Krantz

Multifunction Exposed Ceiling Solutions with System

Cooling and Heating Systems

Krantz Multifunction Exposed Ceiling

Individual solutions for technical building services

The multifunction exposed ceiling system combines cooling, heating, air distribution, and sound absorption into one system with a focus on comfort.

A number of configurations are possible, such as with:
- a single or multiple panels
- a rigid or pull-down design
- supply air function
- Optionally, recirculated air, return air, or without air
- Optionally, an inspection panel for maintenance

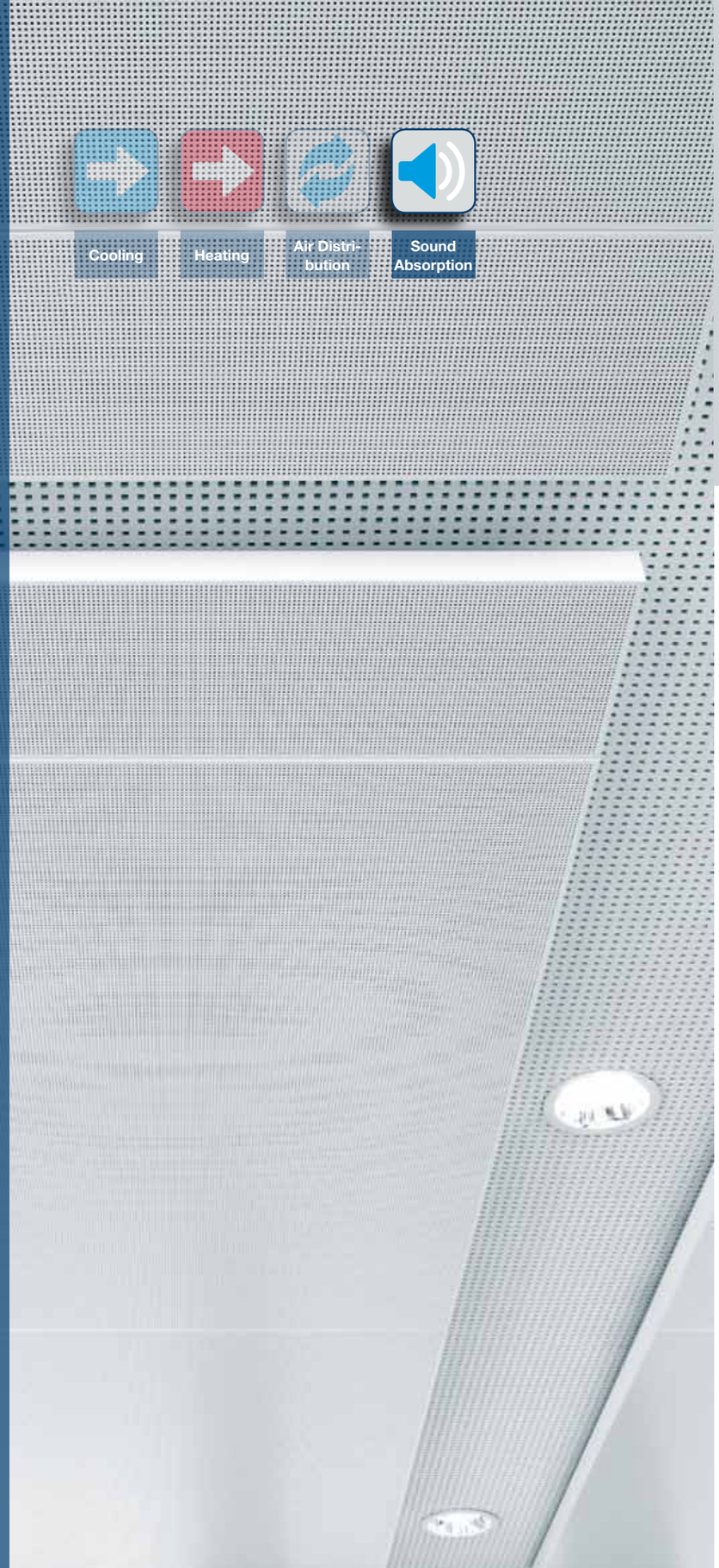
These systems are perfectly suited for use in offices, meeting rooms, foyers, common rooms, and other such spaces, and serve to remove medium cooling loads.

