



## Krantz

Multifunction Exposed Ceiling  
Solutions with System

Cooling and Heating Systems

*Krantz*

# 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



Single

Administration



**and open-plan offices**

**Common rooms**

**Meeting rooms**

**Foyers and waiting areas**

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# Acoustic Panels

## The Krantz solution that is versatile



Cooling



Heating



Air Distribution



Sound Absorption

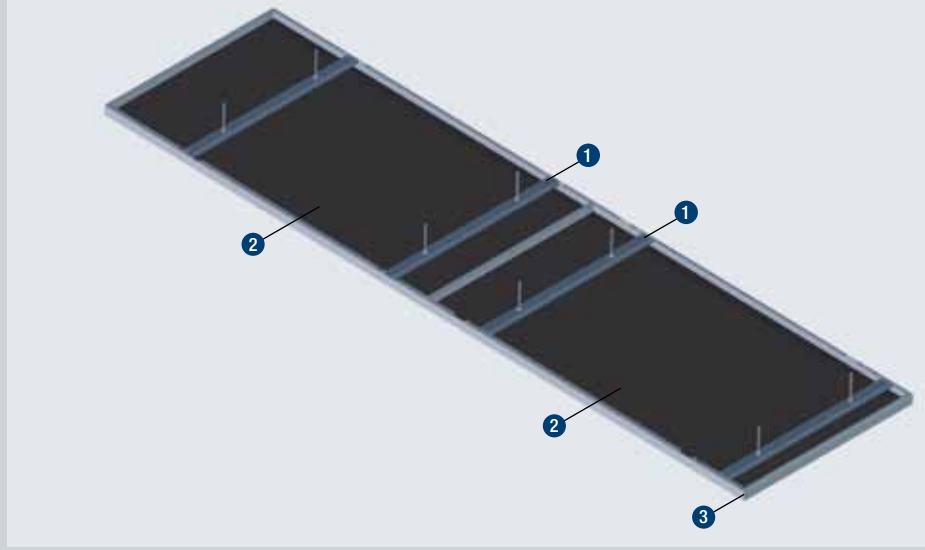


### Sound absorption ceiling panels with acoustic lining

- 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 $s = \text{max. } 0.8 \text{ mm}$ , perforated, hole $\text{Ø } 2.5 \text{ mm}$ , 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 <sup>1)</sup>
Standard nominal width B	1150 mm <sup>1)</sup>
Nominal height H	50 mm <sup>1)</sup>
Minimum suspension height $h_{\text{min}}$	150 mm
Weight	approx. 8 kg/m <sup>2</sup> panel area
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand



**Acoustic panels**

# Multifunction Exposed Ceil- ing as Radia- tion Cooling and Heating Panel

## The Krantz solu- tion that pro- vides flexibility



### Cooling output based on DIN EN 14240

- Cooling output on the water side up to  $118 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = -10 \text{ K}$



### Heating output based on DIN EN 14037

- Heating output on the water side up to  $160 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = +15 \text{ K}$



### 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:  $\alpha_w = 0.6$
- 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:  $\alpha_w = 0.9$



