References

Audi Flagshipstore



Uponor involvement

1600

Audi Flagshipstore

Temperature control at the new Audi flagship store in Berlin is based on an industrial radiant heating system and Uponor's Contec concrete core activation system.

Project Facts:

Location	Completion
Berlin-Adlershof, Germany	2011

Building Type

Commercial Applications

Address	Website	Project Type
Audi Flagshipstore	http://www.audi.de	New building

Uponor TABS for highest efficiency in heating/cooling

The building climate control provided by the Uponor systems facilitates energy savings of up to 50% compared to conventional air/air-based systems. The planners of the used vehicle centre were impressed not only by the low operating costs but also by the pleasing aesthetics of the Uponor thermal and cooling solution. Construction was sped up considerably thanks to the air-handling ceilings supplied by Elbe Spannbetonwerk, which are factory-fitted with Contec modules.

The building, which features generously-dimensioned glass fronts, was constructed on a floor area of approx. 1,600 m². The building planning specifications demanded efficient construction methods, with low operating costs for climate control on the

one hand and an aesthetically-pleasing interior design on the other. Temperature control within the building was furthermore to employ energy-efficient cooling and heating sources.

VW Real Estate's studies towards the building's usage profile suggested that both temporally and spatially there wouldn't be many peaks in energy demand beyond the base loads of 20 °C for heating & 26 °C for cooling.

Heating/Cooling for industrial buildings

Engineer Stefan Leifken headed the installation of the industrial radiant heating system for the floor slabs, combined with a concrete-core thermal activation system in the ceilings of both levels. The temperature boosts to be expected from the solar impact on the large glass surfaces and the lack of exterior shading also needed to be taken into consideration. Together with the building's usage profile, these factors produced the following temperature targets for the combined system of floor heating and two 1,000 m² air-handling ceilings: Cooling supply/return 16/20 °C, heating supply 40 °C. This required the two system components and their safety reserves to provide capacities of 25-30 W/m² for cooling and 25-35 W/m² for heating.

Elbe Spannbetonwerk supplied a total of 133 reinforced concrete ceiling slabs for the building's two concrete ceilings. Each of these had a surface area of 1,000 m² and needed to be thermally activated. The 35 x 120 x 1200 cm hollow concrete elements were activated using prefabricated Uponor Contec modules. At Elbe Spannbetonwerk, these modules were placed and concreted onto a special carrier mat on the lower layer, above the prestressed strands at a height of approx. 8 cm.

Thermal activation of the components achieves a heating output of around 37 W/m² radiating down out of the ceiling of the ground level, and an output of around 30 W/m² radiating up out of the floor on the first level. This is enough to maintain the setpoint temperature of 20 °C. In order to cover peak demand, which occurs predominantly in the walled-off office rooms, a number of additional split air conditioners and compact convector heaters were installed. The Uponor industrial radiant heating system is the other major component in the building's thermal control concept. Eckstein Engineering implemented a floor heating system covering a surface area of 1,240 m². Installed with a spacing of 15 cm between pipes, the 25 x 2.3 mm Uponor PE-Xa water piping system has a total length of 8,270 m.

Intelligent combination with an district heating system

The heating system is supplied from a district heating transfer station located in the terminal building. For thermal control in the summer, a water chiller with a nominal output of 90 kW was installed in the rooftop control unit. Separate split-system air conditioners are used for cooling of the office spaces when the setpoint room temperature is exceeded. Thanks to the combination of industrial radiant heating and panel cooling in this buildi

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