Krantz Multifunction Exposed Ceiling – System of many talents

Content

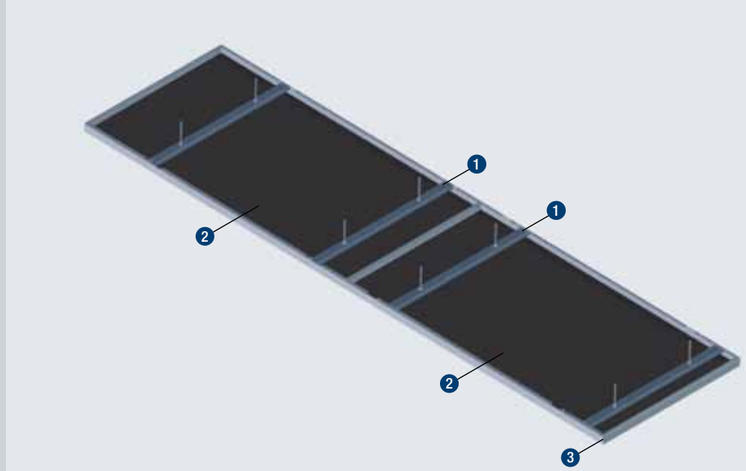
Acoustic Panels

The Krantz solution that is versatile



Sound absorption ceiling panels with acoustic lining
– Without optional sound absorbers with a suspension height of 200 mm: $\alpha w = 0.8$

Acoustic Panels
Example setup



Acoustic Panels

Back to basics

The **Acoustic Panel** is a modern architectural alternative for the open ceiling design. By combining them with Krantz system components that have been specifically developed for this type of installation, multifunction exposed ceiling units are able to provide the highest level of thermal comfort.

Key
1 Crossbar for the suspension of acoustic panels
2 Perforated acoustic panels
3 Canted design optional

Acoustic Panel	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Acoustic lining	Back covered in acoustic lining
Fastening crossbar	2.0 mm sheet metal
Standard nominal length L	A single or multiple panels 1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	150 mm
Weight	approx. 8 kg/m^2 panel area
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand

Acoustic panels

Multifunction Exposed Ceiling as Radiation Cooling and Heating Panel

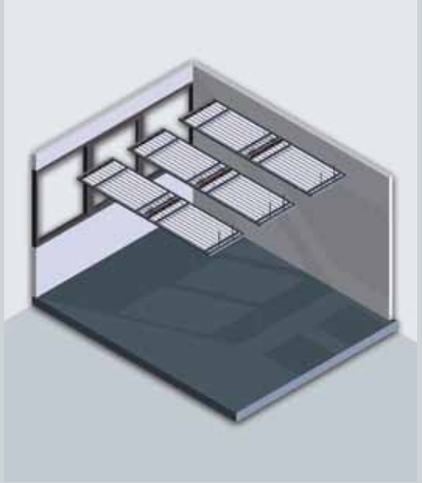
The Krantz solution that provides flexibility

Cooling output based on DIN EN 14240
— Cooling output on the water side up to 118 W/m² based on the panel area for Δtw = -10 K

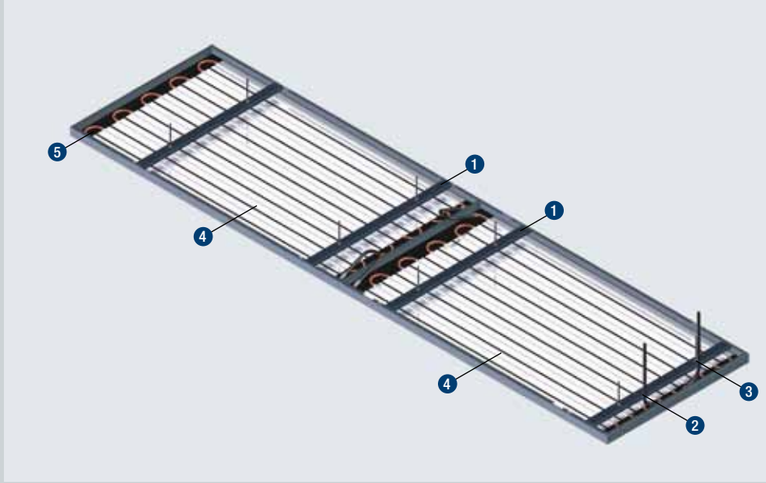
Heating output based on DIN EN 14037
— Heating output on the water side up to 160 W/m² based on the panel area for Δtw = +15 K

Combinable with air outlets

Sound absorption ceiling panel in combination with a contact cooling ceiling system
— Without optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.6
— With optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.7
— With optional sound absorbers with a mounting suspension height of 350 mm: αw = 0.9



Multifunction Exposed Ceiling as Radiation Cooling and Heating Panels Example setup



Multifunction Exposed Ceiling as Radiation Cooling and Heating Panels

Combined into a single unit

The **Multifunction Exposed Ceiling** is an ideal solution for any open ceiling architecture. Here, a ceiling panel is combined with state-of-the-art cooling ceiling technology into a highly functional and flexible unit. The view from below the radiant panel consists of one or more perforated metal ceiling panels which are suspended on hidden fastening crossbars from the building itself. The result is a visually-appealing panel that provides specific cooling and heating outputs while at the same time maintaining a high degree of thermal comfort.

