

## Krantz

Opticlean®  
Ceiling air outlet for installation  
in metal ceilings

Air distribution systems

*Krantz*



# Krantz Opticlean ceiling air outlet

## Strikingly indiscreet

Thanks to its adoption properties, the Opticlean offers architects and planners a high freedom of design.

### Reference list excerpt

- 240 Blackfriars Road, London
- The Shard, London
- 45 Cannon Street, London
- Kingdom Street, London
- St. James Market, London
- 12-14 New Fetter Lane, London
- K + L Gates, London
- 39 Victoria Street, London
- 12-15 Finsbury Circus Offices, London
- Porsche, Aberdeen (Scotland)
- Telekom Call Center, Düsseldorf
- Deutsche Telekom, Hamburg
- Leica Camera, Wetzlar
- Spreedreieck, Berlin
- WinX Tower, Frankfurt am Main
- Amprion, Dortmund
- BASF, Ludwigshafen
- Mercedes-Benz factory, Untertürkheim
- Technical University, Eindhoven
- Court building, Amsterdam

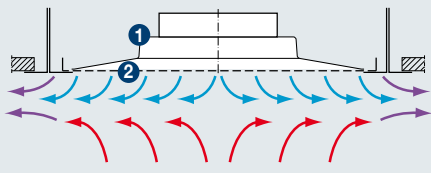




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- 1 Square air distribution element
- 2 Perforated faceplate

Principle sketch of the mode of operation

Principle sketch of the mode of operation, air flow pattern made visible by smoke

## Opticlean – Enables room for design

### Metal ceilings with Opticlean air routing

In modern buildings, metal ceilings carry various indoor installations. Ceiling penetrations such as lamps, sprinkler or ventilation systems influence the appearance of the ceiling significantly.

The Opticlean is an air outlet mounted concealed where the airflow is conducted through the perforation of the metal cassette and cannot be seen from the room.

### Benefits of Opticlean

- Opticlean can be integrated concealed in ceiling systems
- No soiling of the ceiling thanks to the innovative air routing
- Radial, horizontal jet propagation with high thermal comfort
- The air discharge can be adapted to the room geometry by covers
- Eight different metal ceiling perforations available
- Seven Opticlean design sizes
- Room heights 2.5 to 4.5 m
- Can also be used as exhaust air inlet

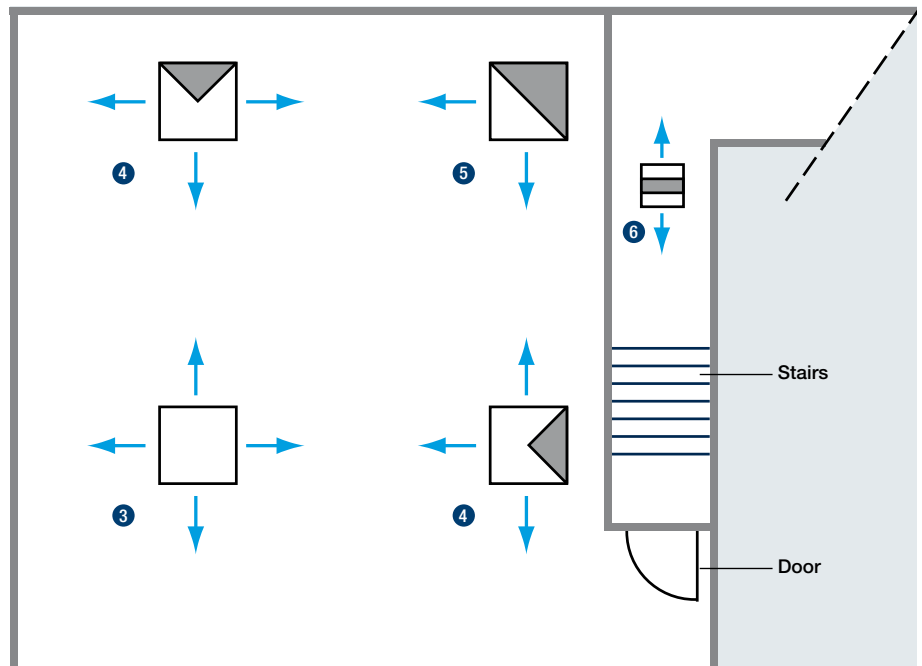
### Key

- 3 Without cover
- 4 3-way discharge
- 5 2-way asymmetric discharge
- 6 2-way symmetric discharge

