



Radiant Ceiling





Grid ceiling and high-gloss sail in a branch of the Sparkasse (Munich)

Cooling and heating ceilings

Conventional air-conditioning systems barely fulfil the more stringent requirements regarding efficiency and personal well-being. Not only is air a poor heat transfer medium that requires a comparatively high amount of energy to temper and convey it, but the air flow required for cooling purposes can be quite uncomfortable for people.

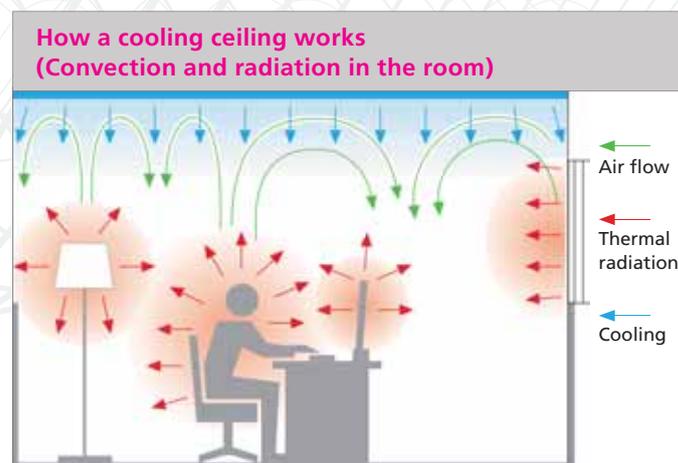
Cooling and heating ceilings – or radiant ceilings for short – that function primarily by means of radiation are an ideal alternative. In cooling mode, the temperature of the ceiling elements drops a few degrees below room temperature to trigger the thermal heat exchange between the ceiling and heat sources in the room. In heating mode, warm water flows through the ceiling.

FRESH AIR

Since the required fresh-air room ventilation no longer needs to act as air-conditioning, the air flow can be reduced to just the amount required for supplying fresh air. Draughts and even the noise from ventilators and fans are imperceptible, which increases the wellbeing and performance of those working in the room.

Each individual radiant element can be adapted in line with the requirements of the workplace. Window seats, sources of heat, the number of people, unused areas of the room and so on can all be taken into account in the design of the air-conditioning system, not only during commissioning but also over the course of years.

Thanks to air dehumidifiers, dew point sensors, regulating valves and hydrophilic coatings, cooling ceilings can even be used in regions subject to high temperatures and humidity.





Modular ceiling in a conference room (Munich)

ROOM ACOUSTICS

Sound absorption is a common problem in modern office buildings because big windows and core-tempered building structures act as sound-reflecting surfaces. Absorbers retrofitted to improve the reverberation time generally have a thermally insulating effect, which can significantly reduce the effectiveness of existing radiant ceiling surfaces.

Metawell offers architects and planners a range of options for ensuring excellent room acoustics under any given conditions.

The key benefits of radiant cooling and heating ceilings:

- Pleasant ambience
- High flexibility
- Integrated ceiling design
- Lower rate of cold-related illness
- Low operating costs
- Low maintenance costs
- Excellent self-regulation
- Separate fresh air supply and air-conditioning

All the options offer excellent sound absorption qualities and are made of aluminium, which ensures outstanding heat conductivity. This allows Metawell to be used in conjunction with building structure core tempering as well as in the form of cooling and heating ceilings.

LIGHTING TECHNOLOGY

The high inherent rigidity of Metawell means that it can easily accommodate large cut-outs for light fittings and support heavy lights (e.g. suspended lamps). The lights do not generally need to be suspended separately from the bare/uncovered ceiling, which offers light technicians a high degree of flexibility and saves installation costs.

By varying the size of the perforation areas, surface colour and degree of gloss, the light reflection – particularly with floor lamps and floor uplighters – can be adjusted in line with individual requirements.



Reception area of a private bank (Munich)

Radiant Ceilings

Aluminium and copper are excellent heat conductors, which means that, in conjunction with its low component mass, Metawell exhibits not only a high level of performance but also excellent response characteristics.