Key
1 Crossbar for panel suspension
2 Chilled water supply pipe
3 Chilled water return pipe
4 Contact-cooling element
5 Perforated ceiling panels

Multifunction Exposed Ceiling as Radiation Cooling and Heating Panel	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Serpentine pipework	Copper tube 12 x 0.4 mm[1)]
Contact profile	Aluminium profile, width b = 78 mm[1)] length matching that of the serpentine pipework
Fastening crossbar	Sheet metal 2.0 mm
Connection ends	For push-in fittings Ø 12 mm +0.05/-0.10 mm[1)]
Pipe spacing T	Fittings: 90° bend, inclined at approx. 20-90° to the ceiling plane[1)] 180° bend, inclined at approx. 20-90° to the ceiling plane[1)]
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	150 mm
Allowable operating pressure	6 bar[1)] (up to 16 bar possible)
Weight	approx. 10 kg/m² panel area (including water, depending on the pipe spacing)
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand

Multifunction exposed ceiling

Multifunction Exposed Ceiling AVACS Supply Air

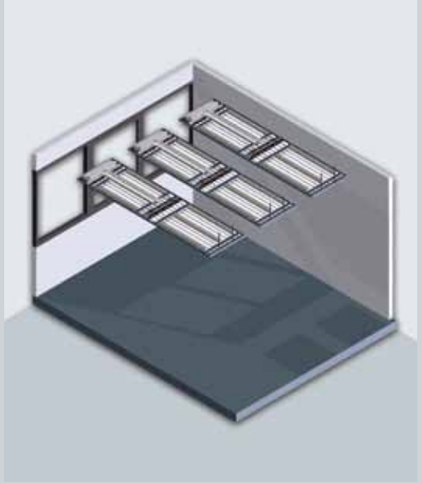
The Krantz solution that does much more

Cooling output based on DIN EN 14240
- Cooling output on the water side up to 165 W/m² based on the panel area for Δtw = -10 K

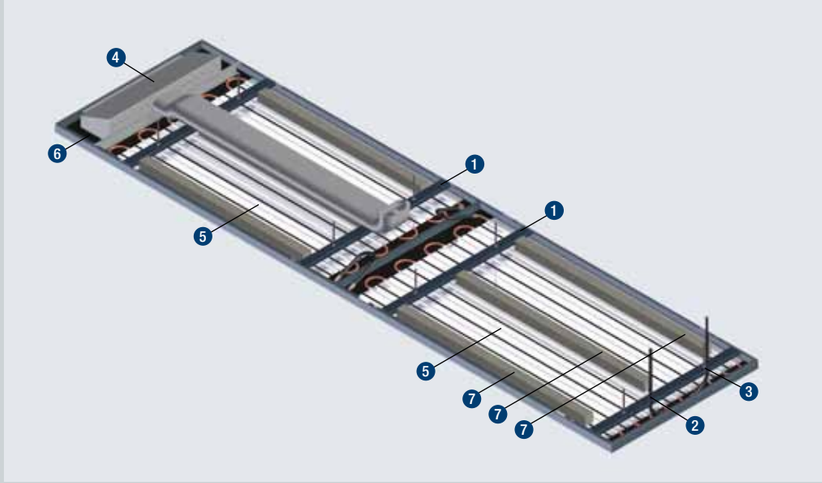
Heating output based on DIN EN 14037
- Heating output on the water side up to 190 W/m² based on the panel area for Δtw = +15 K

Primary air volume when using the AVACS air outlet
- Air flow volume from 30 – 120 m³/h

Sound absorption ceiling panels in combination with a contact-cooling ceiling system
- Without optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.6
- With optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.7
- With optional sound absorbers with a mounting suspension height of 350 mm: αw = 0.9



Multifunction Exposed Ceiling AVACS Supply Air
Example setup



Multifunction Exposed Ceiling AVACS Supply Air

The perfect solution for all challenges

The **Multifunction Exposed Ceiling AVACS Supply Air** is a further development on our cooling ceiling panels. The proven cooling ceiling technology is combined with AVACS air outlets, invisible to the user. The view from below the Multifunction Exposed Ceiling AVACS consists of one or more perforated metal ceiling panels which are suspended on hidden fastening crossbars from the building itself. The result is a visually-appealing panel that provides specific cooling and heating outputs while at the same time maintaining a high degree of thermal comfort.

