Giatla house

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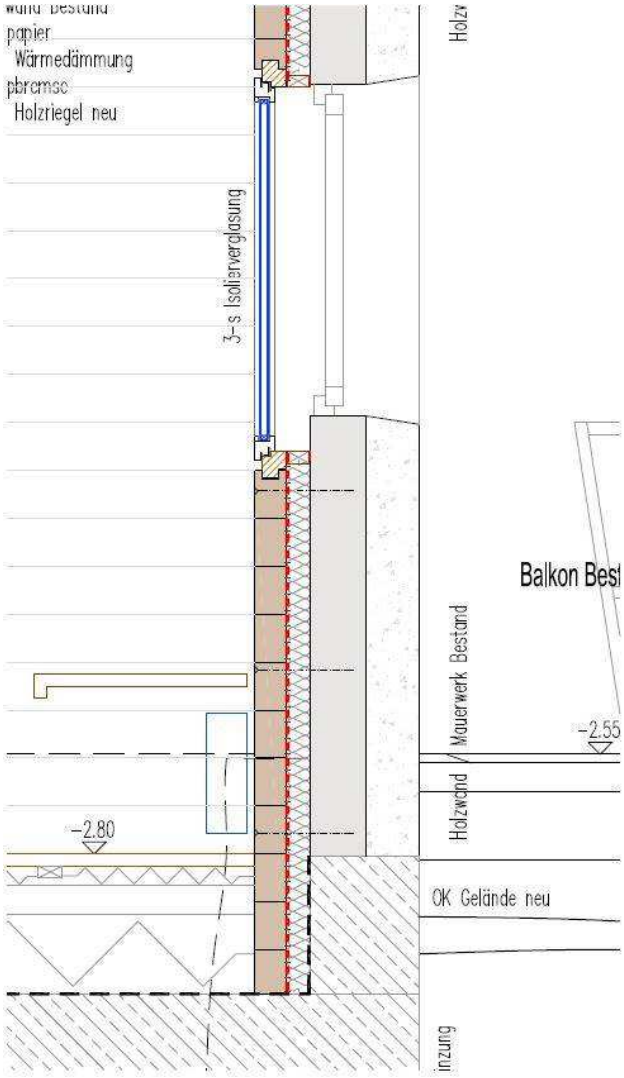
Sheep wool with vapour control layer

Walls

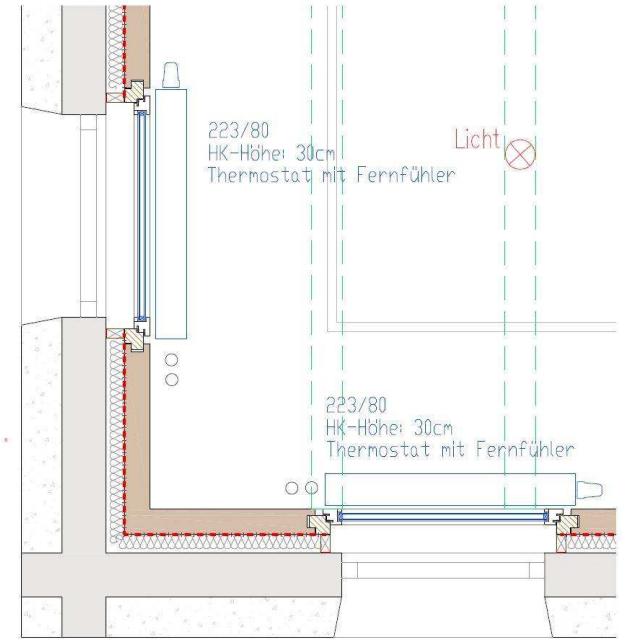
What is the solution?

The old log wall façade was preserved as far as possible. Inside, a new 8 cm thick wall structure was created, which blends into the old walls or wooden walls like a new block. Between the old and the new building, the 6 cm thick insulation was inserted, whereby local sheep wool insulation was used as a natural building material. In order to prevent cold outside air from flushing through the insulation, a diffusion-open wind paper was installed between the insulation and the existing block wall. A vapour control layer (Ampatex DB 90) was installed on top of the insulation to reduce the ingress of moisture by diffusion. The vapour control layer has an Sd-value of 20 m.

Cross section of the wall build-up, available pictures of the solution:



Vertical section, © Arch. DI Reinhard Madritsch



Horizontal section, © Arch. DI Reinhard Madritsch

sheep wool with vapour controll layer, ©Benjamin Schaller

New block wall, ©Benjamin Schaller

View of the house, ©Benjamin Schaller

Why does the solution work in terms of compatibility with conservation, moisture safety and energy improvement?

This challenging "house within a house" solution retains the original outer wooden log wall, while a self-supporting wooden construction with wood panelling is built from the inside. The gap between the inner and outer structure is filled with a local sheep insulation material. The soft sheep insulation is protected against driving rain by a facade membrane and from the inside by a vapour control layer. Due to the relatively low insulation thickness, there is no moisture problematic between insulation and existing wall. Furthermore, the moisture ingress is minimized by the vapour control layer. However, this layer also makes it difficult for the construction to dry out towards the interior. However, circumferential balconies and canopies reduce the probability of moisture penetration due to driving rain. Furthermore, the air leaky block wall has a positive effect on the drying behaviour of the construction due to possible air flushing, but also reduces the thermal resistance of the wooden block wall. From an energy point of view, this solution

is not outstanding, but it significantly reduces heat losses through the wall and achieves sufficient living comfort. Due to the internal insulation, the appearance of the facade and the proportions of the building are preserved. However, a completely new image is created in the interior. By using the inner shell of the wooden block, the appearance of the original block wall is also partially restored, whereby the appearance of the patina is lost, at least for the next decades.

Description of the context:

The Giatlahaus is a 300-year-old typical farmhouse of the region. The farm is situated in the middle of a group of 8 farms. The log construction corresponds to the local building method in the valley. For this reason, special attention was paid during the renovation to preserve the building proportions, the wooden roof with clapboards, the original small windows with the old uneven glass, the block walls and balconies.

Pros and cons of the solution:

This solution is a synergy of protecting the historical value and improving energy efficiency. Due to the additional planning and labour involved, this solution is more cost and space intensive than a new building.

Type of data available (level of information, simulation):

No simulation data is known at the time of documentation of this solution.