References

Modernization with Knauf and Uponor



Uponor involvement

- Knauf flowing screed FE Eco | Klett Silent wet construction system for underfloor heating from Uponor | Knauf Diamant with Knauf Insulation

Quiet appearance in an old building

Renovation with Knauf flowing screed FE Eco in an old apartment
Sloping ceilings and inadequate impact sound insulation: modernizing an old apartment with wooden beam ceilings was tricky. With the innovative system combination of the heating system specialist Uponor plus Knauf flowing screed FE Eco, the construction heights could be easily maintained and the floor simply leveled. Impact sound measurements showed that even the increased requirements of the building sound insulation standard were achieved.

Project Facts:

Location	Completion
Kitzingen, Germany	2021
Building Type	Product systems
Multi storey building	Radiant Heating & Cooling

Partners

- Building Owner: WEG
  Baumüller-Ullmann Kitzingen
- Expert advice at Knauf:
  Patrick Radant und Jan
  Mörchel

Quiet appearance in an old building

This is where you want to live: Historically beautiful on the outside, modern and comfortable on the inside. The two-storey old building from 1896 in Kitzingen with a converted attic and gabled dormers stands firmly on a natural stone base. The plaster façade over the quarry stone masonry is designed with decorative elements such as cornices and ashlars. During the modernization of a private apartment with a floor area of 105 m² on the second floor, the floors above the historic wooden beam ceilings had to be renewed. This was also in order to meet the minimum requirements for impact sound insulation in accordance with DIN 4109 "Sound insulation in buildings". The floors consisted of plank formwork without insulation with a clay filling.

Measurements prove: Increased sound insulation requirements fulfilled
The suspended ceilings carry reed mats with a clay filling. In order to achieve a certain level of sound insulation towards the attic, Knauf Insulation insulation was placed on the reed mats, with Knauf diamond panels underneath. The floor was completely renewed and fitted with underfloor heating, with a beautiful real wood parquet floor on top. This ensures a pleasant living climate and warm feet - in all seven rooms and the corridors. Nothing creaks any more and the residents on the first floor are not disturbed by footfall noise. "Before the renovation, the sound insulation was very poor. It would have been impossible to comply with the standard if the floor structure had remained unchanged," says Knauf consultant Patrick Radant, describing the initial situation. This is confirmed by the measurements that Knauf carried out before and after the floor modernization.

Optimum combination of heating system and flowing screed
"Once the screed has been laid, the minimum requirements for the standard impact sound level and the increased requirements for the building sound insulation index are met," report Patrick Radant and Knauf sound insulation expert Jan Mörchel, who supervised the measurements. This is made possible by the innovative underfloor heating system from heating systems specialist Uponor with the Klett Silent or the Klett Twinboard wet construction system for underfloor heating, combined with flowing screed FE Eco from Knauf. The energy-saving underfloor heating system is characterized by its low installation height, good sound insulation and fast drying. It is perfect for retrofitting during renovations in residential and prefabricated house construction.

Slim installation height and efficient installation
Uponor Klett Silent was used in the apartment in Kitzingen. The structure of the old floor consisted of 10 mm thick planks and up to 20 mm thick chipboard, which had been applied in places to level out the sloping ceilings. A particularly slim and thin-layered solution was therefore required for the modernization. No problem, because the overall system with the Uponor System Klett Silent underfloor heating in combination with the FE Eco flowing screed is only 76 mm high as standard. The 30 mm thick installation panel, consisting of integrated mineral fiber insulation and a laminated Velcro foil, is placed at the bottom of the floor. The 16 mm thick, Velcro-covered heating pipes are simply fixed to the floor on this Velcro layer. The client installed the Uponor underfloor heating in just four days together with a heating installer. "Laying the insulation panels and inserting the heating hoses with the Velcro system went wonderfully," he says.

Efficient installation of the flowing screed
Finally, the self-levelling flowing screed FE Eco was poured into at least 30 mm of heating pipe overlap so that it could optimally enclose the heating pipes. Due to the sloping ceilings, more self-levelling floor screed had to be applied in some

places in the apartment in Kitzingen to compensate for this. The result was a perfectly even and horizontal screed surface for the floor covering.

The screed is laid in an upright position, which is easy on the back and knees and provides a good overview of the room. The work is dust-free; no empty sacks are left over. As the flowing screed is delivered directly to the construction site as dry mortar, including conveyor technology, the material is always ready for use - for rapid construction progress. Thanks to the precise calculation of the material quantity, no residual quantities are left over and the screed is applied efficiently and economically.

Quick accessibility and optimum functionality
From the very next day, the screed could be walked on for further finishing work and after around four weeks the floor was ready for covering, even at a low flow temperature of 40 degrees, for which the flowing screed developed as a heat pump screed is designed. The low pipe overlap and the good pipe sheathing of the Uponor heating pipes as well as the good thermal conductivity of the flowing screed FE Eco enable the screed to heat up quickly. This is because the combination of Uponor underfloor heating and FE Eco flowing screed guarantees the best functionality and low heating requirements and meets the high requirements for impact sound insulation despite the slim floor structure. On solid ceilings, for example, an impact sound improvement of at least 28 dB ($\Delta L_{w,P}$ = 28 dB) is achieved. "The installation of the tried-and-tested system was efficient, quick and safe and now we are delighted with the comfortable living climate and the good impact sound insulation," summarizes the client.

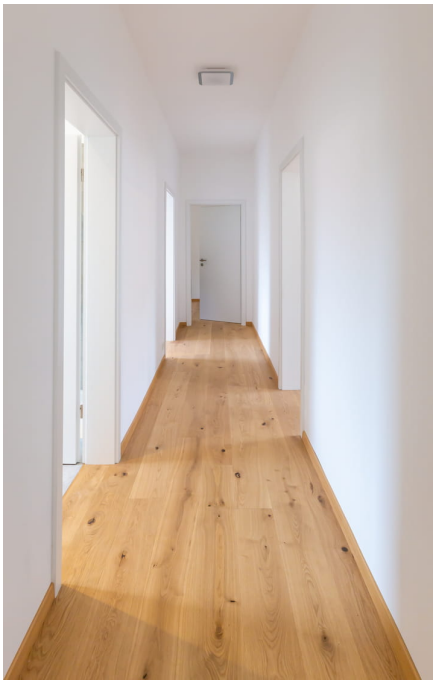
Modernization with Knauf and Uponor, Kitzingen, Germany















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