Wolfgang von Zoubek

Art Light & Design ALD GmbH

Individual Room Design without Visible Heating/Cooling Elements
Aesthetics and Design for the Highest Demands

In modern construction, the design of living and working spaces is strongly dictated in terms of the aesthetics by the individual wishes of the occupants. Builders and architects are therefore understandably often looking for thermal room conditioning techniques that are not highly visible, but nevertheless reliably fulfil the required function. At the same time, social demands for achieving energy efficiency and a healthy indoor environment must also be taken into account when deciding on the technical equipment for rooms. BEKA's various products for providing radiant heating and cooling provide the desired design freedom.

Beautiful Buildings and Modern Technology

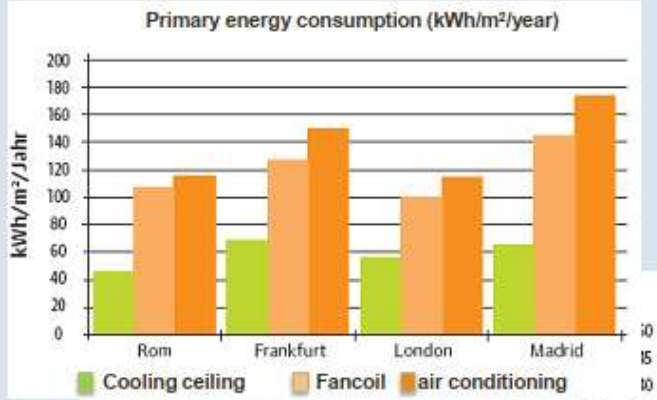
Whether for new-build schemes or renovations, these days energy-efficient thermal room conditioning is right at the top of builders' and architects' wish list in every building project. Therefore it is always a wise choice to also use chilled ceilings for providing heating. For builders and investors, this twin use of BEKA's radiant solutions for both cooling and heating with only a single system already optimises the costs when investing in the building services equipment. Later, during system operation, owners and users also benefit from the cost reductions achieved by low energy consumption. This is because BEKA's radiant heating and cooling systems are energy efficient. Cleverly combining BEKA's chilled and heated ceiling technology with environmentally compatible, energy-saving and progressive LowEx technology for providing the heating and cooling energy demonstrably reduces energy consumption costs compared with conventional heating and cooling technologies by more than 50%.

This demonstrable and verifiable environmental awareness considerably helps with the certification of buildings according to LEED or DGNB standards, conserves resources and helps to secure the future for tomorrow's generations

Considerable Design Freedom. Considerable Indoor Comfort

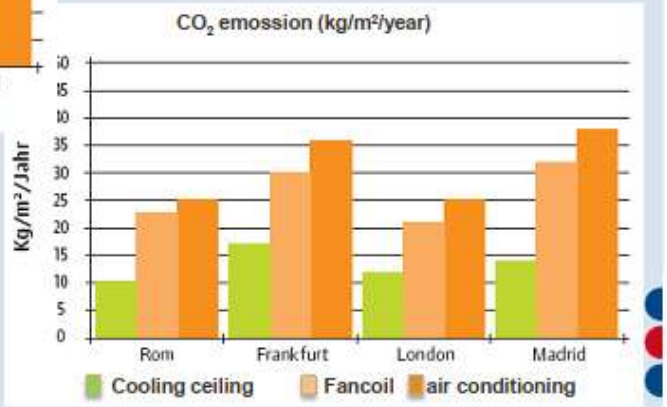
Chilled ceilings can also be used for heating. BEKA offers the right components for this twin use – capillary tube mats, serpentine copper tubing or our self-produced single pipe technology. Plaster ceilings, suspended plasterboard ceilings or metal acoustic ceilings can therefore be thermally activated efficiently and highly effectively. BEKA products are also successfully used for underfloor heating and wall heating systems. The thermal room conditioning provided by radiant heat is pleasant and healthy, protects the environment and is also highly responsive and space-saving. This is also interesting when retrofitting buildings.

Energie efficiency



Primary energy consumption for cooling and heating and ventilation as a result a EnergyPlus simulation of a typical office building (511m²). The building is satisfy national energy standards. For heating it was used gas assist technology. For cooling it was used air cooling technology. But in case of cooling and heating ceiling ther was adding of groundwater allowed.

source: University of Torino 2010



Ice Energy Storage Technology from the Container

Efficient Cooling with off-peak Electricity for Buildings and Industrial Facilities

Modern variants of the ice energy storage offer the possibility of lowering energy costs without sacrificing the comfort of an air conditioning system.

