



Compact structures and economy in passive houses



PASSIVHUS
Norden

Robin Fritzson, Enerwex

INTRODUCTION

A compact construction is an important factor for the success of a passive house. Each projection in the form of, for example, bay windows, dormers and angles increases the cooling surface and gives rise to thermal bridges and difficult angles where the density may be difficult to guarantee. Compare how you freeze more with gloves than mittens.

KIRUNA

We have made a calculation in PHPP for Kiruna City Hall (a new one has to be built because the mining is approaching the present site), which shows that even in the 1960s "thought of passive houses without thinking of passive houses" - the house is an almost cube-shaped building, which minimizes the amount of cooling surfaces. Because the building is so large, the effect of compactness even greater than in a smaller house.

Byggnadsform + optimerat A/V_e - förhållande

Möjliga A_{ext}/V-förhållanden för en enstaka huskropp



In the calculation we have used the materials and construction methods used in the industry today. The result is that even before thinking of passive houses, we're down to a level of 14 kWh/m² per year. In Kiruna!

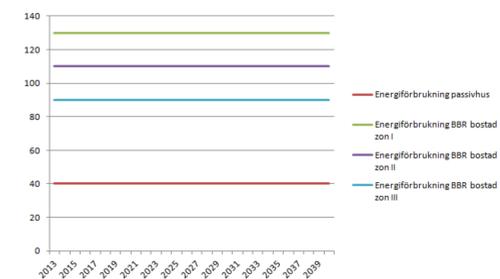
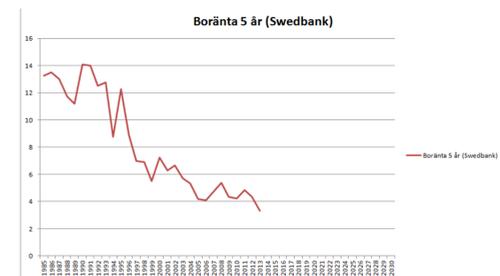
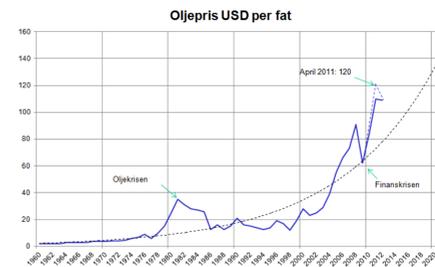
NON-COMPACTNESS

You can of course build non-compact too, but every bay window and dormer costs in terms of time and money in the construction phase and thermal bridges, energy and money throughout the life of the building.



ECONOMY

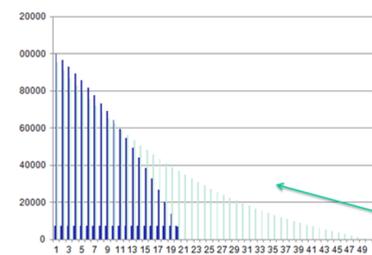
Many factors can vary greatly over time, beyond our control. But one thing we can be sure about when we take the house in use is its energy consumption.



INVESTMENT CALCULATIONS

Simple pay-off calculations are of no use when calculating costs of long-life structures like passive houses. To make accurate cost estimates, we must take into account factors like present value and residual value.

Example: When you take out a bank loan, a portion of the money pays for the insulation. If the loan is paid off after 20 years, this does not mean that the value of the insulation is zero - it continues to be of use for many decades.



CONTACT

For additional information, contact:

Robin Fritzson
Enerwex
+46 705 69 69 77
robin@enerwex.se