ARCHITECTURE

The panel type Alu 08-02-05, which is the main type of panel used in the radiant ceiling, has the rigidity of a 3.5 mm solid steel plate at just 16% of its weight. This, combined with an installation height of just 18 mm (including meander), offers scope for designing and installing large elements and slim-line, suspended ceiling constructions.

Metawell's "sandwich" design offers a unique level of smoothness and surface coverage for interior constructions.

Panels of 1.5 x 6.0 m are available with any kind of contour.

Thanks to its special surface treatment, Metawell is compatible with all standard coatings, from high-quality priming to dispersion paint and plaster.

Weight and plate thickness with the same level of bending

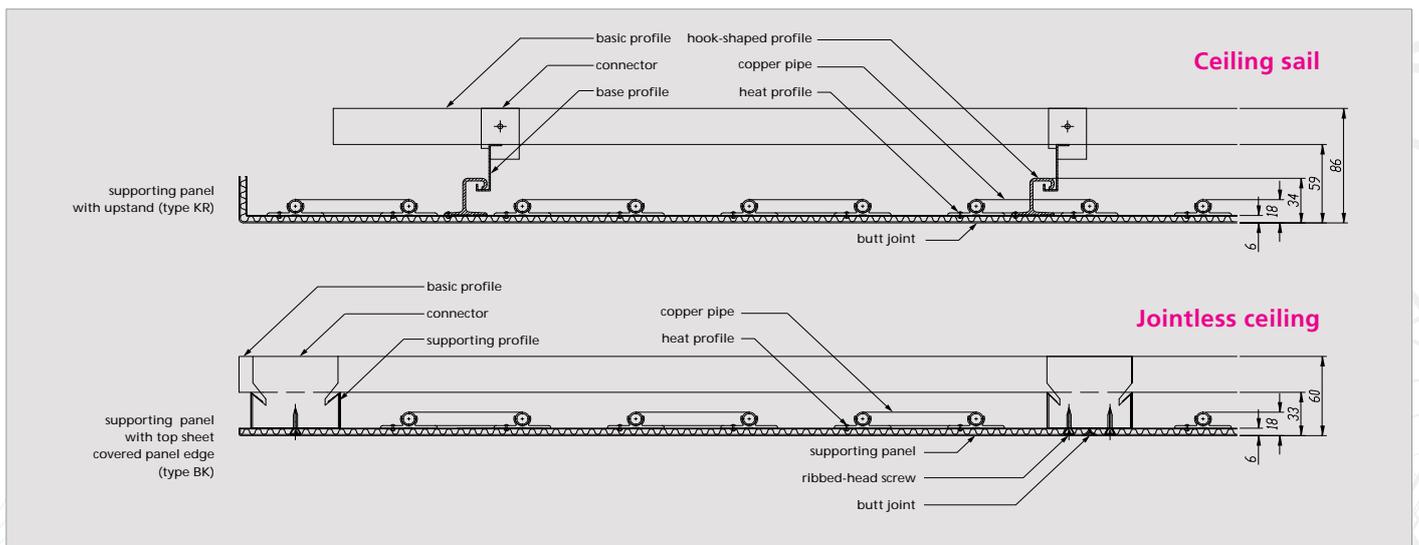


Heat conductance values

• Copper	385 W/m K
• Aluminium	220 W/m K
• Thermo-panel	2 W/m K
• Plasterboard	1 W/m K
• Polymer	< 1 W/m K



Modular ceiling in a conference room (Düsseldorf)



Structure of a Metawell radiant ceiling

SAFETY

Metawell delivers the ready-to-install supporting panel ex works with copper pipe tubes. This is the only way to achieve the required tightness and assured performance values:

- Only “endless” pipes are used.
- All pipe ends are calibrated and fitted with a protective cap. Pipe ends that are to be connected via connector assemblies are reinforced with support bushings.
- The panel coating, adhesive, heat conductance profile and copper pipes are perfectly harmonised.
- The tubes are produced and installed under series conditions using machines specially designed for this purpose.

EFFICIENCY

The high performance of Metawell radiant ceilings cuts investment and operating costs because they require a lower covering density than lower-performance ceilings. For this same reason, Metawell radiant ceilings – in contrast to other products – can run with lower flow rates or higher flow temperatures.

