



POLISH AND NORWEGIAN CITIES
together for climate and energy

PREIKESTOLEN MOUNTAIN LODGE, STRAND MUNICIPALITY

LOW ENERGY USE, BASED ON RENEWABLE SOURCES

Sector: Renewable (geothermal) energy, energy efficiency

Timeframe: 2008 – 2010

Location: Høllesli, Strand, Norway

PROJECT BACKGROUND

The Norwegian Trekking Association (in short DNT) is Norway's biggest outdoor activities organisation. For some 140 years, they have been working to promote trekking and to improve conditions for all who enjoy the country's broad range of outdoor attractions. This is non-profit activity, in close cooperation with local authorities.

A new Mountain Lodge was needed at the trail-head for Preikestolen, "the Pulpit" – a characteristic mountain formation jutting out above the Lysefjord.

PROJECT DESCRIPTION

Preikestolen fjellstue is an environmentally friendly mountain lodge, containing 28 bedrooms, café, restaurant and conference facilities. Universal design gives accessibility for all.

The structure is based on prefabricated solid timber elements. This system has been stretched to its utmost limits both in terms of geometry and in terms of structural spans.

Compact building form. South orientated glazing /windows. Well insulated building envelope with few cold bridges. Combination of passive house

and low energy windows. Low air leakage external envelope. Balanced ventilation with a combination of rotating plate heat recovery and plate exchanger. Heat pump connected to nearby water source (water-water). Remaining heating demand on cold days met by environmental friendly wood oven ("Hypocaust oven").

Pure, high quality materials throughout. Large amount of untreated surfaces (reduced chemical usage). Dowelled massive timber elements, without use of glue. Recycled newspaper insulation (cellulose insulation). Wood fibre plate sheathing boards. 'Fire seal' (metal louvres which close air passages when exposed to high temperatures) mounted behind the timber facade to reduce spread of fire (thereby avoiding impregnation of facade with fire retardant). External cladding made from 100% heartwood. Slate and solid timber floors. Untreated concrete floor finish in wet rooms. Bathroom walls made from glass, kitchen walls from steel. Fireplace plasters with lime and horse manure. Environmentally certified windows (Nordic Swan mark).

PROJECT RESULTS

Gross area:	1290 m ²
Energy sources:	Heat pump (water-water) and wood stove.

Estimated net energy:	164 kWh/m ² /year (NS3031)
Estimated energy delivered:	111 kWh/m ² /year (NS3031)
Room heating:	19 kWh/m ² /year
Domestic hot water:	30 kWh/m ² /year
Fans:	35 kWh/m ² /year
Lighting:	37 kWh/m ² /year
Technical equipment:	6 kWh/m ² /year

Using timber instead of non-renewable construction materials represents an important step towards reducing global warming. The role of forests as 'carbon sinks', whereby the wood stores carbon as long as the tree is alive or is used in a structure, is expected to become increasingly important in the future.

Preikestolen fjellstue has won national architectural awards and become internationally famous.

MORE INFORMATION

Association of Norwegian Architects:
www.arkitektur.no/preikestolen-mountain-lodge?lclid=1033&ecoromo=5cc355f4-61ab-43e8-aa80-odd5acf4eacc

The Norwegian Trekking Association:
www.ut.no/hytte/3.1865/