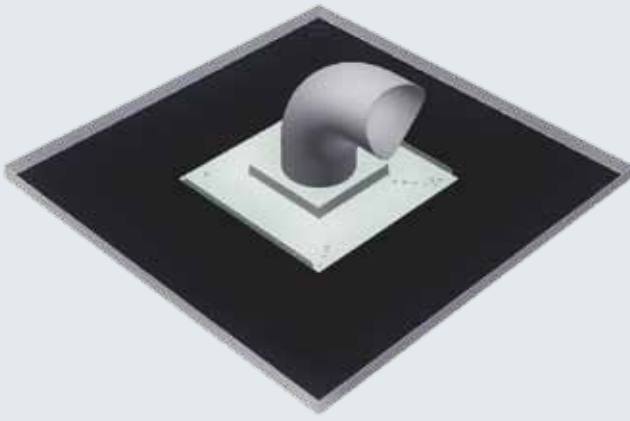
### Implementation recommendations for ceilings with concealed air outlet with minimum air outlet centre spacing

When planning, the centre spacing between the individual Opticlean elements must be considered. For arrangement close to a wall, the half of the distance must be maintained.

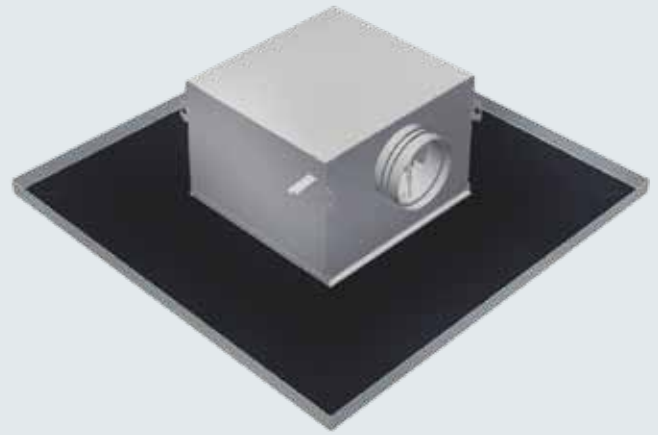
If the minimum distances cannot be maintained for construction reasons, the air outlets can be fitted with additional covers. As a result, the air outlet volumetric flow reduces accordingly by 25% or 50%.



Principle sketch, Opticlean with covers to adapt the discharge direction



Opticlean OC-Q with hose connection



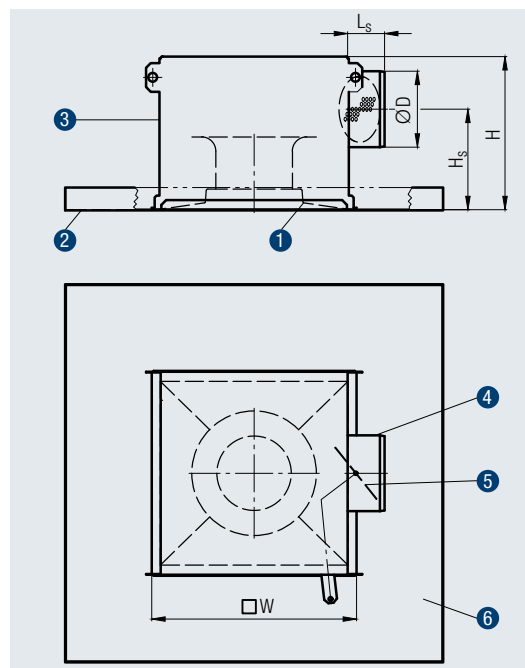
Opticlean OC-Q with flat connection box

## Seven design sizes and eight perforations are available

### Design sizes and performance

Depending on the room, ventilation requirements and cassette format, seven different Opticlean design sizes are available. These have been tested and approved with eight different perforations.