Thanks to the large-format panels, less time is required to connect and align them compared with small-format ceiling elements.

An increasingly important factor for our customers is that copper and aluminium are highly desirable raw materials that can be 100% recycled without any pre-treatment.

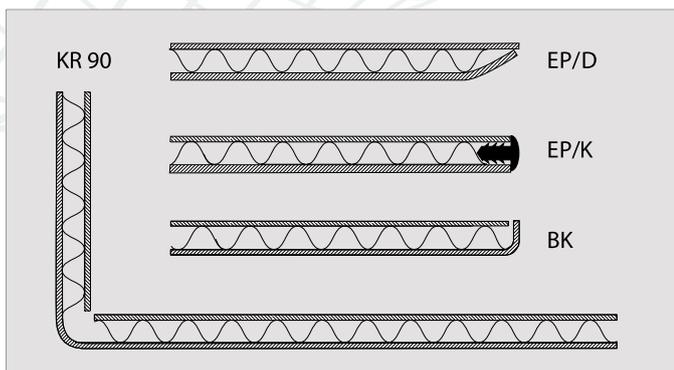


Hotel Bayerischer Hof (Munich)

Jointless ceilings

Jointless ceilings are suspended ceilings with a plasterboard design. The advantage of Metawell is that it offers greater performance and exceptionally fast response characteristics due to the materials used in its construction. Thanks to its high inherent rigidity and the lightweight supporting panel, the modular dimensions of the substructure can be doubled compared with plasterboard. This offers greater flexibility for ceiling fixtures and allows a higher density of tubes.

Metawell offers a range of edge finishes that can be prepared in the factory or made on site. The butt joints all have a stop chamfer (type EP/D) to allow for a perfectly levelled filling. Thanks



Jointless ceiling types

Installation of a jointless ceiling

- The piping in the room is laid taking into account the later positions of the tubes.
- The substructure of runner profiles is suspended (cross-lathed) from the bare/uncovered ceiling by means of standard suspension systems in accordance with a defined reflected ceiling plan.
- The Metawell panels fitted with tubes are fixed to this substructure using self-tapping countersunk screws and with a surrounding shadow gap.
- The tubes are connected to the piping in the room and pressure-tested.
- The ceiling is closed up with passive panels.
- Joints and screw heads are smoothed and polished using standard materials.
- The surface is then painted or, in the case of perforated panels, covered with a non-woven material and then coated with sound absorbing plaster.

to the exceptional smoothness of the panel, only the joint area needs to be smoothed and not the whole panel.

The coordination between ceiling fixtures and meandering requires detailed planning, which we carry out in collaboration with the installation companies in accordance with the approved architect's drawing.

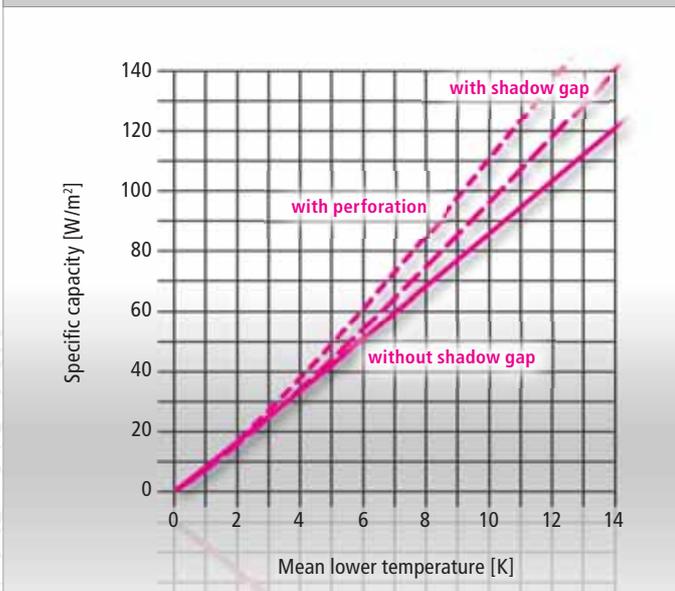


Conference room (Düsseldorf)

