



POLISH AND NORWEGIAN CITIES
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CITY HALL QUARTER, KRISTIANSAND LOW ENERGY OFFICE BUILDING IN THE OLD FIRE STATION

Sector: Energy efficiency in buildings

Timeframe: 2007 – 2014

Location: Kristiansand, Norway



foto: Kristiansand municipality, National Association of Norwegian Architects

PROJECT BACKGROUND

Kristiansand municipality wanted to establish a modern and progressive administration centre to collect and streamline administration and improve accessibility for residents.

At the same time, the City Hall quarter is part of cultural heritage, especially the old fire station with the 25-meter fire tower and the other facades facing the main City Square had to be preserved. The project includes the transformation of buildings from both the early 1900s and office buildings from the 1970s, as well as new construction. Parts of the buildings were demolished and replaced. The project was developed in constructive interaction with the Cultural Heritage Management Office in Kristiansand and county conservator.

PROJECT DESCRIPTION

The new 1500 m² City Hall Quarter in Kristiansand accommodates 430 employees, with emphasis on good working conditions. Old, ineffective buildings are transformed into a new municipal administrative centre. The venerable brick facade of Kristiansand City Hall now hides a modern, climate-smart office environment that meets Kristiansand's future needs without breaking tradition from the past. Energy consumption is low, and environmentally friendly

materials are used. The heat demand is covered entirely by hot-water heating, including heat recovered from the municipality's computer centre, which is established inside the new quarter.

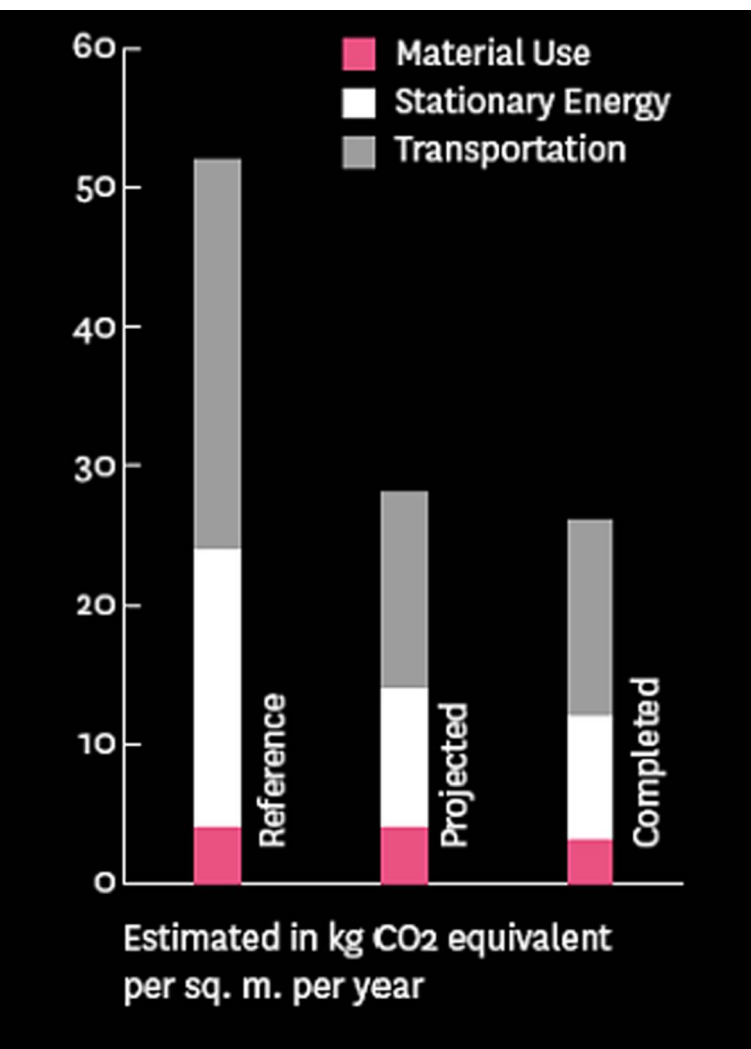
The administrative centre is located in the city centre with perfect access to public transport. The centre has no parking spaces, but excellent indoor bicycle parking facilities and rental of electrical bicycles for the staff.

Key facts:

- Low-energy building, Energy performance certification standard B (dark green)
- Rehabilitation and transformation of an existing quarter
- Energy: remote cooling (seawater from the fjord) and water-base heating
- Material: reuse of building stock, environmentally sensitive demolition
- Transport in use: facilities for bicyclists, rental of electric bicycles

PROJECT RESULTS

Greenhouse gas emissions are reduced by 53%, due to use of less energy, and building materials with lower carbon footprint. The best results in terms of reduced greenhouse gas emissions were



achieved within transportation, because employees that used to bring their cars, now choose more environmental friendly alternatives.

Heated floor space: 13,071 m²

Energy consumption:

Net energy: 87 kWh/m²/year

Delivered energy: 82 kWh/m²/year

Energy Sources: Remote/local heating networks (covering 80% of the heating, ventilation and hot water energy needs), heat pump (water-water) cover the remaining heating needs. District cooling covers 100% of the cooling demand.

Estimated net energy:

Supplied energy, calculated:	82 kWh/m ² /year
Space heating:	8.8 kWh/m ² /year
Ventilation heating	5.7 kWh/m ² /year
Hot water (DHW)	5 kWh/m ² /year
Fans:	16.7 kWh/m ² /year
Pumps:	1.7 kWh/m ² /year
Illumination:	12.5 kWh/m ² /year
Technical equipment:	18.8 kWh/m ² /year
Ventilation Cooling:	8.9 kWh/m ² /year
Direct electricity delivered:	49.7 kWh/m ² /year
Electricity for heat pumps:	1.7 kWh/m ² /year
District heating delivered:	17.8 kWh/m ² /year
Other delivered energy:	4.1 kWh/m ² /year

Some of the old facades were not secure against freezing. The insulation thickness therefore had to be reduced; giving slightly less energy saving than what otherwise could have been expected.

MORE INFORMATION

Economic data (Municipal Bank of Norway):
www.kommunalbanken.no/en/lending/projects/projects/kristiansand-city-hall-quarter

CONTACT INFORMATION:

Arne Birkeland
 Kristiansand municipality
 phone: +47 90 92 41 82
 e-mail:
arne.birkeland@kristiansand.kommune.no