Cooling



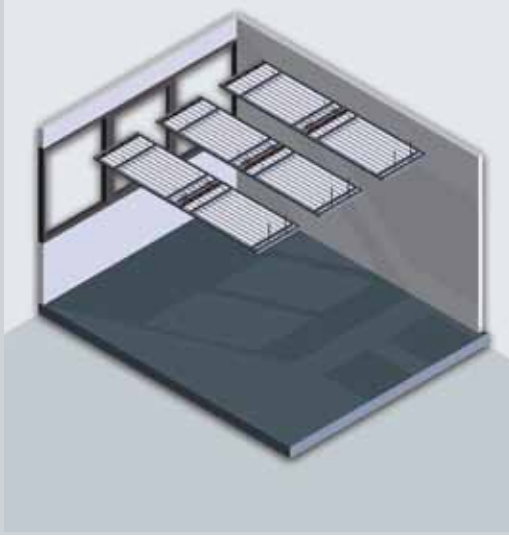
Heating



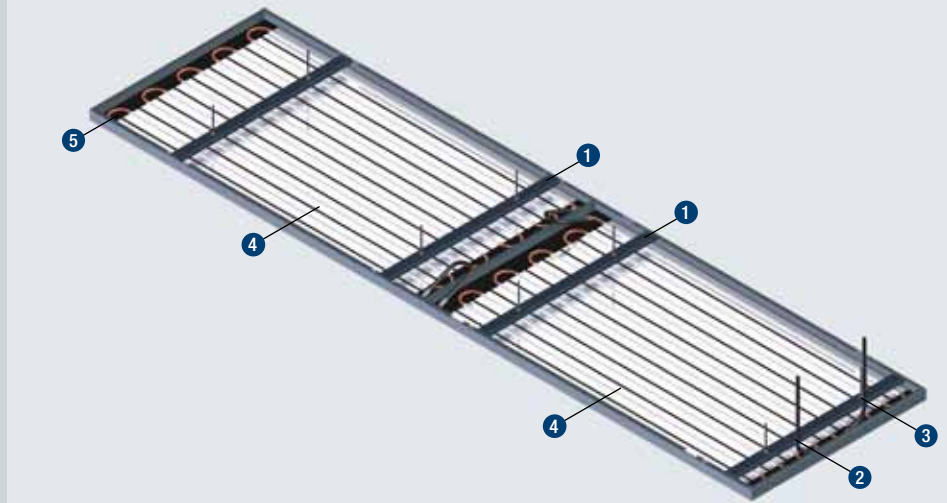
Air Distri-  
bution



Sound  
Absorption



**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 $s = \text{max. } 0.8 \text{ mm}$ , perforated, hole $\text{Ø } 2.5 \text{ mm}$ , approx. 16 % open area, powder coated
Serpentine pipework	Copper tube $12 \times 0.4 \text{ mm}^{1)}$
Contact profile	Aluminium profile, width $b = 78 \text{ mm}^{1)}$ length matching that of the serpentine pipework
Fastening crossbar	Sheet metal $2.0 \text{ mm}$
Connection ends	For push-in fittings $\text{Ø } 12 \text{ mm } +0.05/-0.10 \text{ mm}^{1)}$
Pipe spacing T	Fittings: $90^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup> $180^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup>
Standard nominal length L	$1500 \text{ mm} - 5500 \text{ mm}^{1)}$
Standard nominal width B	$1150 \text{ mm}^{1)}$
Nominal height H	$50 \text{ mm}^{1)}$
Minimum suspension height $h_{\text{min}}$	$150 \text{ mm}$
Allowable operating pressure	$6 \text{ bar}^{1)}$ (up to 16 bar possible)
Weight	approx. $10 \text{ kg/m}^2$ panel area (including water, depending on the pipe spacing)
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand



**Multifunction exposed ceiling**

# Multifunction Exposed Ceiling AVACS Supply Air

## The Krantz solution that does much more



Cooling



Heating



Air Distri-  
bution



Sound  
Absorption



### Cooling output based on DIN EN 14240

- Cooling output on the water side up to  $140 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = -10 \text{ K}$



### Heating output based on DIN EN 14037

- Heating output on the water side up to  $190 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = +15 \text{ K}$



### Primary air volume when using the AVACS air outlet

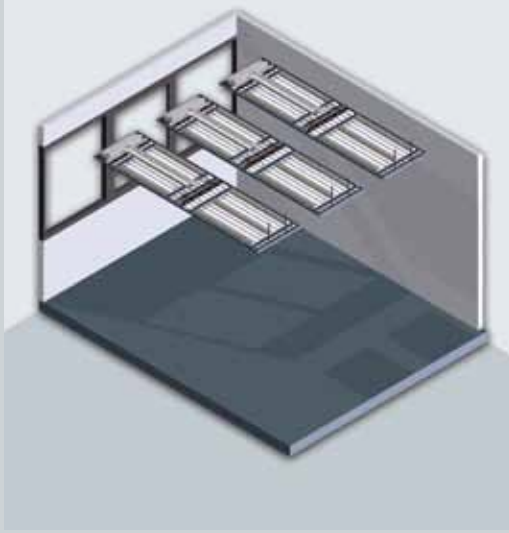
- Air flow volume from  $30 - 120 \text{ m}^3/\text{h}$