Key
1. Crossbar for panel suspension
2. Chilled water supply pipe
3. Chilled water return pipe
4. AVACS air outlet
5. Contact-cooling element
6. Perforated ceiling panels
7. Sound absorbers (optional)

Multifunction Exposed Ceiling AVACS Supply Air	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Serpentine pipework	Copper tube 12 x 0.4 mm[1)]
Contact profile	Aluminium profile, width b = 78 mm[1)] length matching that of the serpentine pipework
Fastening crossbar	Sheet metal 2.0 mm
Connection ends	For push-in fittings Ø 12 mm +0.05/-0.10 mm[1)]
Pipe spacing T	Fittings: 90° bend, inclined at approx. 20-90° to the ceiling plane[1)] 180° bend, inclined at approx. 20-90° to the ceiling plane[1)]
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	150 mm
Allowable operating pressure	6 bar[1)] (up to 16 bar possible)
Weight	approx. 10 kg/m² panel area (including water, depending on the pipe spacing), plus 3.4 kg for induction unit
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand

Multifunction exposed ceiling

Multifunction Exposed Ceiling AVACS Recirculated Air

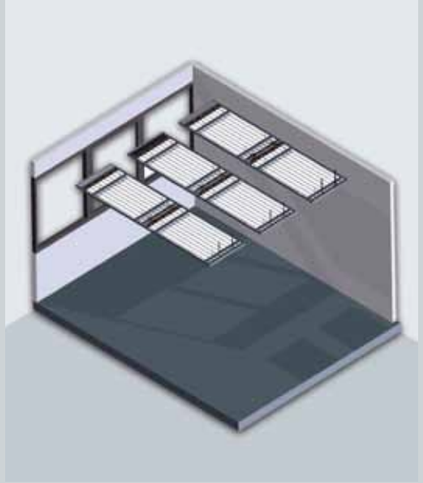
The Krantz solution that turns a vision into a reality

Cooling output based on DIN EN 14240
— Cooling output on the water side up to 165 W/m² based on the panel area for Δtw = -10 K

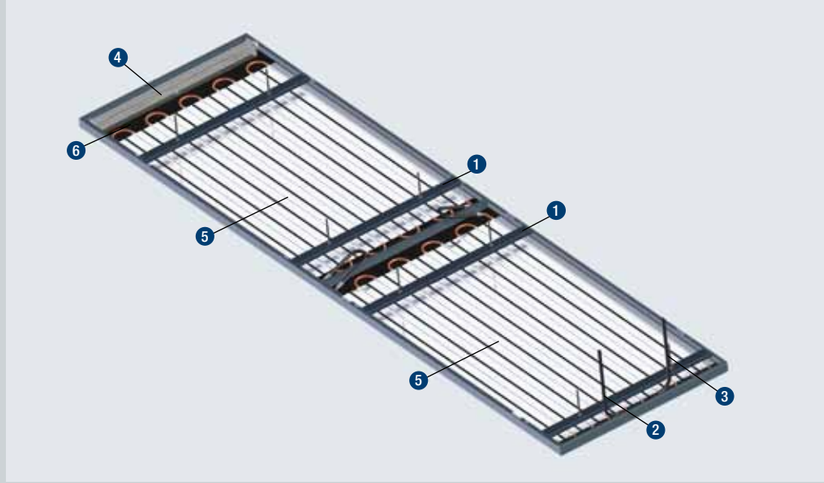
Heating output based on DIN EN 14037
— Heating output on the water side up to 190 W/m² based on the panel area for Δtw = +15 K

AVACS-Recirculated Air Variants
— Air flow volume from 30 – 120 m³/h

Sound absorption ceiling panels in combination with a contact-cooling ceiling system
— Without optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.6
— With optional sound absorbers with a mounting suspension height of 180 mm: αw = 0.7
— With optional sound absorbers with a mounting suspension height of 350 mm: αw = 0.9



Multifunction Exposed Ceiling AVACS Recirculated Air Example setup



Multifunction Exposed Ceiling AVACS Recirculated Air

Delights designers

The **Multifunction Exposed Ceiling AVACS Recirculated Air** is a variation on our AVACS Supply Air system. Our proven cooling ceiling technology is combined with an AVACS recirculated air fan, invisible to the user. The view from below the multifunction exposed ceiling AVACS consists of one or more perforated metal ceiling panels which are suspended on hidden fastening crossbars from the building itself. The result is a visually-appealing panel that provides specific cooling and heating outputs while at the same time maintaining a high degree of thermal comfort.

