

Hästgatan, Visby, Sweden

Background

This is one of the largest Art Nouveau buildings in Visby. It was built in 1906 on the foundations of a medieval building, the vaults of which make up parts of the existing cellar. The building is listed and is situated in Visby town centre which is a UNESCO World Heritage Site, placing restrictions on what can be done to the façades, windows and interior fixtures.

It is owned by a housing cooperative, in which a board of members make the majority of decisions and ensure maintenance and renovations are carried out when necessary. The block is comprised of 16 apartments and one shop.

Motivations for retrofit

The cooperative's main motivation for participating in the LEAF project was to receive recommendations on how to improve the comfort of the building and save energy, within the remit of the planning restrictions.

The owners are aware that restrictions apply to the building since it is listed, and they are determined to preserve the cultural values.

The challenge was to establish what can be done to save energy without compromising the cultural heritage of the building.

Results

The EPC showed that the circulation pump for distributing the heat around the district heating system was old and malfunctioning. This was replaced in 2014. In addition to this, the cooperative decided to carry out hydronic balancing of the heating system (to optimise the heat distribution) and replace all radiator thermostats, work on which is on going. They also decided to gradually renovate and upgrade the old windows and terrace doors with more energy efficient versions.

The projected savings for each of these measures are outlined in Table 1, overleaf.



Case study block pre retrofit



Case study block post retrofit

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Measures installed/ recommended	Details	Reasons for installation/recommendation	Projected annual savings for whole block		
			Kilowatt hours (kWh)	CO ₂ (t)	Fuel bill (€)
Replacement circulation pump (installed)	District heating to block	The central circulation pump for heat distribution was old and malfunctioning	1,000	0.1	150
Window renovation and upgrade (install in progress)	Older windows	Old secondary glazing replaced with low emission panes in the apartments. Increase comfort and save energy	10,000	0.6	800
Hydronic balancing and change of radiator thermostats (install in progress)	District heating to block	The heating system needed better balance and control. Some rooms were cold when the heating was on and others were too warm. A number of radiators were not responding to changes in temperature as they should	13,000	0.8	1,000

Table 1: Details and associated savings of the measures installed and recommended

Challenges

Finding appropriate measures for a listed building can be a challenge. However changes to the existing heating system aren't usually a problem as they are unlikely to require planning permission. The consultant who conducted the EPC included a calculation for external wall insulation in his report. This investment required was considerably higher than the savings, therefore the measure was not recommended but it is unlikely that this would have been permitted anyway. The upgrade of the existing windows is a measure which can work in listed buildings, but is likely to still require permission from the local authority.

Successes

All suggested measures were accepted by the cooperative board who have been positive throughout the project and remain interested in improving comfort and saving energy. It is also positive that they care about the history of the house, and want to make improvements without compromising the historical features. The cooperative continue to evaluate the savings and are considering lowering the room temperature by a couple of degrees to reduce consumption further.

One householder was particularly pleased with the newly installed measures, explaining: **“the new door to the terrace is fantastic! It used to be so draughty my hair would actually flutter!”**

The residents also received behaviour change advice through the LEAF project. After receiving this, they reported that they have become more aware of their energy consumption and how to reduce it.

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