References

Novum Hotel Bruy



Uponor involvement

- 1,200 m2 of Klett underfloor heating | 2,000 m2 of Contec ON thermo-active building component activation | 600 m2 of Renovis ceiling heating and cooling | Uponor MLC ISI box | Uponor Vario S stainless steel manifold | 3,800 m of Uponor Uni Pipe PLUS composite pipes
- Hotel modernisation | Conversion of the existing building |Building of extensions | Expansion of the hotel's capacity to 128 rooms
- Advising the building owner and providing project planning | Coordinated heating and cooling systems for modernisation and expansion | Hygienic installation solution for the hotel bathrooms

Heating and cooling take pole position

Hotel modernisation resulting in energy efficiency and comfort

The brand Porsche and the Zuffenhausen district of Stuttgart are inextricably linked. And this link can be experienced at the Novum Hotel Bruy. The business hotel in the north of Stuttgart, which has been extended and converted multiple times and which is newly renovated, is where Hans Hermann and Richard Attwood celebrated into the early hours on the occasion of Porsche's first overall victory at Le Mans in 1970. Building owner Bodo Bruy realised early on that the special history of the hotel, which started out as a simple restaurant, and its proximity to Porsche were not strong enough as USPs for the business to survive in the long term in the highly competitive Stuttgart hotel sector.

Project Facts:

Location	Floor space	Completion
Stuttgart, Germany	128 rooms	2019
Building Type	**Product systems**	**Number of floors**
Hotels	Radiant Heating & Cooling, Multilayer Pipe Systems	4
Address	**Website**	**Project Type**
Unterländer Strasse 66–68	http://www.novum-hotels.com/hotel-bruy-stuttgart	Renovation

Partners

Building owner:

Bodo Bruy

Project management and energy concept development:

Prof. Dipl.-Ing. Georg Sahner, G.A.S. Sahner, Stuttgart

Building technology planning:

B-iT KG, Dipl.-Ing. Bodo Bruy, Stuttgart

Building technology execution:

Berner Elektrotechnik, Heizung und Sanitär, Stuttgart

Energy efficient solution and services from Uponor

Bodo Bruy has put his hotel comprising 128 rooms into pole position in terms of heating, cooling and ventilation. Upon taking on his parents' business, it was clear to the hotelier that, considering the complex structural situation, the only way to reduce the energy costs while boosting the hotel guests' comfort was with a very good overall building services concept. He developed a convincing energy concept for the hotel's modernisation together with Prof. Dipl.-Ing. Georg Sahner. It is founded on a gas-powered peak load boiler with output of 210 kW and a gas-powered combined heat and power system with electrical output which can be modulated in the range of 5 kW to 20 kW and thermal output in the range of 10 kW to 43 kW. This generates all the heat and 90% of the electricity needed.

The heat generation system is complemented by a solar thermal system measuring 88.56 m2 with installed capacity of 61.99 kW. Annually, 56.16 MWh of energy are fed into the drinking water network via five freshwater modules, each with output capacity of 80 l/h at 60°C. A further 70.48 MWh of solar energy are available for heating and 107.3 MWh for the auxiliary heating. Three 3,000 l buffer tanks provide storage.

Primary designed according to the cooling load

Before the modernisation work began, the heating and cooling loads of every room were calculated under realistic conditions that also took into account the internal loads caused by guests and the use of electrical consumers. The result: The building (~ 2000 sqm) has an average cooling load of 411 kW. Affected by the location of the building high solar gains are collected. This in particular affects the hotel rooms in the attic (~ 600 sqm). The concept was then based on this. In order to reduce the solar radiation into the rooms, electrical roller shutters are used. Depending on the rooms' location, intensity of sunlight and time of year, they care for shading automatically.

Energy-efficient overall solution for heating and cooling

To determine the hotel rooms' heating and cooling loads, it was assumed that there was an average supply air flow of 50 m3/h from the ventilation system and a room temperature of 25°C in cooling mode and 22°C in heating mode. But rather than heat and cooling being distributed by fan coil units, which are still common in hotel rooms, Bodo Bruy wanted noiseless, hygienic, draught-free and above all energy-efficient heating and cooling in his individually arranged rooms. Based on the structural circumstances, he opted for an overall heating and cooling solution from Uponor. This also meant the ventilation system could be given a smaller dimension.

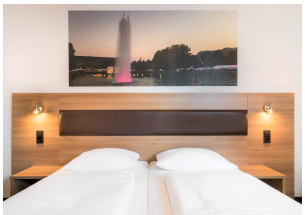
Three floors added to the rear of the building are heated and cooled by Uponor's Contec ON near-surface thermal-active building activation. Guests can individually adjust the temperature of their room to suit thanks to single-room regulation. As the pipes lie just a few millimetres beneath the soffit, the system responds very quickly to changes in the desired temperature.

The existing parts of the building feature a combination of underfloor heating and ceiling cooling. The Uponor Klett underfloor heating made an impression above all thanks to its simple and flexible laying, which could be easily adapted to the rooms' different geometries. The Uponor Renovis ceiling cooling elements were installed onto existing walls and ceilings like dry construction boards by means of a substructure made of commercially available CD profiles. There is therefore a pleasant room temperature all year round in the old parts of the building too.

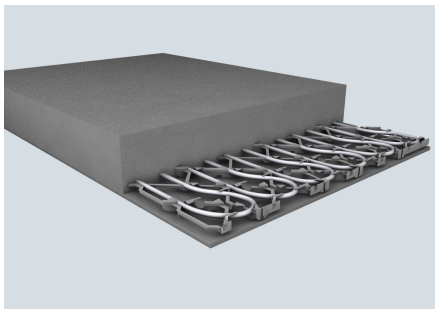
Clever installation solutions for the hotel bathrooms

130 ready-for-connection Smart ISI boxes were installed in the hotel bathrooms, with the withdrawal points for two rooms at a time being brought together to create a loop installation by an Uponor Uni Pipe PLUS composite pipe. 'This type of installation offers the perfect parameters for the hygienic distribution of hot and cold drinking water,' emphasises Michael Rebel, Technical Consultant at Uponor. In contrast to conventional tee connector or serial installations, in this case, the individual withdrawal points are supplied with water in a loop from two sides, rather than consecutively. They are therefore always fed from two directions, meaning the water in the pipes is completely replaced every time water is drawn off. By this stagnation of water can be essentially eliminated in the case of normal usage.

Heating and cooling take pole position















"I was looking for systems that could both heat and cool. The Renovis and Contec ON systems can do just that", says hotel owner Bodo Bruy, who is impressed with the solution.