Key[2)]
1 Crossbar for panel suspension
2 Chilled water supply pipe
3 Chilled water return pipe
4 Recirculated air fan
5 Contact-cooling element
6 Perforated ceiling panels

Multifunction Exposed Ceiling AVACS Recirculated Air	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Serpentine pipework	Copper tube 12 x 0.4 mm[1)]
Contact profile	Aluminium profile, width b = 78 mm[1)] length matching that of the serpentine pipework
Fastening crossbar	Sheet metal 2.0 mm
Connection ends	For push-in fittings Ø 12 mm +0.05/-0.10 mm[1)]
Pipe spacing T	Fittings: 90° bend, inclined at approx. 20-90° to the ceiling plane[1)] 180° bend, inclined at approx. 20-90° to the ceiling plane[1)]
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	150 mm
Allowable operating pressure	6 bar[1)] (up to 16 bar possible)
Weight	approx. 10 kg/m² panel area (including water, depending on the pipe spacing) plus 1.1 kg recirculated air fan
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand, [2)] Sound absorbers (optional)

Multifunction exposed ceiling

Multifunction Exposed Ceiling with Opticlean

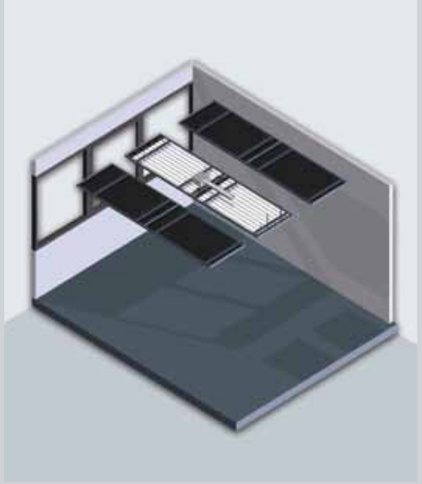
The Krantz solution that's nearly invisible

Cooling output
— Cooling output is dependent on the primary air quantity and on possible low temperature Δt_L

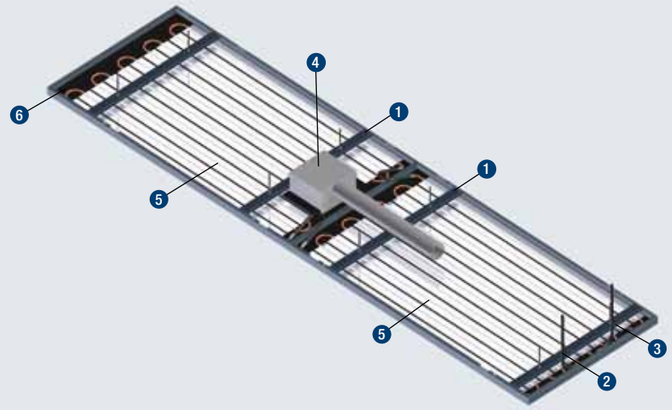
Heating output
— Heating output is dependent on the primary air quantity and on possible low temperature Δt_L

Primary air flow when using Opticlean air outlets
— Air volume flow from 90 – 430 m^3/h with a minimum installation height of < 200 mm (larger air volume flows on request)

Sound absorption ceiling panels in combination with optional air outlet and contact-cooling ceiling system
— Without optional sound absorbers with a mounting suspension height of 180 mm: $\alpha w = 0.6$
— With optional sound absorbers with a mounting suspension height of 180 mm: $\alpha w = 0.7$
— With optional sound absorbers with a mounting suspension height of 350 mm: $\alpha w = 0.9$



Multifunction Exposed Ceiling with Opticlean
Example setup



Multifunction Exposed Ceiling with Opticlean

Creating the optimum comfort

The **Multifunction Exposed Ceiling with Opticlean** is a further development on our cooling ceiling panels. Our proven cooling ceiling technology is combined with an Opticlean air outlet, invisible to the user. The view from below the multifunction exposed ceiling consists of one or more perforated metal ceiling panels which are suspended on hidden fastening crossbars from the building itself. The result is a visually-appealing panel that provides specific cooling and heating outputs while at the same time maintaining a high degree of thermal comfort.

