

## CASE STUDY INNOVATIVE BUILDING TECHNOLOGY IN HISTORIC WALLS



**PROJECT:**  
Event location "2T"

**LOCATION:**  
Lindlar, Germany

**COMPLETION:**  
2017

**APPLICATION:**  
Surface heating and cooling  
HVAC  
Refrigeration

**PRODUCTS:**  
aquatherm blue pipe  
aquatherm black system

### EVENT LOCATION 2T IN LINDLAR RELIES ON ENERGY-SAVING HEATING AND COOLING TECHNOLOGY FROM AQUATHERM

**H**istoric buildings have a very special charm. Unfortunately, this often goes hand in hand with high energy consumption. The problem: outdated building technology. So it was with a 100-year-old building complex on the edge of the 20.000-inhabitant town of Lindlar in Germany.

For decades, the red-brick buildings were home to the Nord-West Papierwerke until the company had to close in 2013 after a long struggle for survival. One year later, Hong Kong-based entrepreneur and Lindlarer Dietmar Brück acquired the traditional property, with the aim of creating a unique event location for the region. His vision — a facility with meeting space for seminars and celebrations, a craft beer brewery, skating rink, and climbing and bouldering hall — emerged as the 2T.

*“The aim of the conversion measures was to use innovative and energy-saving heating and cooling technology to meet the needs of the entire property,” explains 2T Manager Stefan Bosbach.*

That was no easy task in a historic building with around 24.000 square metres of floor space.

The new energy system, which mainly uses sun and air to generate both heat and cold, was planned and installed by Metternich Haustechnik GmbH. The centrepiece is an ice energy storage system from Viessmann. Its capacity is 1.700 cubic metres, making it one of the largest ice energy storage systems in Germany. The ice energy storage technology is connected to three brine / water heat pumps with a nominal heat output of 120 or 150 kW, as well as emergency heating via

#### THE CHALLENGE

Energy-saving heating and cooling of a climbing and bouldering hall required innovative heating technology.

#### THE SOLUTION

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a gas condensing boiler with a heat output range of 12 to 60 kW. Four separation storage units of 2.000 litres and a load storage unit of 2.000 litres complete the equipment in the technical centre of the 2T.

### MAXIMUM SAFETY AND SERVICE LIFE

The supply to the ice energy storage units, as well as the piping in the entire technical centre, was carried out with 200 mm aquatherm blue pipe.

*“The pipe, which is made of corrosion-resistant and diffusion-proof polypropylene, is ideal for the transport of cooling and heating media in closed systems and is therefore particularly well-suited for a wide variety of industrial applications,” explains Frank Euteneuer, Managing Director of Metternich Haustechnik GmbH.*

The physical properties of aquatherm pipe are tailored to the specific needs of the heating and cooling sector. It is characterized by its high temperature- and pressure-resistance. In addition, its heat fusion joining process results in a homogeneous and cohesive unit that achieves maximum safety and service life.

These advantages are also reflected in the skating rink of the 2T: A Tichelmann distributor made of aquatherm blue pipe with a total pipe length of around 70 metres and more than 14.000 metres of aquatherm blue pipe ensure dependable operation and a smooth ice surface. The ice is provided cost-effectively and CO<sub>2</sub>-neutral thanks to the ice energy storage system.

### FAST INSTALLATION ON SITE

A very special heating and cooling technology is used in the 2T's climbing and bouldering hall: aquatherm black system. Entrants to the hall

immediately notice the black grids in the upper area of the hall walls, which – like aquatherm blue pipe – are made of fusiolen® polypropylene.

*“An advantage of the installation was that the grid elements weighed only 4,1 kg/m<sup>2</sup>, including water filling,” says Euteneuer. “They were custom fabricated in aquatherm’s main plant in Attendorn, which allowed for quick on-site assembly.”*

Depending on the selected water temperature, the aquatherm black system can be used for either heating or cooling.

*“aquatherm black system works with significantly lower flow temperatures than conventional heating systems, or higher flow temperatures than conventional cooling systems,” Euteneuer says. “This allows a particularly efficient and energy-saving operation.”*

In addition, the simple control technology and automatic switching from heating to cooling operation made the aquatherm black system an ideal choice for the 2T climbing and bouldering hall.

### VERY GOOD HEATING AND COOLING PERFORMANCE, SIMPLE AND QUICK INSTALLATION

A total of 120 aquatherm black system grids with sizes between 3,5 x 0,8 metres and 6 x 1 metres were installed in various ways in the hall: in the cement screed in the floor, just below the wall plaster, and as free convection.

*“The decisive factor for the decision for a partially open installation directly on the wall was the particular effectiveness of this extraordinary solution: the registers di-*

*rectly heat the room air, without the detour via the room envelope,” says the managing director of Metternich Haustechnik GmbH.*

He adds that this reinforces the energy-saving mode of action of the aquatherm black system. The individual pipe registers are equipped with rectangular distributors., which allows easy connection — such as via the Tichelmann method used in Lindlar.

*“The heating and cooling of large buildings, such as the climbing and bouldering hall of the 2T, always presents a challenge in terms of planning,” says Euteneuer. “aquatherm black system was chosen due to its very good heating and cooling performance and simple and quick installation. The use of the Viessmann ice energy storage system and the aquatherm GmbH products has resulted in an energy-saving heating and cooling technology as requested by the client, as well as smooth operation in the 2T year-round.”*



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state of the pipe

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