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THE STAR SHAPED TALL BUILDING, KRISTIANSAND UPGRADING SOUTHERN NORWAY'S COLDEST HOUSING CO-OPERATIVE

Sector: Energy efficiency

Timeframe: 2013 – 2015

Location: Kristiansand, Norway



for: Stjernhus Borettslag,
Spiss Arkitektur & Plan AS/
Sjundelet Boligbyggelag

PROJECT BACKGROUND

This 10-floor apartment building from 1965, containing 60 apartments, had a significant need for rehabilitation and maintenance. For example, there were considerable thermal bridges in the concrete structure that led to a large heating requirement. The co-operative also had environmental ambitions, including reduced CO₂ emission.

The Minister of Environment took part in the opening ceremony.

PROJECT DESCRIPTION

Since the building has a very visible location within the Kristiansand skyline, the architectural design of the rehabilitation was considered important.

Walls, floors and roofs were given extra insulation. The thermal bridges were identified using thermography and removed or minimized. The façades were checked for asbestos and the building was re-clad. Windows and doors were replaced and new glassed-in balconies were mounted without structural contact with the internal concrete structure. Balanced ventilation with heat recovery was installed and oil boilers replaced with district heating.

Wind is the most important microclimatic challenge in the area. Particular focus has been placed on use of wind-proof solutions and maintenance friendly materials in the project. Glassed-in balconies from outdoor spaces are protected from wind and weather. This increases comfort and the use of the balconies, as many of the apartments have a very good view.

Key words:

- Energy efficient rehabilitation
- Improving of standard of dwellings
- Result oriented co-operation between client, architect/engineers, contractors and users

PROJECT RESULTS

Livable area	4543 m ²
Heated floor space:	3750 m ²
Number of residents:	87
Glass proportion of floor space:	21.5%
Energy label:	B (Dark Green)

Energy consumption:

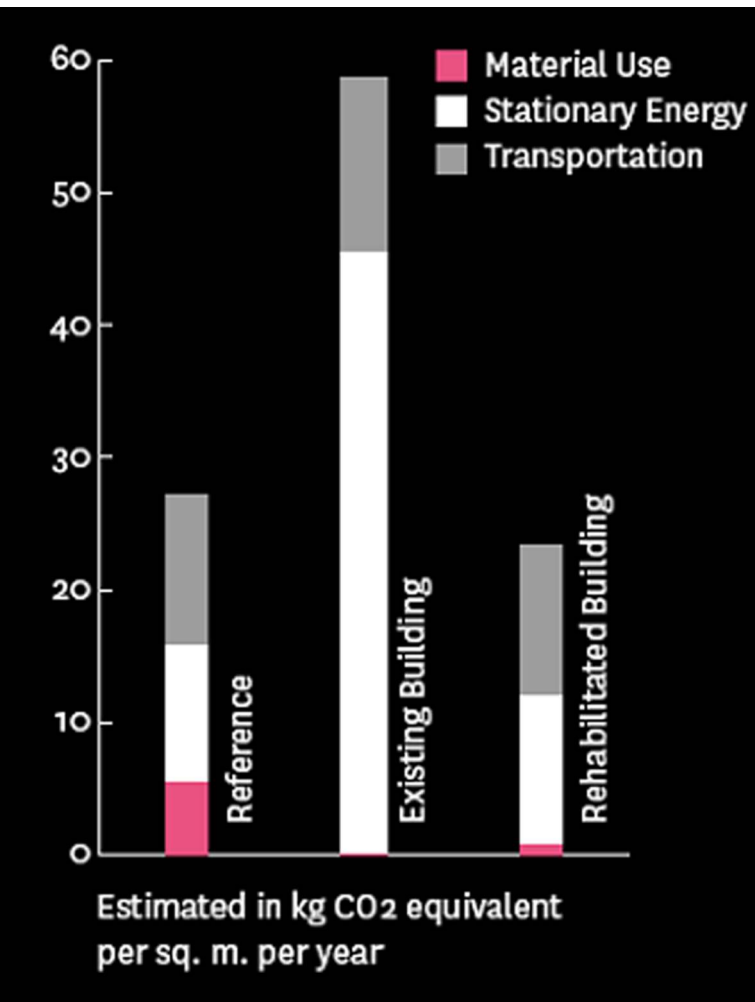
Net energy: 88 kWh/m²/year

Delivered energy: 97 kWh/m²/year (calculated)

Reduced from respectively 297 and 337 kWh/m² per year



fot. Stjernehus borettslag,
 Spiss Arkitektur & Plan AS,
 Sørlandet Boligbyggelag



In a housing co-operative, it can be difficult to reach agreement on expensive rehabilitations. The Stjernehus co-operative committee took the necessary time and energy to inform all the residents about the plans and gave them the opportunity to comment. The committee received full support and the process strengthened the sense of community in the co-operative.

MORE INFORMATION

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Buildings of the Future:
www.arkitektur.no/buildings-of-the-future

Supplied energy (calculated):	95 kWh/m ² /year
Energy sources:	District heating, supplied with electricity
Space heating:	20.4 kWh/m ² /year
Ventilation heat:	3.7 kWh/m ² /year
Hot water (DHW)	29.8 kWh/m ² /year
Fans:	8.3 kWh/m ² /year
Pumps:	0.1 kWh/m ² /year
Illumination:	11.4 kWh/m ² /year
Technical equipment:	17.5 kWh/m ² /year

DELIVERED ENERGY:

Direct electricity:	41.4 kWh/m ² /year
District heating:	59.8 kWh/m ² /year
Normalized thermal bridge:	0.11 (W/m ² K)
Specific fan power:	2 kW/(m ³ /s)
Heat recovery efficiency	80%