Ice energy storages from BEKA [sp.ICE] combine an exceptionally efficient cooling performance with flexible options for installing and incorporating into existing air conditioning systems. They are based on proven capillary tube mats, which have a particularly high degree of efficiency over the large heat transmission area of the capillaries.

The loading of the heat exchanger is able to take place at a refrigerating temperature of only -2°C. The ice energy storage system is deployed in a standardised container at ground level or can be lowered into a basin in the ground. There is a choice of three container sizes according to the cooling capacity that is required. Sizes to suit special requirements are also possible.

Ice Energy Storage Technology

Ice energy storages are essentially a modern variant of a centuries-old technology that harnesses the energetic processes in conversion between states of aggregation.

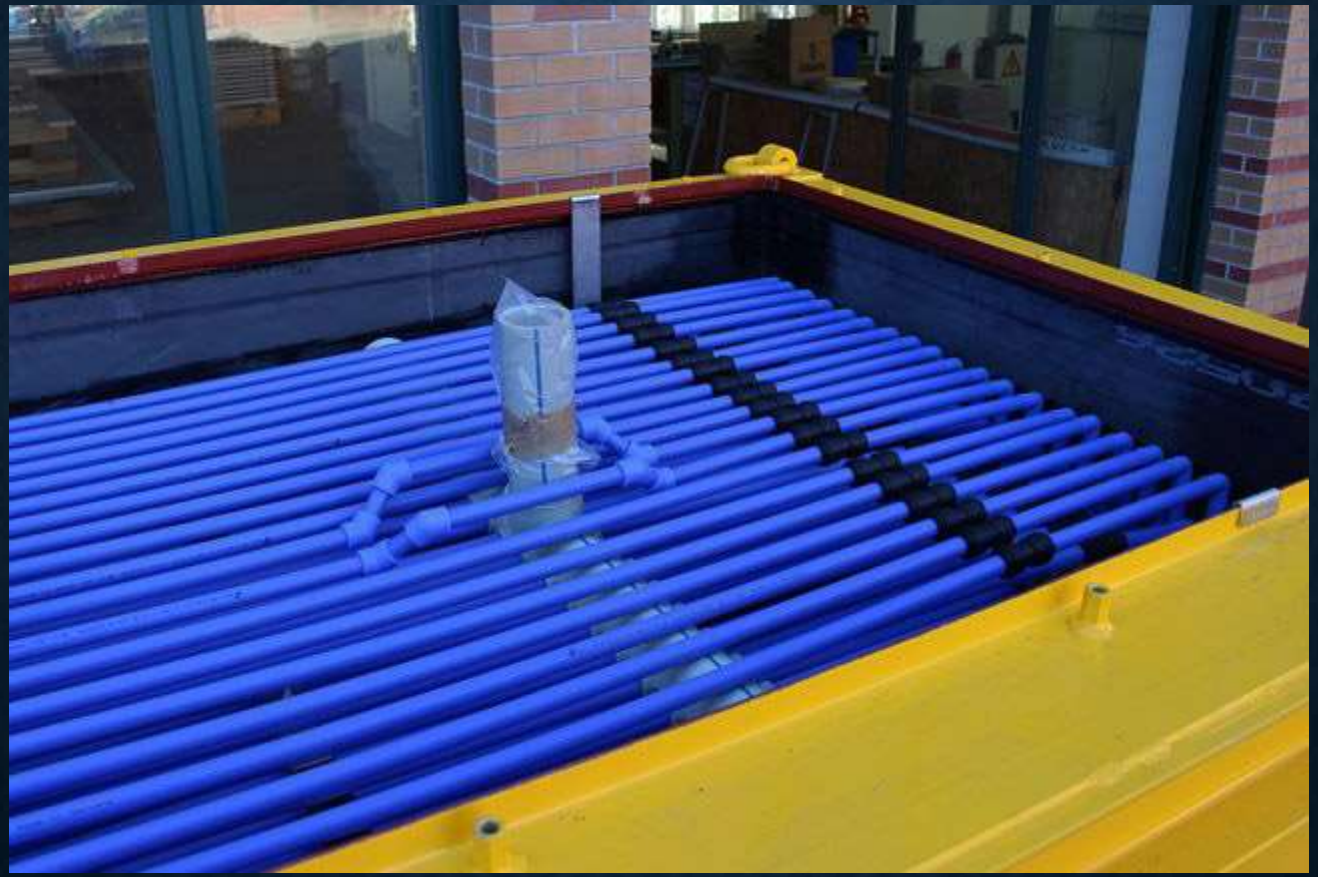
Whereas previously ice was stored primarily to chill food and manufacturing processes during the summer, nowadays thermal energy storages are required with short, charging cycles that expire daily. The ice storages are filled at night at reduced electricity costs and the stored cooling capacity is used during the day to cool offices or industrial facilities.

sp.ICE Energy Storage References

The modular BEKA ice energy storage systems with capillary tube mats as the heat exchanger are currently in use primarily in China, where a high demand for cooling exists and the differences between day-time and night-time electricity tariffs are extremely high.

