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County Administrative Board

791 84 Falun

GOOD PRACTICE SUSTAINABLE BUILDINGS

HOUSING DISTRICT VITSIPPAN - PASSIVE HOUSE APPARTEMENTS

Region / local area considered:	**Good practice submitted by**
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1) Short description of the project

Vitsippan

Vitsippan is the name of a housing area in the district of Britsarvet, only one kilometre from Falun town centre. Close by there are shops, restaurants and schools as well as countryside and recreation opportunities.

The municipal housing company in Falun, Kopparstaden, is currently building 54 apartments in the Vitsippan complex, all with spacious patios or glazed balconies, divided between two structures.

The buildings are projected to meet passive-house standards with a specific energy consumption of 51 kWh/m2. The requirement for airtightness is very strict and set at 0.15 l / (sm2), and the windows have a U factor of 0.8 W / (m2 K).

Through the project, the municipal property company, Kopparstaden, has become a leader in the field of energy efficient buildings. No one else in the county has previously built housing at such an energy-efficient level as this.

2) Content / background / targets

The construction costs of a building in Sweden are normally about 10% of the building's total cost over its lifetime. It is only natural that the municipal housing company Kopparstaden in Falun, as a long-term property owner, wants to build houses that are cheap to administer. On this basis, in 2011 the company started a process that led to new, highly energy-efficient dwellings being built.

Already in the procurement process, the company tested innovative technologies to meet strict and non-negotiable energy requirements in line with the standard for passive houses and at the same time set an upper limit on costs. Contractors who submitted tenders needed to show in their bids how they would fulfil energy requirements within the given cost framework.

Falun Municipality has an energy and climate plan that guides its own operations towards improving energy efficiency. The plan requires that the municipal administration and the municipally owned companies take the lead in this work. Transparent and ambitious levels of monitoring and evaluation form an important tool in the implementation of the process.

3) Detailed project / program description

The buildings being planned in the districts of Galgberget and Britsarvet were chosen as pilot sites for the construction of passive houses. The first project, known as Argentum at Galgberget, consists of two buildings with a total of 36 apartments. Tenants began to move in in September 2012. In addition to the requirements for passive houses, airtightness requirements were very strict (0.15 l / (sm2), which in the Swedish context is a very low figure. Specific energy use was projected at 46-48 kWh/m2. A hydronic heating system was selected for domestic heating needs.

In the next project, the construction of two apartment buildings at Britsarvet, passive-house standards were also required, but with higher airtightness demands. The Vitsippan complex was designed for a heat requirement of 11W/m2. The windows have a U -factor of 0.8 W/m2K. The projected specific energy consumption was set at 51 kWh/m2 per year.

The apartments have individual household heating agreements. Unlike Argentum, there were no radiators installed but any additional heat that is needed is supplied through a water coil in the supply air duct.

The housing company's requirements as set out in the procurement documents surprised several of the contractors. The requirements were so demanding that several construction companies did not submit bids. The CEO of the Kopparstaden property company said at the time that we have all the knowledge we need to build at these energy levels – now it's time to bring it home to Dalarna.

4) Funding / financing / costs

The two projects show that it is about 5% more expensive to build a passive house and, according to estimates, the pay-off time 8 years.

Kopparstaden does not use LCC in its calculations.

5) Main results

Since the buildings have recently been completed, the follow-up of energy efficiency has not yet been started. Not until after about a year can evaluation commence.

During the project, the contractors specially trained their construction workers. The construction process has to be completed with high quality requirements, with airtightness as especially critical and everyone involved needs to be very conscious that it is a low-energy house that is the target of the operation.

These passive-house projects have attracted a lot of attention in the region and several study groups have visited the buildings.

6) Analysis – lessons learnt and success factors

Building energy-efficient dwellings at a level of 75-80 kWh/m2 with added heat coming from a district heating system no longer entails higher costs. However, when you choose to go down to the levels of passive-house standards, investment costs increase by about 5%, as this project shows.

Kopparstaden has not used LCC and has shown an interest in professional development in the area.

Contractors see this procurement as a challenge, but are nevertheless positively inclined to the Kopparstaden initiative. Within the space of a few years, contractors have developed their construction skills so that they now are able to build extremely airtight constructions. Compared with national construction airtightness requirements at 0.8, builders now typically manage levels of 0.15. This is such rapid progress that it is worth more publicity.

7) Time frame

Both construction projects will be ready for occupancy in the late autumn of 2012.

8) Contact project owner

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Take a virtual walk around the apartments:
http://www.kopparstaden.se/vara-omraden/nyproduktion/vitsippan/3d-visning/