Design size	B	Ø D	H	H <sub>s</sub>	L <sub>s</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]
215	214	79	160	105	38.6
270	265	99	182	115	38.6
330	321	124	207	127.5	38.6
400	391	159	242	145	38.6
500	491	199	282	165	38.6
600	591	249	332	190	58.6
625	616	249	332	190	58.6



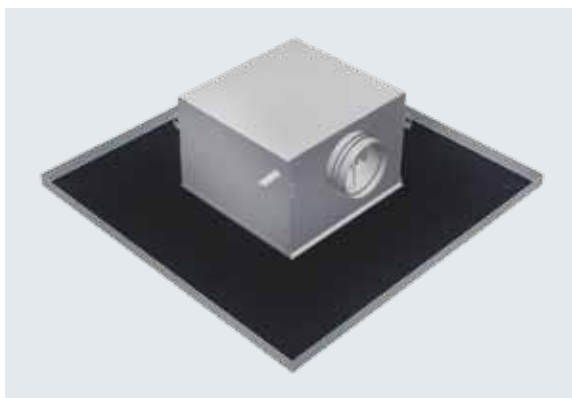
### Key

- 1 Opticlean air distribution element
- 2 Perforated faceplate
- 3 Connection box
- 4 Connection spigot
- 5 Volume flow damper
- 6 Cover (made of acoustic fleece)



# Dimensioning diagram for eight perforations

Valid for Opticlean with flat connection box



Cooling load up to 100 W/m<sup>2</sup>  
 Draught rate DR = 15 %  
 Room temperature max. 26 °C  
 Discharge height 2.7 – 3.0 m }  $u_R \leq 0.2$  m/s

### Key

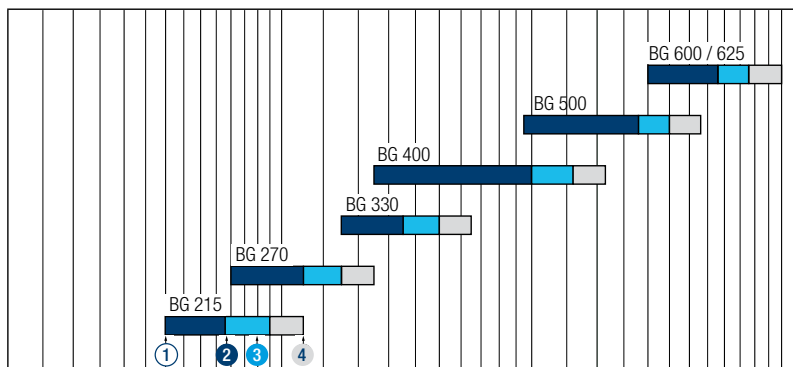
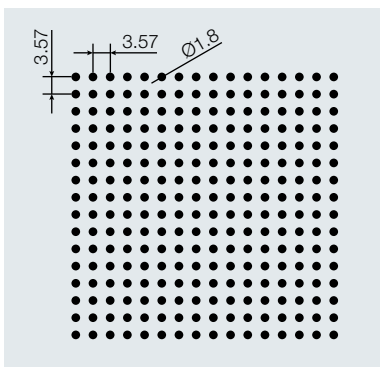
- ① Lower value:  $\triangleq \dot{V}_{\min}$  [do not fall below]
- ② Average value:  $\triangleq \dot{V}$  at 35 dB(A) [single office]
- ③ Upper value:  $\triangleq \dot{V}$  at 40 dB(A) [open-plan office]
- ④ Max. value:  $\triangleq \dot{V}$  at 45 dB(A) [break room, WC, cafeteria]