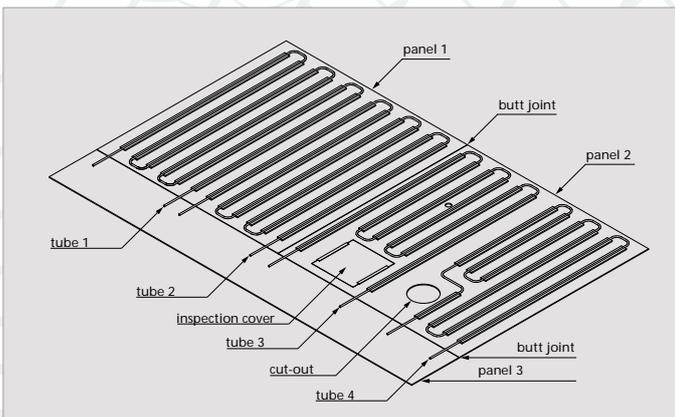
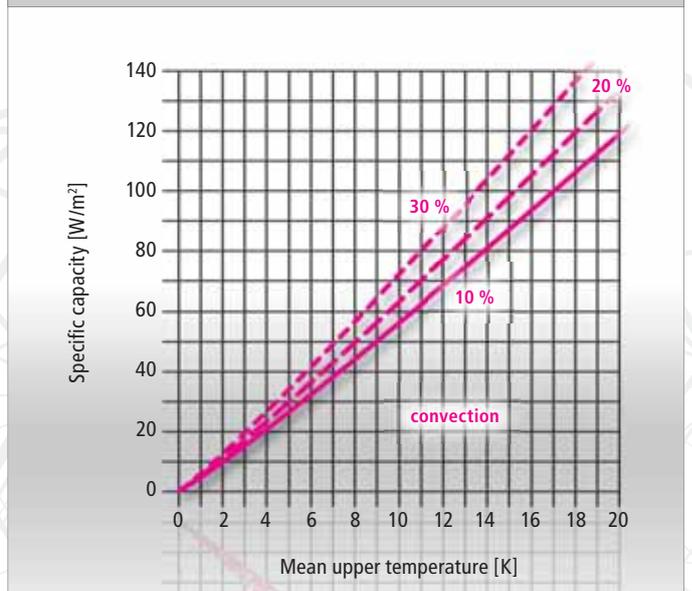


Showroom (Stephanskirchen)

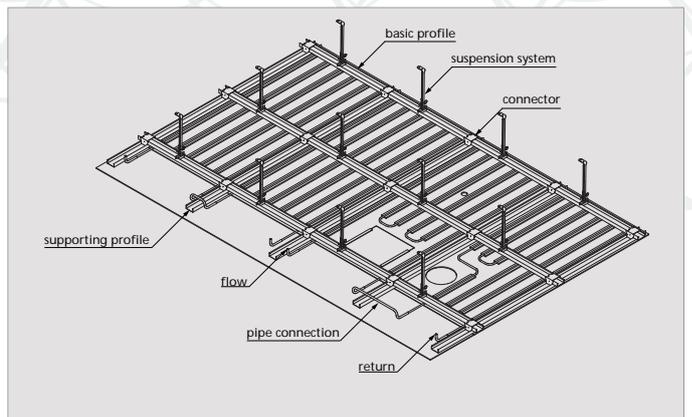
Cooling capacity of jointless ceilings



Heating capacity of jointless ceilings



Structure of a jointless ceiling – Metawell scope of supply



Structure of a jointless ceiling — scope of supply with on-site services



Senate meeting room (Frankfurt / Main)

