References

St. Mary’s Cathedral



Uponor involvement

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St. Mary’s Cathedral

The 1,200-year-old St. Mary’s Cathedral in Hildesheim is currently undergoing a restoration.

Project Facts:

Location	Completion
Hildesheim, Germany	2014
Building Type	Product systems
Municipal	Radiant Heating & Cooling
Address	Project Type
Domhof 18-21	Renovation

Partners

enduser
Bistum Hildesheim
Domhof 18-21 31134 Hildesheim
Deutschland

specifier
Ingenieurbu¨ro PGH Becker-Huke-
Hoffmann GmbH
Mathias-Giesen-Straße 10 41540
Dormagen
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installer
Klaus Jentzsch GmbH
Wellweg 5 31157 Sarstedt
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Crucial to this project are the Ecoflex Thermo 'Twin' and 'Classic' solutions.

St. Mary's Cathedral in Hildesheim is a UNESCO World Cultural Heritage site. After 50 years without any maintenance work, the cathedral's technical systems receive an extensive restoration. In future, the church will be able to offer draught-free heating during services. This new heating system will reduce annual heating costs for the diocese of Hildesheim by 30%. All this while retaining the historic value of the property.

From 2010 to 2014, the diocese will be restoring the cathedral's technical systems. In addition, a bishops' tomb is to be constructed in the crypt, and the chancel is to be renovated to meet modern liturgical needs.

The wood-chip-fired combined heat and power system (CHP) from energy supplier Energieversorgung Hildesheim (EVI) is heating the cathedral. The flexible, pre-insulated pipes of the Uponor Ecoflex Thermo Twin system transport this heating energy to the building itself. 680 metres of pipe were installed to accomplish this feat.

As part of the reconstruction work, it was necessary to remove plaster and floor coverings from the walls and floors, primarily the layers laid in the 1950s & 1960s, while retaining the historic structure.

After technicians removed the layers of floor covering in the nave and the crypt, the natural stone beams of the foundation were revealed. Technicians drilled core holes in the stone beams and installed the flexible, pre-insulated pipes of the Ecoflex Thermo Twin system. The front of pipes were inserted into the holes and pulled through using conveyor belts. The pipes were then fed in from the back. Enrico Soeder from our Technical Sales department instructed the technicians at Klaus Jentzsch GmbH in Sarstedt in the handling of pipes, fittings and the installation system itself.

During installation, the pipes performed well due to their high degree of flexibility and light weight. After two weeks, the supply pipes had been installed. However, construction had to be interrupted on numerous occasions to allow for archaeological examinations.

The cathedral used a very expensive air heating system before. Air was heated centrally and blown into the nave, a space 15 m in height and 50 m in length. However, the warm air was not distributed evenly and visitors found the draughts caused by the fan to be unpleasant.

For this reason, an underfloor heating system was installed. Now, the space is heated using mild, radiant heat and the system is energy-efficient and draught-free. With a flow temperature of 50°C and a return flow temperature of 40°C, the Uponor Classic underfloor heating system is installed over an area of 1,300 m² in the nave (120 W/m²) and 165 m² in the crypt (40 W/m²). In addition, radiators are used to heat the walls in order to prevent a build-up of condensation.

These elements combined ensure the system is able to meet the cathedral's heating needs efficiently at 160 W/m2. This helps the diocese to save money.

The floors vary in height throughout the building due to the construction and reconstruction work over the centuries. To correct for these differences, technicians installed Classic pipe mats ranging in strength from 5 to 15 cm.

Technicians installed a total of 5,155 m of the high-pressure cross-linked PE-Xa pipe. Depending on the particular area, these pipes were installed at distances ranging from 10 cm to 30 cm. A 45 mm layer of cement was poured on top of the underfloor heating system. Technicians then laid 50-mm-thick natural stone floor plates as the final floor covering. Finally, they installed 7 distributors with 52 heating circuits in the nave and the crypt.

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