Noise data are sound power levels in dB with A rating

## 1820

Ø 1.8 mm  
 Number of holes  
 20 %

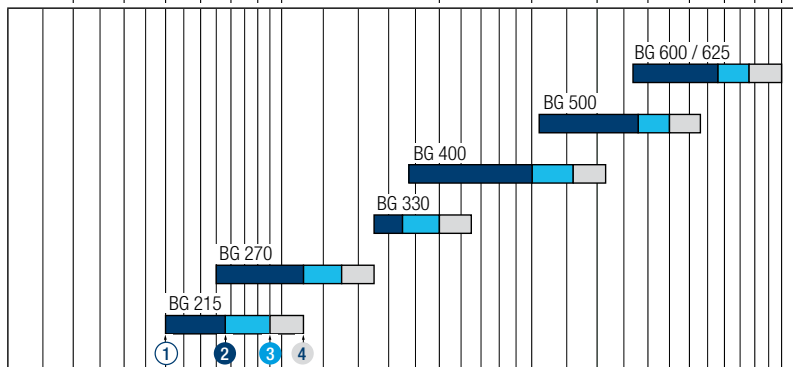
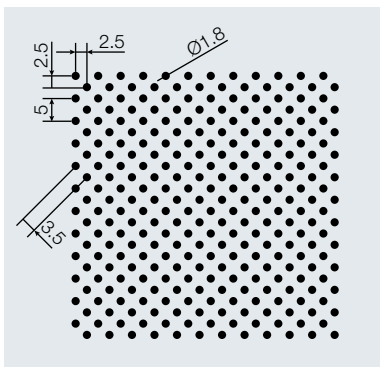
Rg 1.8 – 3.57  
 (acc. to DIN 24041)



## 1821

Ø 1.8 mm  
 Number of holes  
 20 %

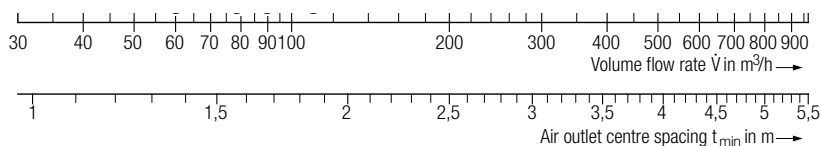
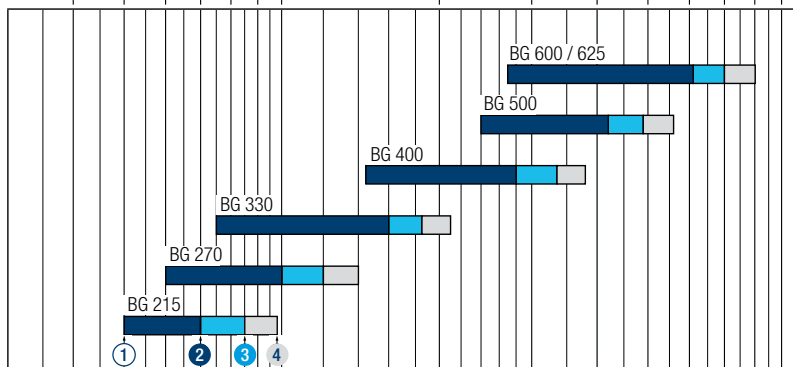
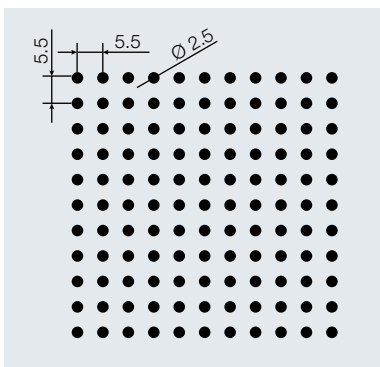
Rd 1.8 – 3.5  
 (acc. to DIN 24041)