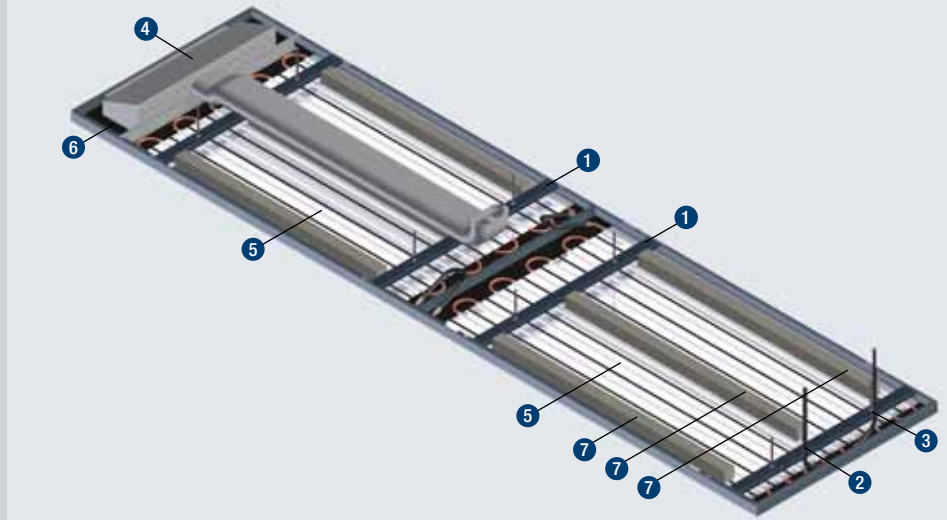
### Sound absorption ceiling panels in combination with a contact-cooling ceiling system

- Without optional sound absorbers with a mounting suspension height of  $180 \text{ mm}$ :  $\alpha_w = 0.6$
- With optional sound absorbers with a mounting suspension height of  $180 \text{ mm}$ :  $\alpha_w = 0.7$
- With optional sound absorbers with a mounting suspension height of  $350 \text{ mm}$ :  $\alpha_w = 0.9$





**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 $s = \max. 0.8 \text{ mm}$ , perforated, hole $\varnothing 2.5 \text{ mm}$ , approx. 16 % open area, powder coated
Serpentine pipework	Copper tube $12 \times 0.4 \text{ mm}^{1)}$
Contact profile	Aluminium profile, width $b = 78 \text{ mm}^{1)}$ length matching that of the serpentine pipework
Fastening crossbar	Sheet metal 2.0 mm
Connection ends	For push-in fittings $\varnothing 12 \text{ mm} +0.05/-0.10 \text{ mm}^{1)}$
Pipe spacing T	Fittings: 90° bend, inclined at approx. 20-90° to the ceiling plane <sup>1)</sup> 180° bend, inclined at approx. 20-90° to the ceiling plane <sup>1)</sup>
Standard nominal length L	1500 mm – 5500 mm <sup>1)</sup>
Standard nominal width B	1150 mm <sup>1)</sup>
Nominal height H	50 mm <sup>1)</sup>
Minimum suspension height $h_{\min}$	150 mm
Allowable operating pressure	6 bar <sup>1)</sup> (up to 16 bar possible)
Weight	approx. 10 kg/m <sup>2</sup> 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.

<sup>1)</sup> 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



Heating



Air Distribution



Sound Absorption



#### Cooling output based on DIN EN 14240

- Cooling output on the water side up to  $140 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = -10 \text{ K}$



#### Heating output based on DIN EN 14037

- Heating output on the water side up to  $190 \text{ W/m}^2$  based on the panel area for  $\Delta t_w = +15 \text{ K}$