In Germany, Heidelberger GA-tec Gebäude- und Anlagentechnik GmbH (a buildings and plant firm) operates two sp.ICEs with a total storage capacity of 4,200 kWh. We will gladly supply further references on request.
How much Cooling Capacity does your Project Require?

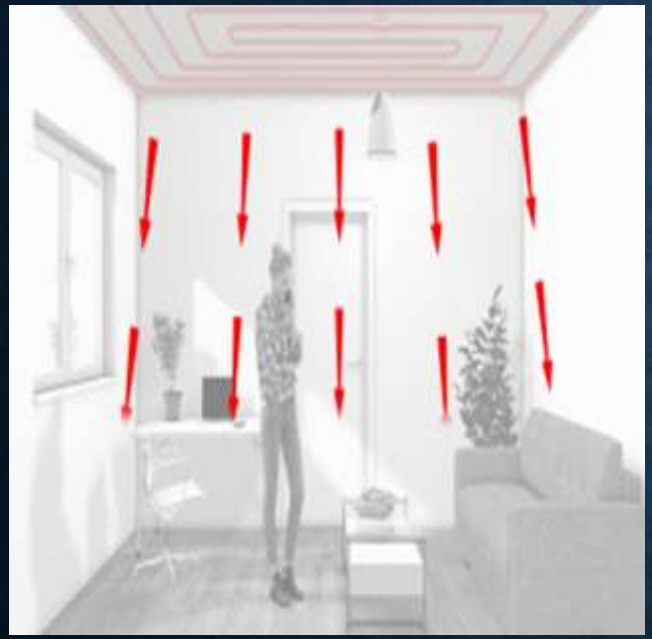
Are you planning a modernisation of your building's air conditioning or cooling system? Our engineers will assist you with the integration of ice energy storages into an existing air conditioning system and with a calculation of the cooling capacity required.




BEKA
KLIMA-KOMFORT
sp.ICE
speedy & powerful ice storage

By the way: The transfer of cooling capacity to the climate within a room is particularly efficient when combined with BEKA cooling ceilings. Our cooling ceilings with integrated capillary tube mats bring into play energetic advantages comparable to those of ice energy stores: a high degree of efficiency, rapid response and an even distribution of cooling or warming due to large areas of heat exchange.

Geothermie System.



Watercooled Ceiling - Silent, Natural, Energy-efficient

Radiant cooling ceilings provide a perfect indoor temperature all year round. During the summer period the cooling power insures a pleasant indoor climate without adverse effects of an air condition like cold air circulation and high energy consumption. During the cold period the function as heating ceiling guarantees a uniform and pleasant warmth.

The installation of a radiant cooling and radiant heating in one system reduces investments and operating costs. Heating without radiators opens a space for modern interior architecture.

Whether installed as a cooling and heating ceiling, underfloor heating or wall heating, BEKA capillary tube mats, BEKA serpentine copper tubing or the BEKA single pipe technology will remain invisible to occupants during the subsequent operation of the system.

The occupants will only feel the pleasant effect provided by the room's uniform, draught-free and thus healthy thermal conditioning.

Beautiful Buildings and Modern Technology

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Gamesa, Spain

Comfortable and healthy thermal room conditioning in the hospital

Architects: Brunet Saunier Architecture

Construction period: 2011

Design: 5,000 m² of plaster ceiling as a combined heating and cooling system

All patients' rooms are radiantly heated and cooled via the ceiling using BEKA capillary mats. This ensures uniform temperatures, a draught-free, hygienic environment and high climatic comfort for patients.

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Benefits of Radiant Ceiling Cooling and Heating

- Heating and Cooling with one single system
- Modelled on Nature
- Directly perceived, pleasant heat
- Low air circulation
- Healthy indoor climate with significant less allergenic impact
- Low energy consumption costs

Radiant Cooling Ceilings – Cooling without a Cold

Radiant cooling ceilings create a high degree of thermal comfort. Cooling without annoying air circulation contributes to the high acceptance and satisfaction especially amongst allergy sufferers. This is why more and more hospitals invest in radiant cooling ceilings.