Key[2)]
1 Crossbar for panel suspension
2 Chilled water supply pipe in combination with a contact-cooling ceiling system
3 Chilled water return pipe in combination with a contact-cooling ceiling system
4 Opticlean with connection box
5 Contact-cooling element
6 Perforated ceiling panels

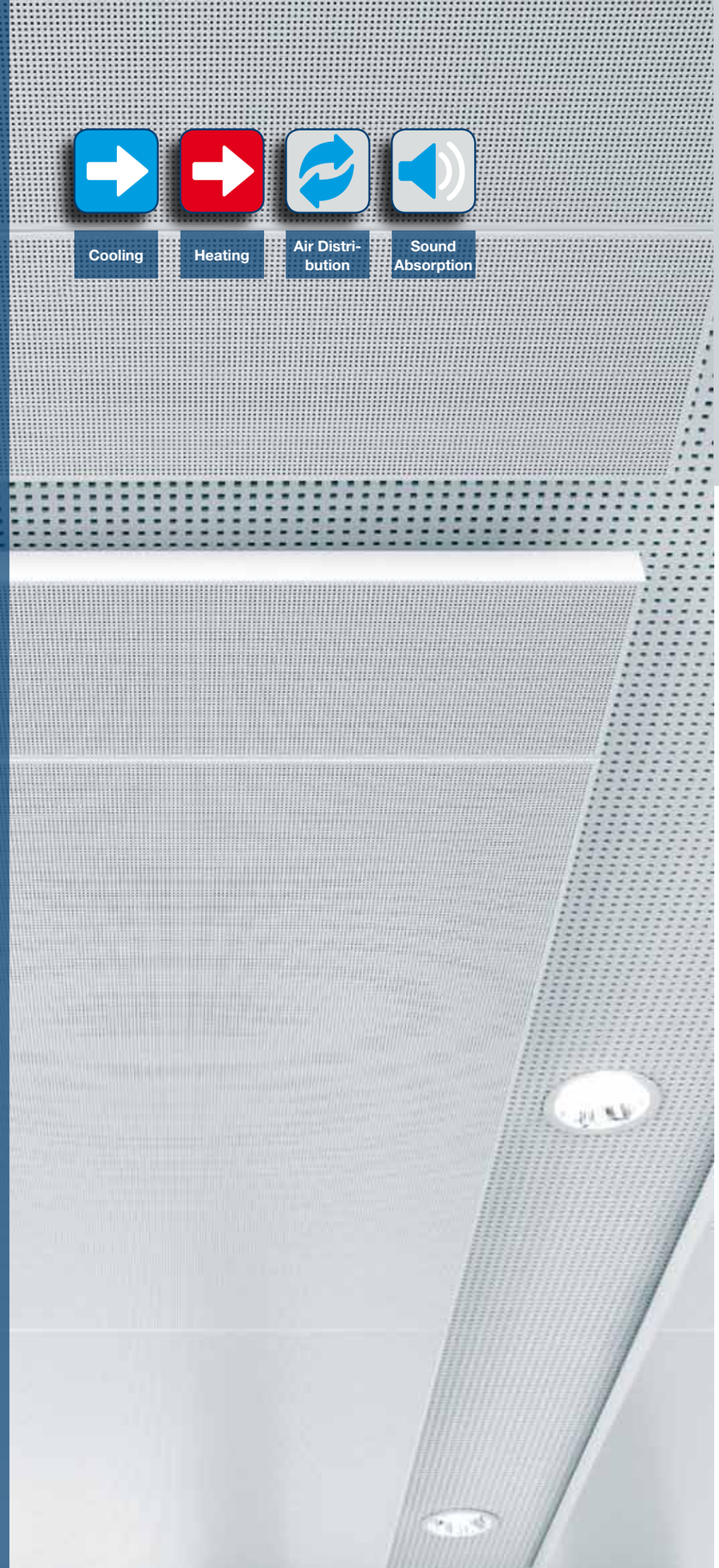
Multifunction Exposed Ceiling with Opticlean	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Serpentine pipework	Copper tube 12 x 0.4 mm[1)]
Contact profile	Aluminium profile, width b = 78 mm[1)] length matching that of the serpentine pipework
Fastening crossbar	Sheet metal 2.0 mm
Connection ends	For push-in fittings Ø 12 mm +0.05/-0.10 mm[1)]
Pipe spacing T	Fittings: 90° bend, inclined at approx. 20-90° to the ceiling plane[1)] 180° bend, inclined at approx. 20-90° to the ceiling plane[1)]
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	200 mm
Opticlean	Size 215 – 400 (other sizes open request) L: 214 – 389 mm, B: 214 – 389 mm, H: 110 – 190 mm Connection DN: 80 – 160 mm
Allowable operating pressure	6 bar[1)] (up to 16 bar possible)
Weight	approx. 10 kg/m^2 panel area without contact-cooling ceiling system, plus max. 4.6 kg Opticlean
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand, [2)] Sound absorbers (optional)