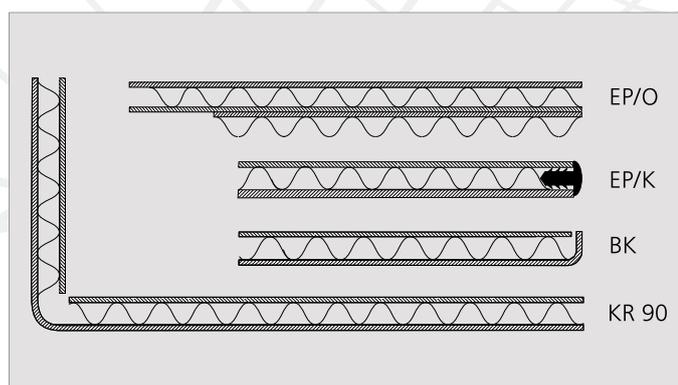
Modular and grid ceilings

Modular ceilings differ from grid ceilings in that no visible rail or band grid is required for installing the panels. The panels are instead suspended directly on threaded rods or hooks, which are offset from the edge of the panel.

Depending on requirements, the panels can be pushed together to within just a few millimetres of each other or, if partitions are to be installed and/or easy access is required, placed on the lay-in panels. Here again, functionality can be combined with an attractive appearance by adjusting the height of the lay-in panels or resurfacing them, for example.

Sound-absorbing radiant ceilings

- Right-angled or stepped perforation
- Perforation areas all over the panel or in strips
- Visible perforation on painted panels in a range of perforation patterns
- Textured paint applied to sails and module/grid ceilings in the factory
- Sound absorbing or smooth plaster applied to jointless ceilings on site



Grid ceiling types



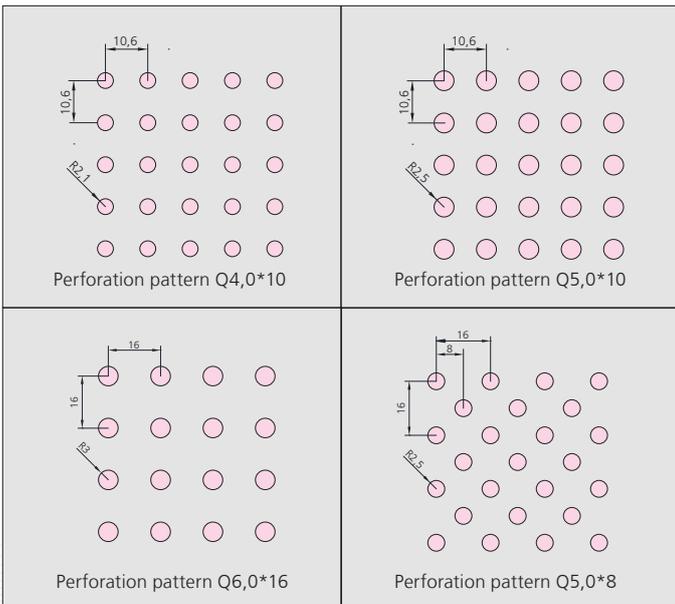
Surfaces of sound-absorbing Metawell ceilings



Polygonal modular ceiling (Cologne)



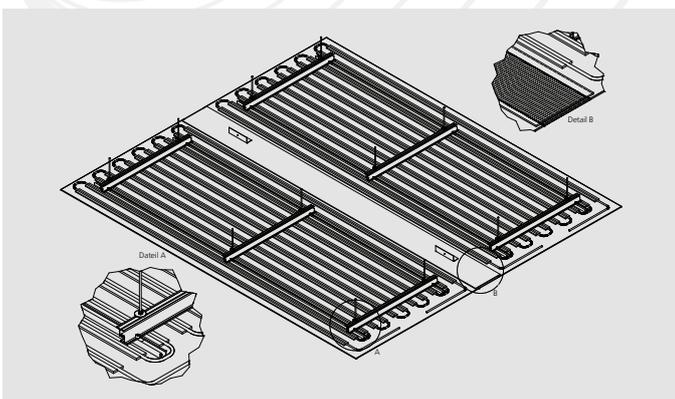
Hotel suite (Rottach-Egern)



