Residential and commercial building Feldbergstrasse - Basel

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External Insulation - Mineral wool Solution 2

Walls

What is the solution?

During the refurbishment of the building on Feldbergstrasse 4 + 6 in the old part of Basel, several requirements of the cityscape commission for façade and roof design had to be met. The existing massive plastered outer wall in quarry stone and z.T. Brick is insulated on the outside with a plastered compact insulation with a thickness of 40 cm (FLUMROC thermal-acoustic insulation board). As the facade on the street has been formally changed (new thermal insulation and new garments), the solution with the slat blind box on windows should be eliminated from the point of view of the Commission. The windows have been substituted without modifying the original dimension to maintain alignment to the neighbor houses. A solution was sought in which louvered blinds could be inserted into the new thermal liner and thus the original image from the window jambs could be restored. The choice of colors has been made on site.

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

Analysis of the front on the Feldbergstrasse
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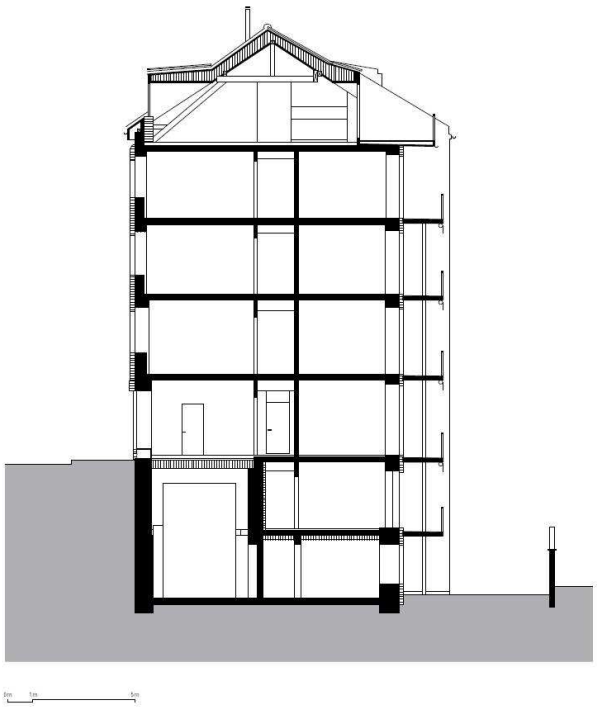
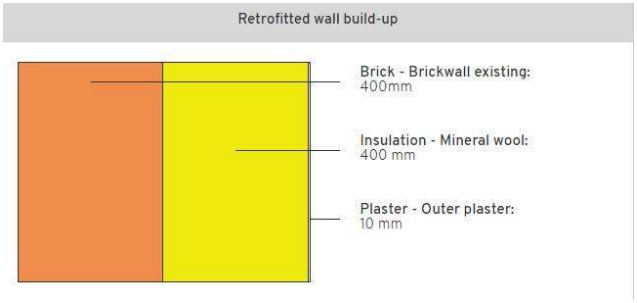


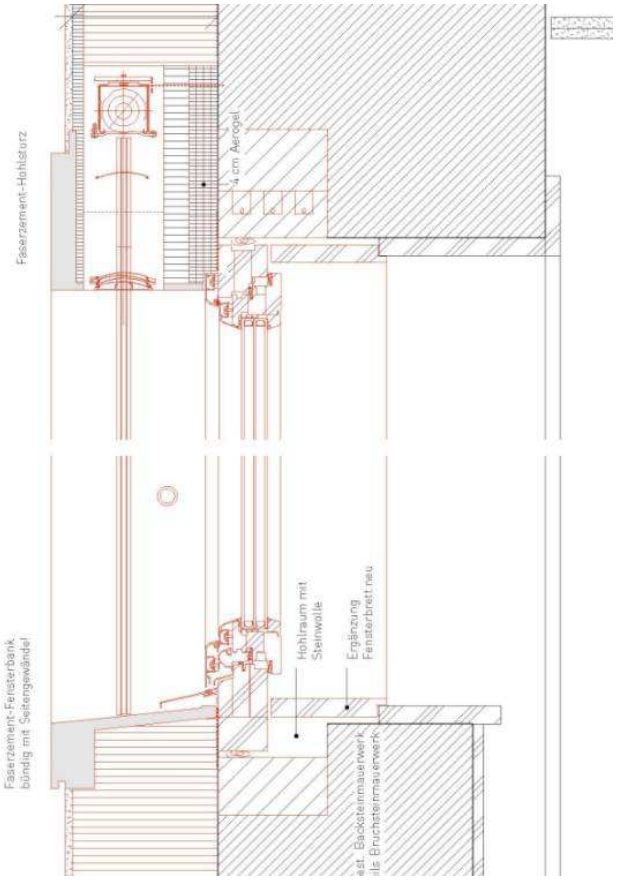
Cross section, © Viridén + Partner AG

Court view, © Viridén + Partner AG



Retrofitted wall build-up

Street elevation after renovation. © Nina Mann



Cross section detail © Viridén + Partner AG

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

After analysis of the front on the Feldbergstrasse and due to the need to put a new coat of insulation, the project provides a formal layout of the façade divided in three levels: the base, shaft and the roof. As store windows are used along the street, a new store window has been realized in one building. In the shaft the windows are inserted with simple new jambs to align to the street front, avoiding to different formal decoration. The intervention has been discussed with the "City Picture Commission".

Description of the context:

Two more than 100-year-old apartment buildings on Feldbergstrasse are being renovated to produce more energy than they use for heating/hot water, ventilation and auxiliary energy. The 12 apartments did not meet today's comfort requirements. Accordingly, the apartments were poorly rented or stood empty. The need for maintenance was high.

Pros and cons of the solution:

It could be reached a very high energetic improvement of the outer wall. On the contrary, to meet the requirements of high energy efficiency reached a very high thickness insulation layer was necessary. The surface remains plastered.

Costs of outer plastered insulation are lower than other systems. Mineral wool is also very fire resistant and can act as a fire stop. It is hydrophobic, so it won't absorb water or encourage the growth of mould. Protective gear must be worn when installing mineral wool.

Additional Information:

This cladding insulation delivers excellent fire protection and soundproofing performance. The thermal transmittance value of the wall was significantly reduced after the intervention (U-value pre-intervention 1,40 W /(m2K); U-value post-intervention 0,60 (W/(m^2K). Climatic zone Cfb (Warm temperature, fully humid, warm summer). The climate in this area is classified as Cfb: Temperate oceanic climate (Köppen climate type), characterized by a temperate climate, without dry season, with warm summer. the coldest month averaging above 0 °C (32 °F), all months with average temperatures below 22 °C (71.6 °F), and at least four months averaging above 10 °C (50 °F) with no significant precipitation difference between seasons. This climate characteristics implies that external optimal energy efficiency can be achieved with a good insulation system.

Is there any related publication? If yes, please provide any available link or document for further reading

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Link to best practice example (Hiberatlas):

https://www.hiberatlas.com/en/residential-and-commercial-building-feldbergstrasse-basel--2-67.html