Multifunction exposed ceiling

Multifunction Exposed Ceiling with Opticlean and Fan Coil

The Krantz solution that offers a multitude of possibilities

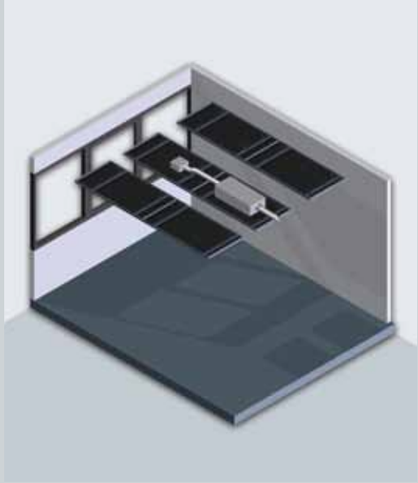


Cooling output approx. 1300 W
— Cooling output dependent on the total air volume and temperature difference between supply air and room air (-8 K)

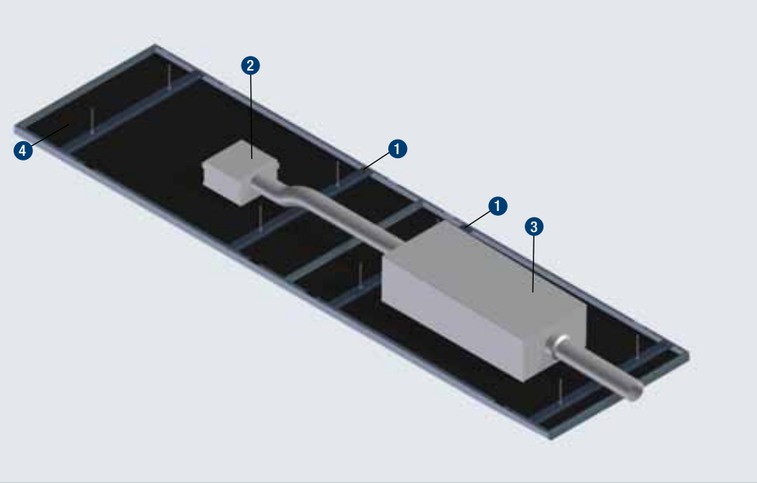
Heating output approx. 1300 W
— Heating output dependent on the total air volume and temperature difference between supply air and room air (+8 K)

Primary air quantity fan coils
— Air volume flow dependent on building emissions and the air flow rate per person. For example, for two people, approx. 150 m^3/h.

Sound absorption ceiling panels with acoustic lining
— Without optional sound absorbers with a mounting suspension height of 180 mm: $\alpha w = 0,8$
— With optional sound absorbers with a mounting suspension height of 180 mm: $\alpha w = 0,7$
— With optional sound absorbers with a mounting suspension height of 350 mm: $\alpha w = 0,9$



Multifunction Exposed Ceiling with Opticlean and Fan Coil Example setup



The above example shows the Fan Coil at the installation point (the Fan Coil has to deliver by the customer). Having the fan coil outside of the Multifunction Exposed Ceiling is also possible.

Impressed by transformability and versatlity

The **Multifunction Exposed Ceiling with Opticlean and Fan Coil** is yet another variant. The Opticlean air outlet is directly attached to a fan coil, and the two are arranged on the upper surface of the panel where, because of their flat construction, they can hardly be seen. The view from below the panel consists of one or more perforated metal ceiling panels which are suspended on hidden fastening crossbars from the building itself. The result is a visually-appealing multifunctional ceiling. This arrangement permits very specific cooling and heating outputs while ensuring a high degree of thermal comfort.

Key[2)]
1 Crossbar for panel suspension
2 Opticlean with connection box
3 Fan coil
4 Perforated ceiling panel

Multifunction Exposed Ceiling with Opticlean and Fan Coil	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Fastening crossbar	Sheet metal 2.0 mm
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	350 mm
Opticlean	Size 500 (other sizes on request) L: 491 mm, B: 491 mm, H: 282 mm Connection DN: 200 (199)
Weight	approx. 8 kg/m^2 panel area plus max. 5.7 kg Opticlean
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand, [2)] Sound absorbers (optional)