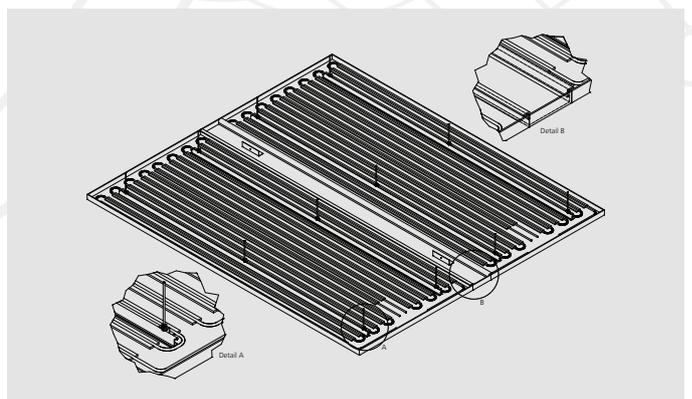
Perforation patterns



Modular ceiling with passive covering strips with wave appearance (Neuburg)



Modular ceiling (type BK) with pipe spacing of 100 mm and cross-lathed hook-shaped profiles



Modular ceiling (type KR90) with pipe spacing of 80 mm and a simple hooked suspension system



Open-plan office (Munich)

Ceiling sails

Radiant sails are suspended from the room ceiling individually or in groups to form an "island". This open design offers numerous advantages over closed ceilings.

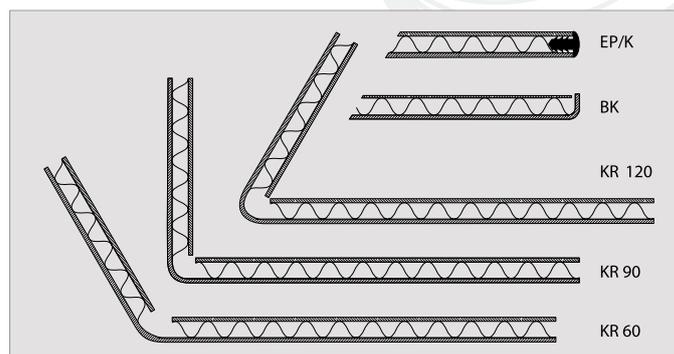
The sound-absorbing design is the perfect complement to core-tempered ceilings because they significantly improve room acoustics without compromising the cooling/heating capacity of the concrete ceiling. In addition, specific performance shortcomings can be compensated as required.



Ceiling sails divided longitudinally with a 120° tilt (Munich)

Key benefits of ceiling sails:

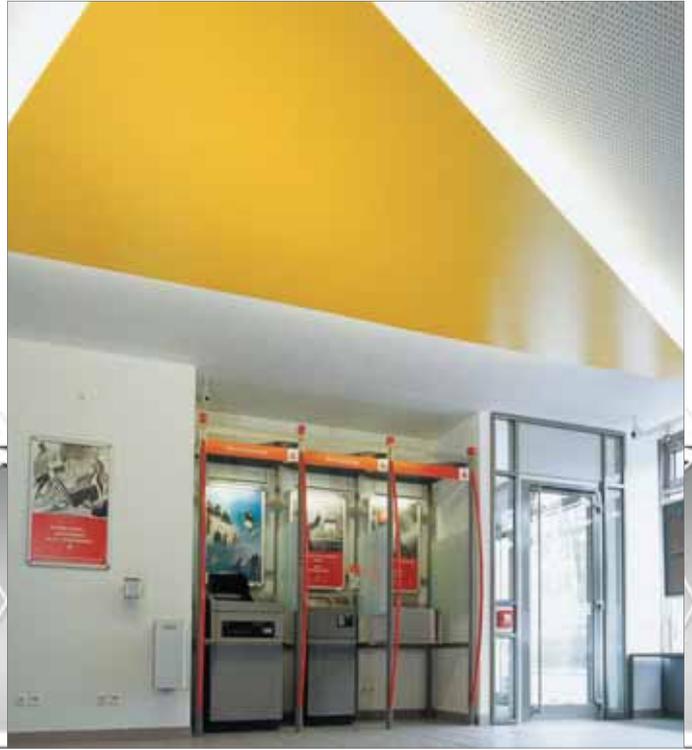
- The rear of the sail is easily accessible.
- The coating is usually applied in the factory.
- They offer almost unlimited flexibility with regard to the contour, shape, colour and so on.
- Retrofitting and wall assembly (or disassembly) can be performed with minimal outlay.
- With a higher convective component, sails offer much better performance than closed ceilings.
- Sails absorb sound much more effectively than closed ceilings because the rear of the sail also acts as a sound absorber.



