SUSTAINABLE BUILDINGS IN COLD CLIMATES

Ulf Nordwall
Peab Region North

Oversight of where we are currently building
Hotel
BORGarFJÄLL
Some houses last longer and ages more beautiful than others. But how do we build them and how can we afford to live in them?
How do you want to live?
FUNCTION
MEASURABLE VALUES

- Square meters
- Function measurement
- Availability
- Volume
- Energy
- Rent
FUNCTION
UNMEASUREABLE VALUES

- Material and details
- Quality
- Degree of public/private
- Rectangularity
- Movements
- Room organisation
BEAUTY

THE GOLDEN RATIO

\[ \frac{a+b}{a} = \frac{a}{b} \]
SUSTAINABILITY

When taking into account the total life span, the management stage occupies 70-80% of the total cost.

- Repairs of residential buildings costs an estimated 60 billion SEK every year. (SCB, 2012)
- Any relocation in an apartment costs about 25-30 000 SEK (Bostads AB Poseidon)
- Good management is a competitive tool to keep the tenants
- Focus on management has gone from technology to individual
How shall we afford to live?

CALCULATION METHODS
Starting point in the user and revenue drivers

Starting point in the technical solution and cost drivers
Costing in early stages

SUSTAINABILITY

- KEY FIGURES
- EXPERIENCE VALUES
- ASSUMING CONDITIONS
- SENSITIVITY ANALYSIS
Project cost < Market value
= OK to invest?

Project cost > Market value
= Haggle project cost?
Key figures

SUSTAINABILITY

- RESIDENCES – Living area, Living area/gross area
- OFFICE PREMISES – Office area, Office area/Living area
- SCHOOLS – LOA/pupil, UMA/pupil
- HOTEL – number of beds, room size
- HOSPITAL – number of hospital beds
- ARENA – number of seating places
HÅLLBARA HUS I KALLT KLIMAT

22 HÅLLBARA HUS FRÅN BOLLNÄS TILL KIRUNA 1994–2014

REDAKTÖR ULF NORDWALL OCH THOMAS OLOFSSON
Passivhus, Bollnäs (JOHANNA HOLM)

"The building is a passive building. Passive buildings are designed to achieve as little as possible purchased energy use over time."
Laggarbergs skola, Timrå (ANDERS NYQUIST)

“This project is an example that proves that it is possible to rebuild an old school and transform it into a modern school based on the principles of recycling.”
Villa Ödman, Kvissleby (ANDERSNYQUIST)

"Foundations with foamglass and local healthy eco-friendly materials."
Gene Fornby, Örnsköldsvik (PER RAMQVIST)

"Through, among other things, the northern, cooler area, several regional solutions have emerged, such as: the fireplace being placed in the cattle shed and the dwelling rooms were unusually well insulated among other things."
Fiskevistet, Skagsudde (ULF NORDWALL)

"To accentuate each other and create tension between the traditional and the modern is the theme of the building that was built at Skagsudde."
The deep, glazed balconies create a climate zone around the building which help to keep the heat in and simultaneously limit the sunlight radiation during the summer.
Lerstenen, Umeå (THOMAS SANDELL)

"The building has been constructed by local contractors with local suppliers and materials."
Arkitekthögskolan, Umeå (LENNART SJÖGREN)

The building is characterised by its flexible architectural design. The materials have been chosen to last for at least 100 years.
Garaget, Umeå (JOHANNA OLSSON)

Reuse is the key word here from a sustainability point of view. Reuse of a place, a building and its parts.
Geografigränd, Umeå  (ULF NORDWALL)

"Low-energy house with venues and rooms for versatile utility."
Väven, Umeå  (SNÖHÄTTA & WHITE ARKITEKTER)

With the city’s prime location, next to Umeälven, Väven is a meeting place for culture and people.
The construction materials used, both inside and outdoors, has been considering how the child might experience them. Not least with the sense of touch, how it feels to take on different surface structures.
The new regional offices that Peab built in Umeå is one of the first office buildings in Sweden which is of a low-energy type.
The six houses built at Tavleliden have become Sweden’s northernmost certified passive houses.

Tavleliden, Umeå (THOMAS GREINDL)
Umeva, Umeå (PETER JÖNSSON)

"The interior design at the workplaces is incorporated into the business operations and is marked with the Nordic Swan."
Kv Laxen, Skellefteå (OVE NILSSON)

The building opens up with large windows facing south offering a beautiful view. The building’s transparent parts are protected by a canopy.
The building’s scale, materials and the colour scheme fit in with the surrounding buildings. The wooden fascia with its carefully detailed finish is designed to increase the building’s longevity.
The residential building marks the blocks location as a gateway to the city center and is linked to other tall buildings in the townscape.
Kv Sparven, Luleå (BENGT AILI)

"The Danish building bricks are of a very high quality, both technically and with regard to the appearance created."
Hemavan/Fjällormen’s characteristic grass roofs are not just a part of the design, the extra soil acts as an insulating layer.
Material selection has been made with regard to the amount of embodied energy. The ventilation system is able to recover 90 percent of the heat from the air in the rooms.
The ice hotel in Jukkasjärvi is built with natural ice, taken directly from the Torne River. The hotel is rebuilt every year.
Summary:

Sustainability can be expressed in many different ways. The future will show which projects that will make an imprint.
Thank you!

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