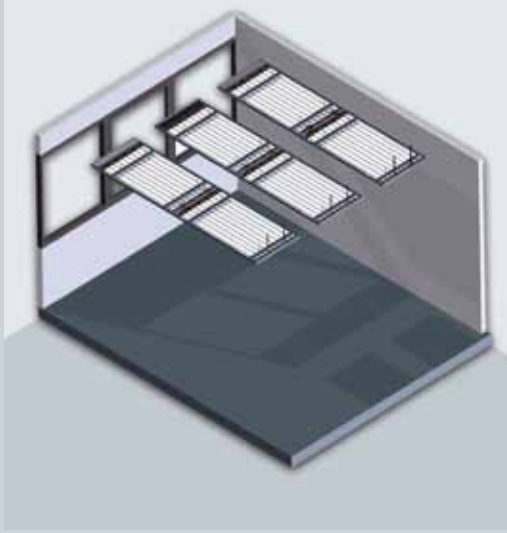
#### AVACS-Recirculated Air Variants

- Air flow volume from  $30 - 120 \text{ m}^3/\text{h}$

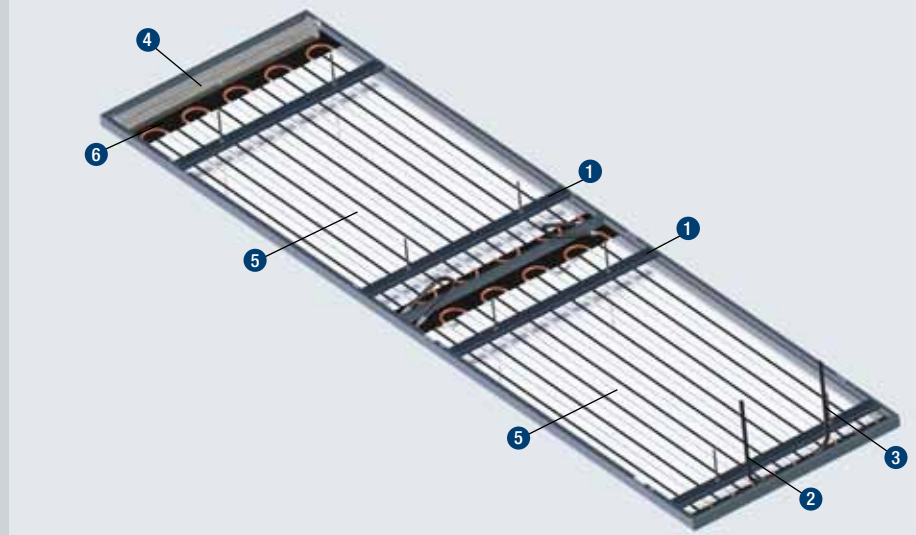


#### Sound absorption ceiling panels in combination with a contact-cooling ceiling system

- Without optional sound absorbers with a mounting suspension height of  $180 \text{ mm}$ :  $\alpha_w = 0.6$
- With optional sound absorbers with a mounting suspension height of  $180 \text{ mm}$ :  $\alpha_w = 0.7$
- With optional sound absorbers with a mounting suspension height of  $350 \text{ mm}$ :  $\alpha_w = 0.9$



**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<sup>2)</sup>

- 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 $s = \text{max. } 0.8 \text{ mm}$ , perforated, hole $\text{Ø } 2.5 \text{ mm}$ , approx. 16 % open area, powder coated
Serpentine pipework	Copper tube $12 \times 0.4 \text{ mm}^{1)}$
Contact profile	Aluminium profile, width $b = 78 \text{ mm}^{1)}$ length matching that of the serpentine pipework
Fastening crossbar	Sheet metal $2.0 \text{ mm}$
Connection ends	For push-in fittings $\text{Ø } 12 \text{ mm } +0.05/-0.10 \text{ mm}^{1)}$
Pipe spacing T	Fittings: $90^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup> $180^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup>
Standard nominal length L	$1500 \text{ mm} - 5500 \text{ mm}^{1)}$
Standard nominal width B	$1150 \text{ mm}^{1)}$
Nominal height H	$50 \text{ mm}^{1)}$
Minimum suspension height $h_{\text{min}}$	$150 \text{ mm}$
Allowable operating pressure	$6 \text{ bar}^{1)}$ (up to 16 bar possible)
Weight	approx. $10 \text{ kg/m}^2$ panel area (including water, depending on the pipe spacing) plus $1.1 \text{ kg}$ recirculated air fan
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand, <sup>2)</sup> Sound absorbers (optional)

**Multifunction exposed ceiling**



# Multifunction Exposed Ceiling with Opticlean

## The Krantz solution that's nearly invisible



Cooling



Heating



Air Distri-  
bution



Sound  
Absorption



### Cooling output

- Cooling output is dependent on the primary air quantity and on possible low temperature  $\Delta t_L$