„From a medical point of view, we consider it very important for our patients to have draught-free, uniform

Elbphilharmonie, Hamburg

Silent thermal room conditioning with minimum space and energy requirements
Architects: Herzog & de Meuron
Construction period: 2014-2015
Design: 1,300 m² plaster ceiling, type BASWAphon Cool
Location: Hamburg, Germany :Architects: Herzog & de Meuron
Silent thermal room conditioning with minimum space and energy requirements
Construction period: 2014-2015

Construction period: Autumn 2000

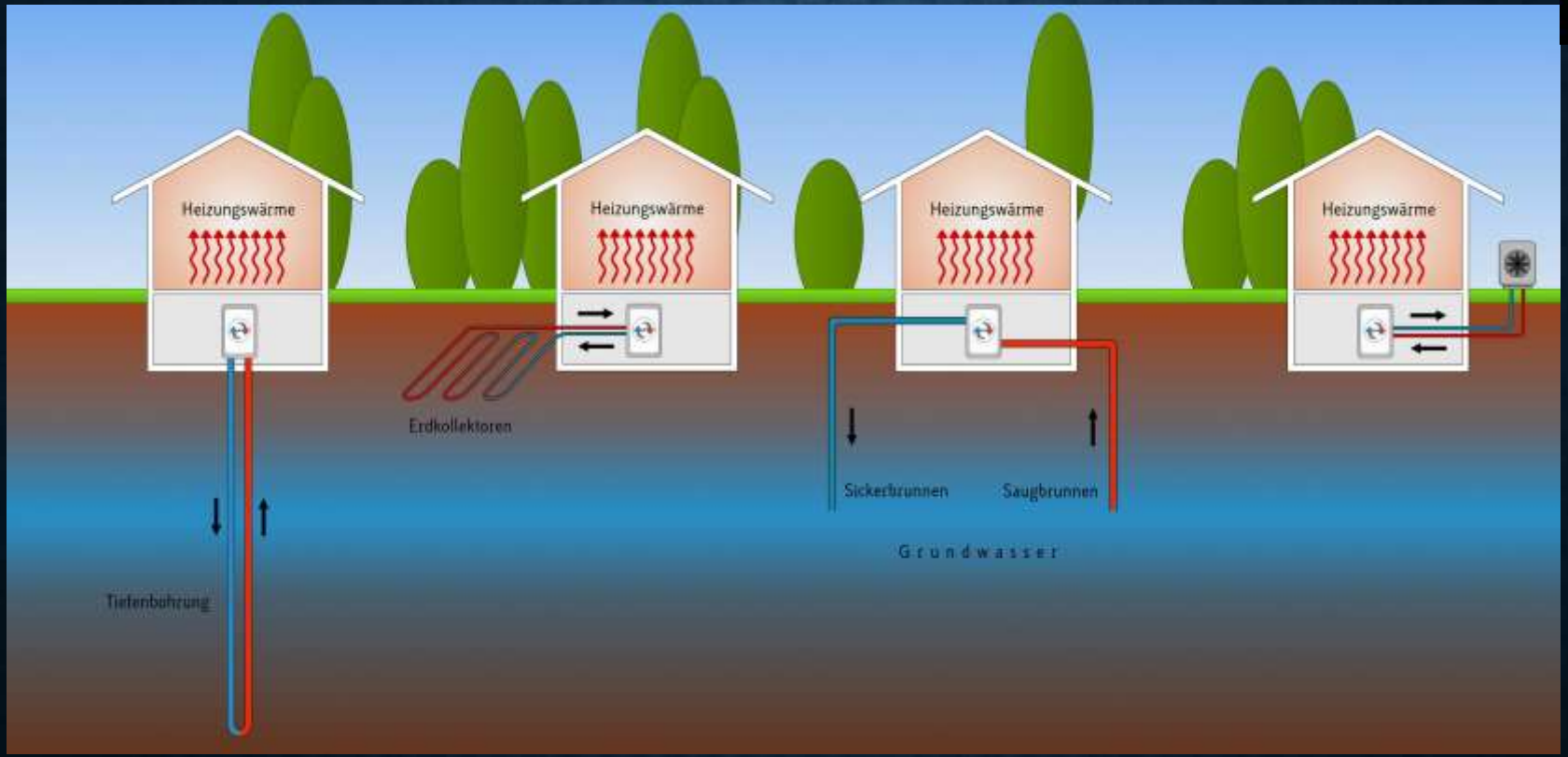
Design: 29,000 m² of active cooling area provided by metal ceiling panels to ensure efficient building cooling