Ceiling sail types

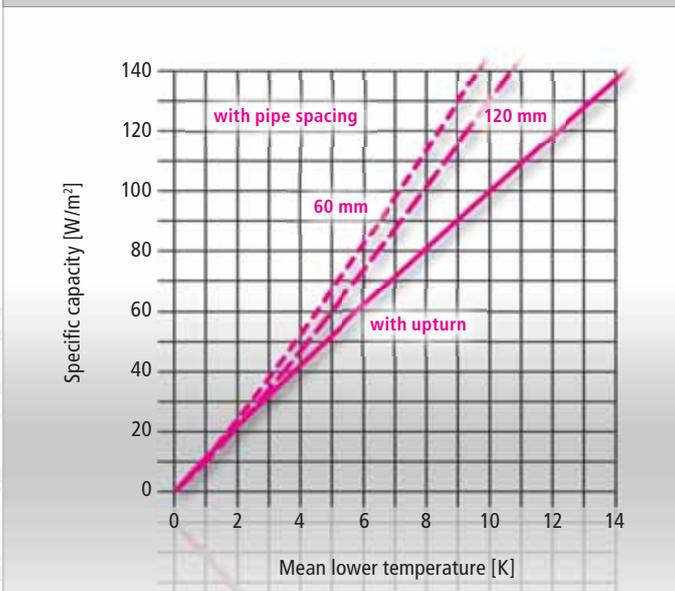


Attic floor in an administrative building (Rijssen)

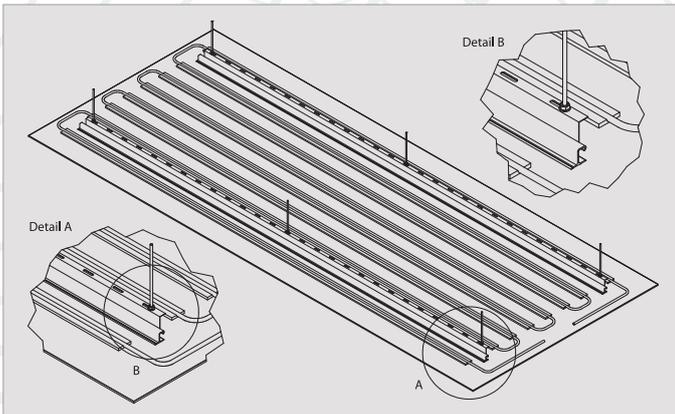
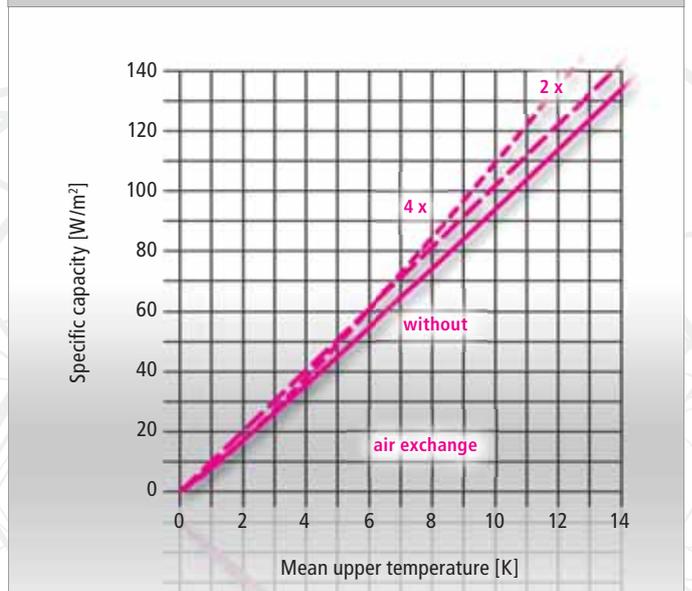