### Heating output

- Heating output is dependent on the primary air quantity and on possible low temperature  $\Delta t_L$



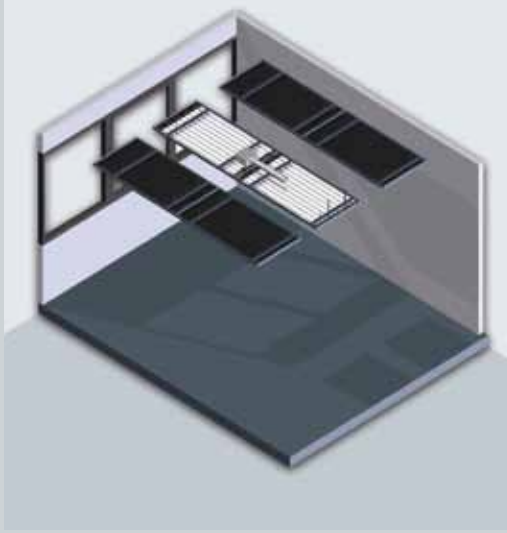
### Primary air flow when using Opticlean air outlets

- Air volume flow from 90 – 430 m<sup>3</sup>/h with a minimum installation height of < 200 mm (larger air volume flows on request)

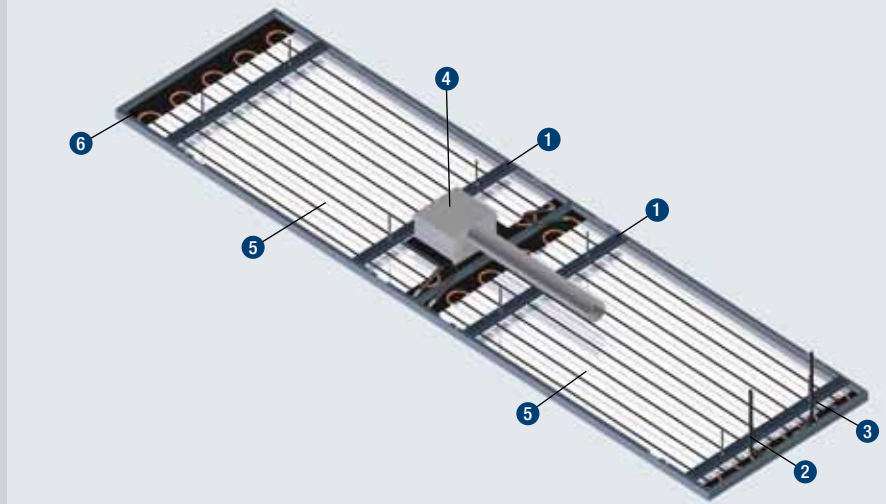


### Sound absorption ceiling panels in combination with optional air outlet and contact-cooling ceiling system

- 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<sup>2)</sup>

- 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 $s = \max. 0.8 \text{ mm}$ , perforated, hole $\varnothing 2.5 \text{ mm}$ , approx. 16 % open area, powder coated
Serpentine pipework	Copper tube $12 \times 0.4 \text{ mm}^{1)}$
Contact profile	Aluminium profile, width $b = 78 \text{ mm}^{1)}$ length matching that of the serpentine pipework
Fastening crossbar	Sheet metal $2.0 \text{ mm}$
Connection ends	For push-in fittings $\varnothing 12 \text{ mm} +0.05/-0.10 \text{ mm}^{1)}$
Pipe spacing T	Fittings: $90^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup> $180^\circ$ bend, inclined at approx. $20-90^\circ$ to the ceiling plane <sup>1)</sup>
Standard nominal length L	$1500 \text{ mm} - 5500 \text{ mm}^{1)}$
Standard nominal width B	$1150 \text{ mm}^{1)}$
Nominal height H	$50 \text{ mm}^{1)}$
Minimum suspension height $h_{\min}$	$200 \text{ mm}$
Opticlean	Size 215 – 400 (other sizes open request) L: $214 - 389 \text{ mm}$ , B: $214 - 389 \text{ mm}$ , H: $110 - 190 \text{ mm}$ Connection DN: $80 - 160 \text{ mm}$
Allowable operating pressure	$6 \text{ bar}^{1)}$ (up to 16 bar possible)
Weight	approx. $8 \text{ kg/m}^2$ panel area without contact-cooling ceiling system, plus max. 4.6 kg Opticlean
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand, <sup>2)</sup> Sound absorbers (optional)