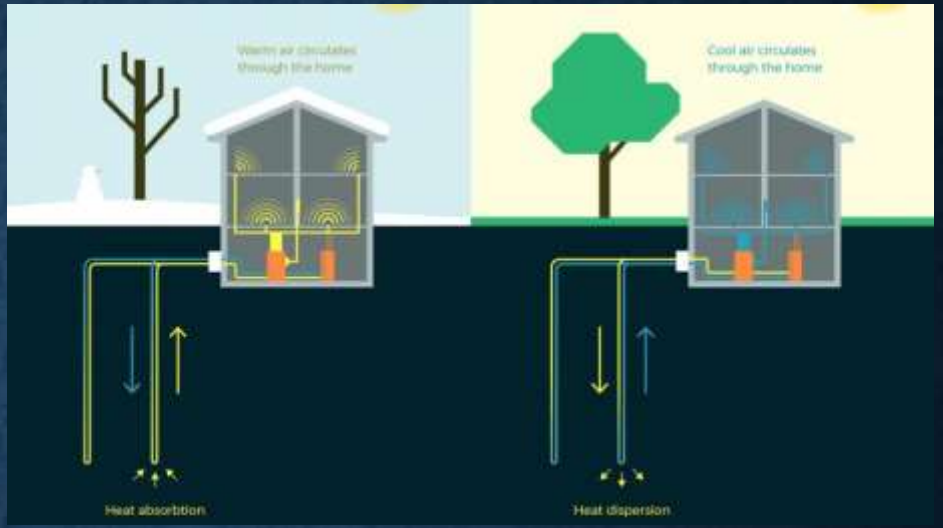
BEKA's radiant temperature control solutions meet the highest demands with regard to the cooling and heating surfaces. They can even be excellently combined with the room's acoustic requirements, whereby architects have various options available to them when selecting the desired materials for designing room surfaces. For example, BEKA capillary tube mats can be integrated into acoustically effective plaster-based systems. Acoustic plasterboard ceilings with visible or invisible perforations as well as metal acoustic ceilings can be thermally activated with BEKA capillary tube mats, BEKA serpentine copper tubing or the BEKA single pipe technology.

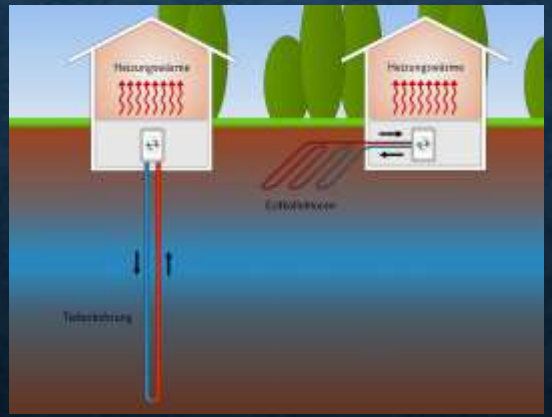
Twin Tower Vienna
Architect: Massimiliano Fuksas
Developer: Wienerberger AG

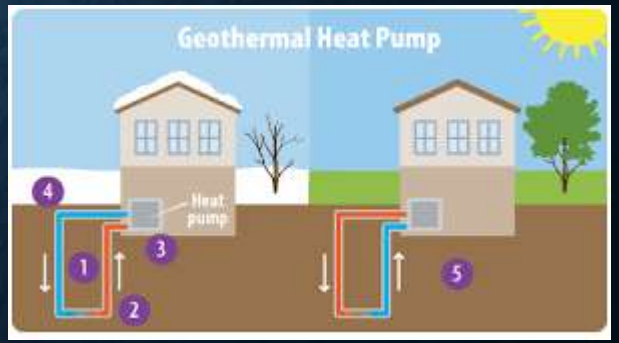
BASWA cooling ceilings with capillary tube mats were installed in the backstage areas such as the rehearsal and voice rooms. BASWAphon Cool enables draught-free and silent thermal room conditioning with minimal space and energy requirements.

Different possibilities of geothermal applications .. for the heating or cooling of residential and office spaces ..




Warm air circulates through the home
Cool air circulates through the home
Heat absorbtion
Heat dispersion




Geothermal Heat Pump
Heat pump
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2
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4
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