POLISH AND NORWEGIAN CITIES
together for climate and energy

ÅSVEIEN SCHOOL, TRONDHEIM
PASSIVE ENERGY STANDARD, LOW CARBON EMISSIONS

Sector: Energy efficiency in buildings

Timeframe: 2013 – 2015

Location: Byåsen, Trondheim, Norway

fot. Carl-Erik Eriksson

PROJECT BACKGROUND

Due to insufficient capacity, high costs and poor environmental performance the old Åsveien School needed replacement. The local politicians demanded high environmental performance, and the project has been part of the national program "Buildings of the Future" requiring at least 50 per cent reduction in greenhouse gas emissions.

The new building accommodates 630 pupils, a center for 20 autistic children and a local cultural and sports center (multipurpose hall). More rooms are flexibly arranged so that they can be made available to different user groups in evenings and weekends.

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PROJECT DESCRIPTION

Even with significantly larger area than the old school, the energy consumption in the new one is reduced to a quarter. Parts of the building's heating needs are met by a geothermal heat pump with ten wells at a depth of 200 meters. Built according to "passive energy standard" with energy performance certification standard A (dark green).
The building has extensive use of timber, reducing the greenhouse gas emissions from building materials with more than 40 per cent compared to a traditional concrete construction. Loadbearing structures and internal walls are constructed using cross-laminated timber panels, and the façades are clad with slow-growing heartwood pine.
Spatial efficiency indoor and parking restrictions combined with measures to promote walking, bicycling and use of public transport help reducing energy use and carbon footprint.

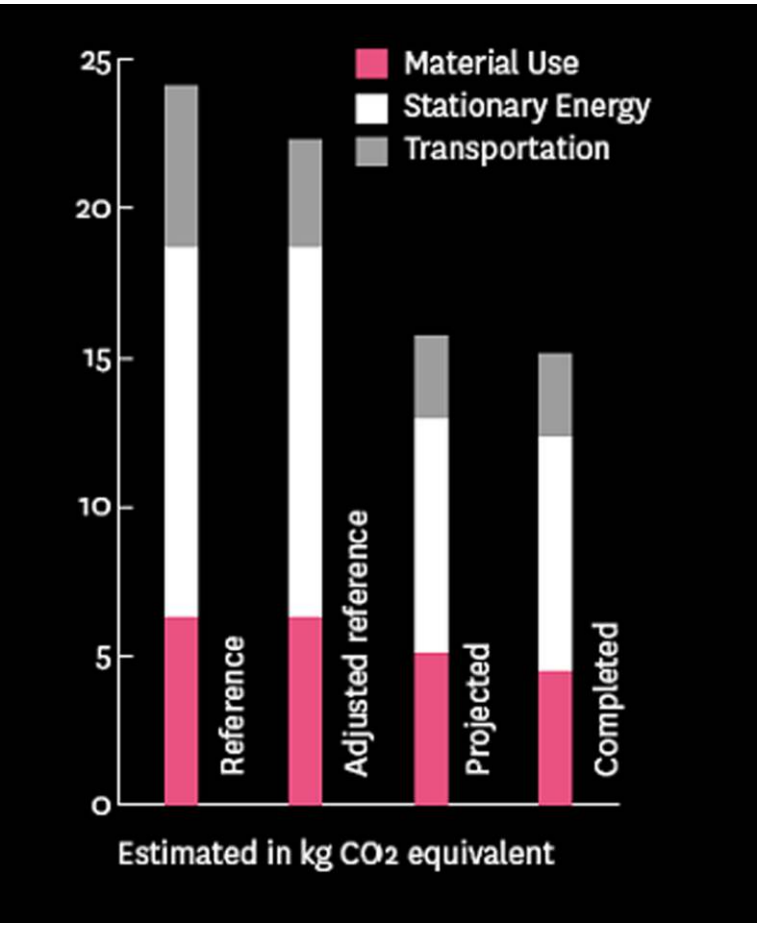
Storm water management with rain gardens and dams is one of the measures of adaption to climate change.

Owner: Trondheim Municipality

Architect: Eggen Arkitekter AS

Funding: Mainly within ordinary budgets, though with contributions from national programs

PROJECT RESULTS



Heated area:	8790 m^2
Energy label:	A (Dark Green)
Energy consumption: Net energy:	65 kWh/m^2/year.
Delivered energy:	57 kWh/m^2/year
Space heating:	6.3 kWh/m^2/year
Ventilation Heat (heating coils):	3.8 kWh/m^2/year
Hot water (DHW):	10.1 kWh/m^2/year
Fans:	6.5 kWh/m^2/year
Pumps:	0.7 kWh/m^2/year
Light:	8.3 kWh/m^2/year
Technical equipment:	8.8 kWh/m^2/year
Ventilation Cooling (cooling coils):	0.8 kWh/m^2/year

Other results: Better indoor air quality. Better adaption to climate change. Reduced car traffic to/from school – good for environment and preventing traffic accidents.

Local Community Centre established in addition to ordinary school functions. Economic and environmental gains due to intensive use – one building instead of two.

Old school demolished with high level of building material recycling.

MORE INFORMATION

See the new school being built in 12 minutes (YouTube):
www.youtube.com/watch?v=YbaDtToZZk4

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