**Multifunction exposed ceiling**

# Multifunction Exposed Ceiling with Opticlean and Fan Coil

## The Krantz solution that offers a multitude of possibilities



Cooling



Heating



Air Distribution



Sound Absorption



### 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)



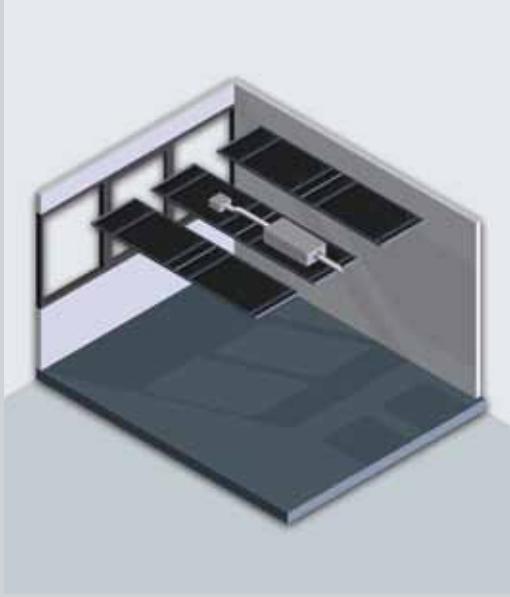
### Primary air quantity fan coils

- Air volume flow dependent on building emissions and the air flow rate per person. For example, for two people, approx. 150 m<sup>3</sup>/h.

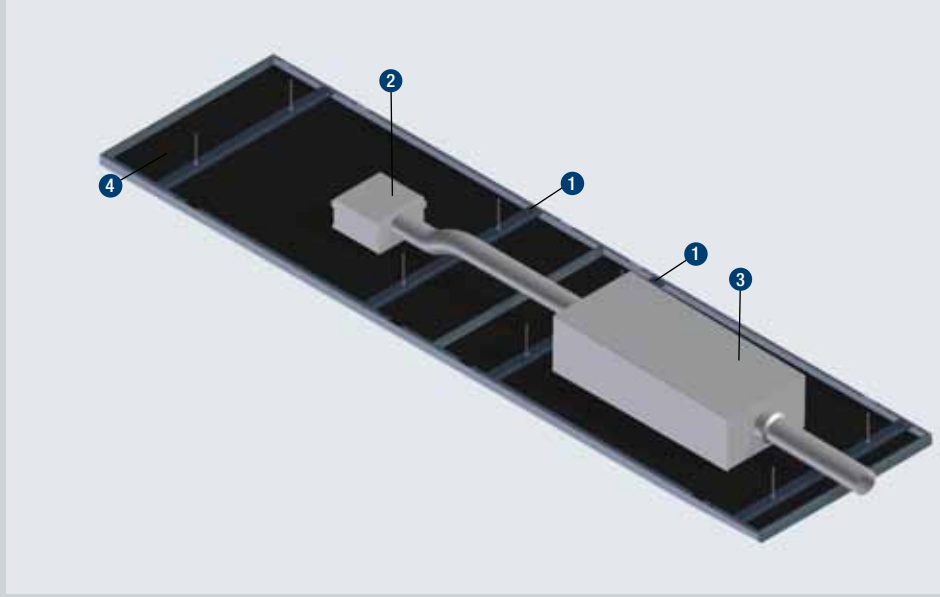


### Sound absorption ceiling panels

- 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.  
Having the fan coil outside of the Multifunction Exposed Ceiling is also possible.