Multifunction exposed ceiling

Multifunction Exposed Ceiling KrantzCool

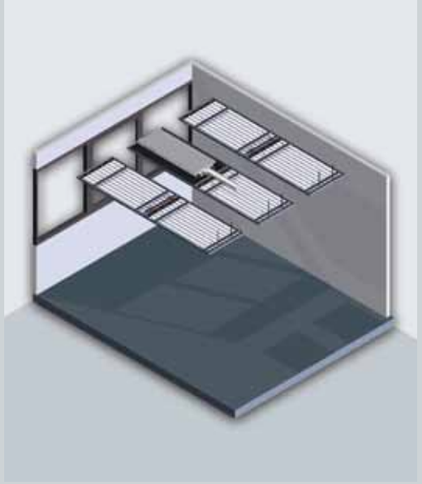
The Krantz solution that adapts to the right situation

Cooling output based on DIN EN 15116
— Cooling output on the water side up to 550 W/m based on the length of the unit for Δtw = -10 K

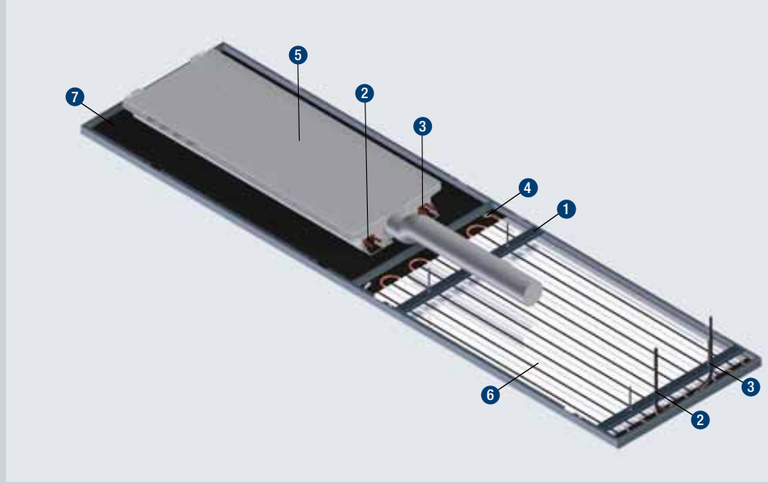
Heating output based on DIN EN 15116
— Heating output on the water side up to 330 W/m based on the panel area for Δtw = +15 K

Primary air quantities when using KrantzCool
— Air volume flow from 30 – 150 m^3/h (dependent on the length of the unit)

Sound absorption ceiling panels with acoustic lining
— Without optional sound absorbers with a mounting suspension height of 200 mm: αw = 0.8



Multifunction Exposed Ceiling KrantzCool Example setup



Multifunction Exposed Ceiling KrantzCool

Satisfaction through versatility

The **Multifunction Exposed Ceiling KrantzCool** offers a very specific heating and cooling output. The ultra-compact housing of the KrantzCool system makes it possible to mount the induction unit above the ceiling panel with a height of < 200 mm. Thanks to its proximity to the concrete ceiling, what is known as the Coanda effect can be utilized when supply air is blown out. This results in a horizontal airflow under the concrete ceiling, which, in turn, ensures that air speeds are kept low in occupied areas.

Key[2)]
1 Crossbar for panel suspension
2 Chilled water supply pipe
3 Chilled water return pipe
4 Primary air connection
5 KrantzCool
6 Contact-cooling ceiling element, optional
7 Perforated ceiling panel

Multifunction Exposed Ceiling KrantzCool	
Ceiling panel	Sheet metal s = max. 0.8 mm, perforated, hole Ø 2.5 mm, approx. 16 % open area, powder coated
Fastening crossbar	Sheet metal 2.0 mm
Standard nominal length L	1500 mm – 5500 mm[1)]
Standard nominal width B	1150 mm[1)]
Nominal height H	50 mm[1)]
Minimum suspension height h_{min}	180 mm
KrantzCool	L: 1500 – 2700 mm, B: 560 mm, H: 155 mm
Water connection KrantzCool	2 to 4 connections DN 15 mm, one-sided
Primary air connection	DN 125 mm
Allowable operating pressure	6 bar[1)] (up to 16 bar possible)
Weight	approx. 8 kg/m^2 panel area plus max. 16 kg/m KrantzCool
Total weight	Dependent on the ceiling design, services, etc.

[1)] Other types/values on demand, [2)] Sound absorbers (optional)

Multifunction exposed ceiling

Multifunction Exposed Ceiling in the optimum light

Cooling | Heating | Air Distri-bution | Sound Absorption

... whether with suspended linear lamps for direct or indirect lighting, or

... with shaded lamps for direct or indirect lighting, or

... with ambient lighting, or

... with built-in lamps for direct lighting, or

... with floor lamps for direct and indirect lighting, etc.

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