Foyer of a branch of the Sparkasse (Munich)

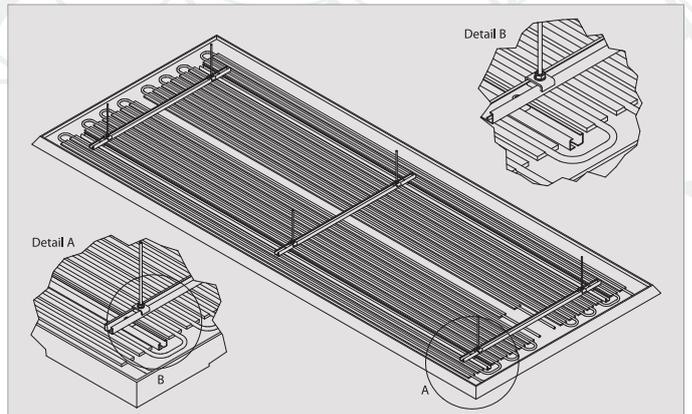
Cooling capacity of ceiling sails



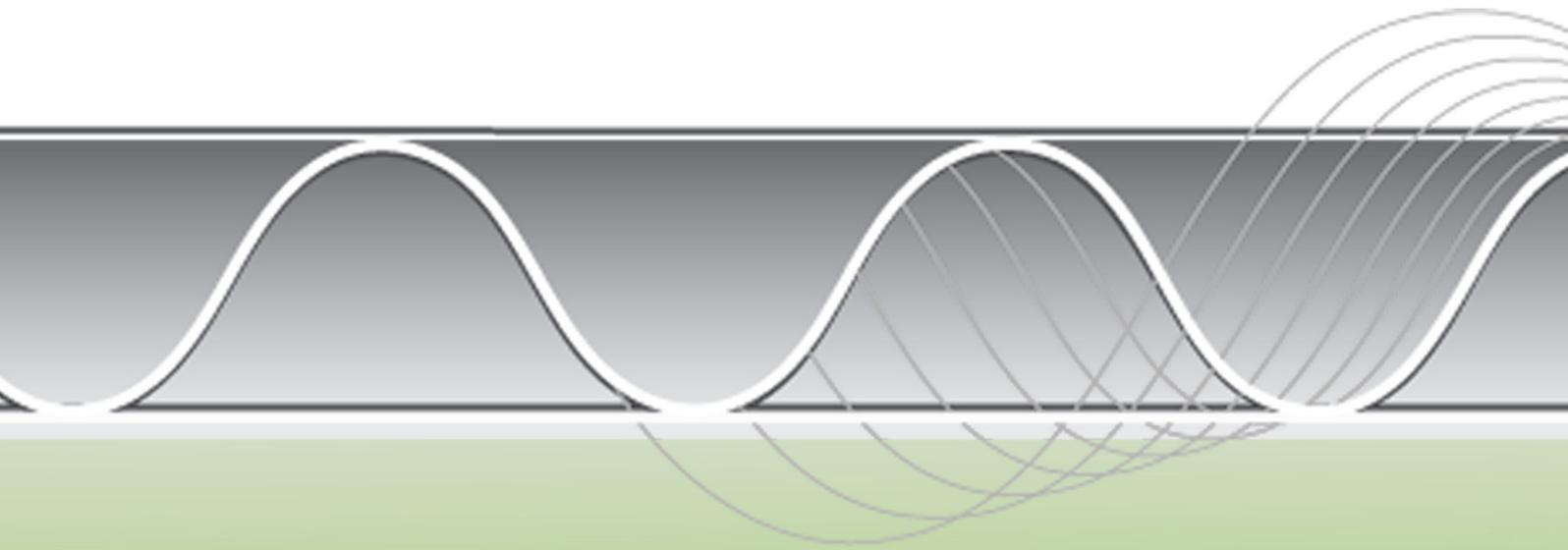
Heating capacity of ceiling sails



Ceiling sail (type BK) with pipe spacing of 120 mm and hooked suspension system



Ceiling sail (type KR120) with pipe spacing of 60 mm and C-rail suspension system



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metal sandwich technology

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