## Impressed by transformability and versatility

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<sup>2)</sup>

- 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 $s = \text{max. } 0.8 \text{ mm}$ , perforated, hole $\text{Ø } 2.5 \text{ mm}$ , approx. 16 % open area, powder coated
Fastening crossbar	Sheet metal 2.0 mm
Standard nominal length L	1500 mm – 5500 mm <sup>1)</sup>
Standard nominal width B	1150 mm <sup>1)</sup>
Nominal height H	50 mm <sup>1)</sup>
Minimum suspension height $h_{\text{min}}$	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 <sup>2</sup> panel area plus max. 5.7 kg Opticlean
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand, <sup>2)</sup> Sound absorbers (optional)



**Multifunction exposed ceiling**

# Multifunction Exposed Ceiling KrantzCool

## The Krantz solution that adapts to the right situation



Cooling



Heating



Air Distri-  
bution



Sound  
Absorption



### 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  $\Delta t_w = -10$  K



### Heating output based on DIN EN 15116

- Heating output on the water side up to 330 W/m<sup>2</sup> based on the panel area for  $\Delta t_w = +15$  K



### Primary air quantities when using KrantzCool

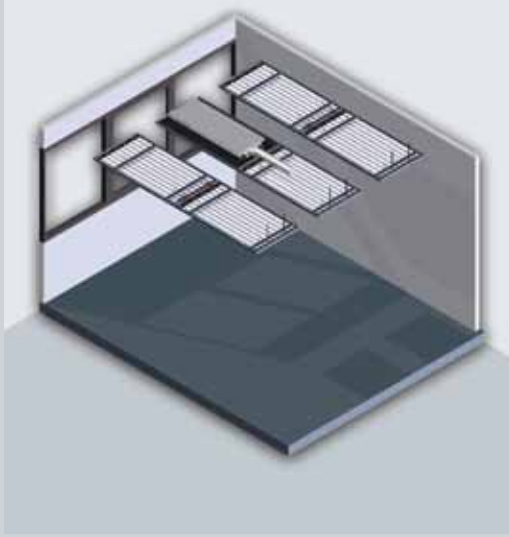
- Air volume flow from 30 – 180 m<sup>3</sup>/h (dependent on the length of the unit)



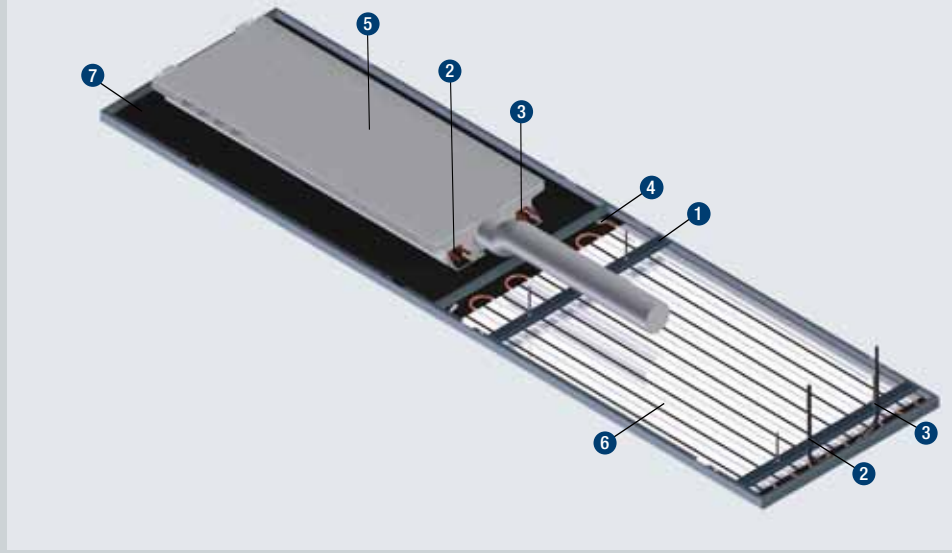
### Sound absorption ceiling panels with acoustic lining

- Without optional sound absorbers with a mounting suspension height of 200 mm:  $\alpha_w = 0.8$





**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 air-flow under the concrete ceiling, which, in turn, ensures that air speeds are kept low in occupied areas.

### Key<sup>2)</sup>

- 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 <sup>1)</sup>
Standard nominal width B	1150 mm <sup>1)</sup>
Nominal height H	50 mm <sup>1)</sup>
Minimum suspension height h <sub>min</sub>	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 <sup>1)</sup> (up to 16 bar possible)
Weight	approx. 8 kg/m <sup>2</sup> panel area plus max. 16 kg KrantzCool
Total weight	Dependent on the ceiling design, services, etc.

<sup>1)</sup> Other types/values on demand, <sup>2)</sup> 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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The logo for Krantz GmbH, featuring the word "Krantz" in a stylized, blue, cursive script font.