC design was carried out by Climaconsult Finland Oy and the electrical design by Projectus Team Oy.

The Environment Centre to become completely carbon neutral by 2015

At least as important as the building itself are its users, without whom even the best building cannot be eco-efficient. The City of Helsinki Environment Centre's ambitious objective is to make the organisation completely carbon neutral by 2015. The good practices established will also be extended to other organisations of the city.

Action plan for a carbon neutral Environment Centre

The carbon footprint calculated for the Environment Centre's employees in 2008 was 5.4 tonnes per employee, which covers energy use as well as transport, procurement and waste. Thanks to the energy-efficient building, the move to Viikki will reduce the department's carbon footprint to 3.2 tonnes per employee. The aim is to reduce the emissions to 1.5 tonnes per employee by 2015.

Before the move, the Environment Centre prepared an action plan, aiming to take transport, waste sorting and similar factors into account in the design process.

- The ambitious 36-step action plan strives for energy-efficient practices, environmentally-friendly transport, sustainable acquisitions and environmental responsibility.
- The actions with the greatest impact on emission reductions are the use of green electricity and district heating based on renewable fuels.
- More than half the old furniture is utilised in the new building in Viikki, which has a significant positive environmental impact in addition to providing cost savings.
- After the implementation of the action plan, the aim is to compensate for emissions to achieve complete carbon neutrality.