



Low energy buildings - Case Study: **Kuopas Apartment Building**



Category / year of construction or renovation

New construction: nearly zero energy building or better / 2010



Address of the building

Finland, Kuopio, Suokatu 14



Pictures





Description of the building

Type of building:

Large residential (multi-family house)

Detailed description:

5 story apartment building with 47 accessible apartments for students.

Building gross volume: 6 900 m³, heated gross area 2 125 m² without garage

Walls: Polyurethane insulation (300 mm), concrete sandwich elements (U-value 0.08)

Roof: Hollow slab, Polyurethane insulation (270 mm) + 90-160 mm light gravel and 100 mm concrete

Total energy consumption of the building: 107 100 KWh/a

Total renewable energy production (solarheated water and solar electricity, geothermal heating and thermal energy created by use of the building): 85 600 KWh/a.

Heating energy purchased from district heating grid: 17 335 KWh/a.

Electricity purchased from grid: 4 230 KWh/a.

Heating energy and electricity sold to district heating system and electricity grid: 19 273 kWh/a.

Total energy balance = -2 292 KWh/a (energy to be purchased from external sources).

The example shows that zero energy buildings are feasible even in regions with harsh climatic conditions and low solar radiation.



Energy consumption

Energy values:

Heating demand: 10.6 KWh/m²/a

Cooling demand: 12.9 KWh/a, cooling is completely produced by geocool i.e. the only energy consumed is the electricity for pumps

Final energy demand including onsite solar energy production: 1.4 KWh/m²/a

Total energy balance = -2 292 KWh/a (electricity purchased from external sources)

Use of renewables:

Renewables of heating demand 100 %

Renewables of cooling demand 100 %

Renewables of total energy demand 98 % total annual balance (building feeds energy to district heating grid as well as electricity grid)



Links

Website illustrating the building:

<http://www.nollaenergia.fi/mediapankki.html>

Promotional material online:

www.nollaenergia.fi



Contact details

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