## 2516

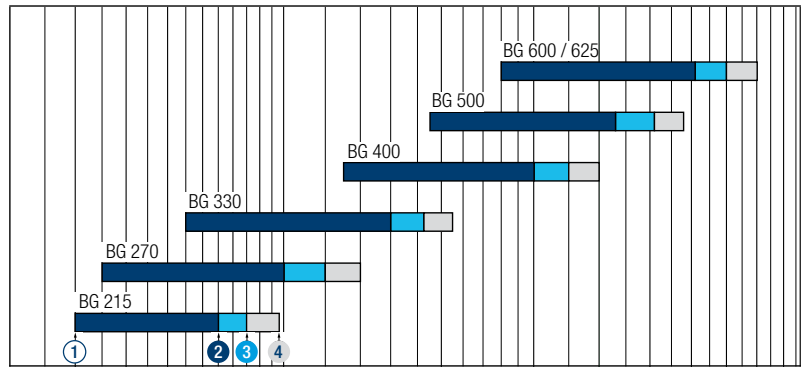
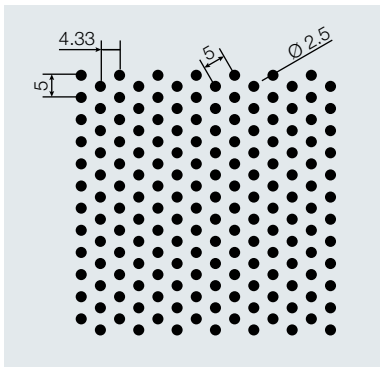
Ø 2.5 mm  
 Number of holes  
 16 %

Rg 2.5 – 5.5  
 (acc. to DIN 24041)



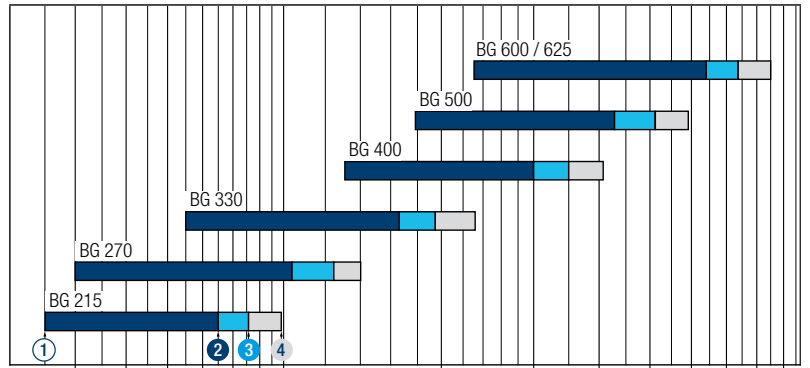
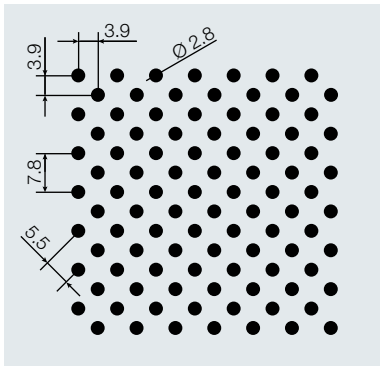
**2523**

Ø 2.5 mm  
 Number of holes  
 23 %  
 Rv 2.5 – 5.0  
 (acc. to DIN 24041)



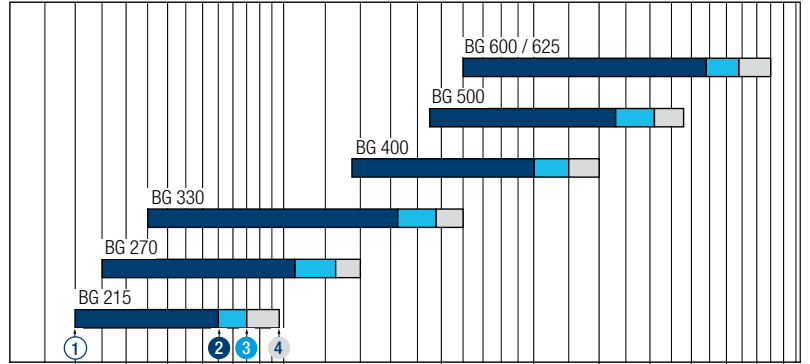
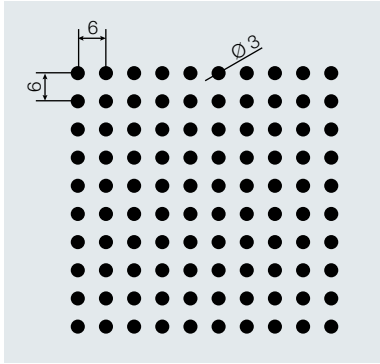
**2820**

Ø 2.8 mm  
 Number of holes  
 20 %  
 Rd 2.8 – 5.5  
 (acc. to DIN 24041)



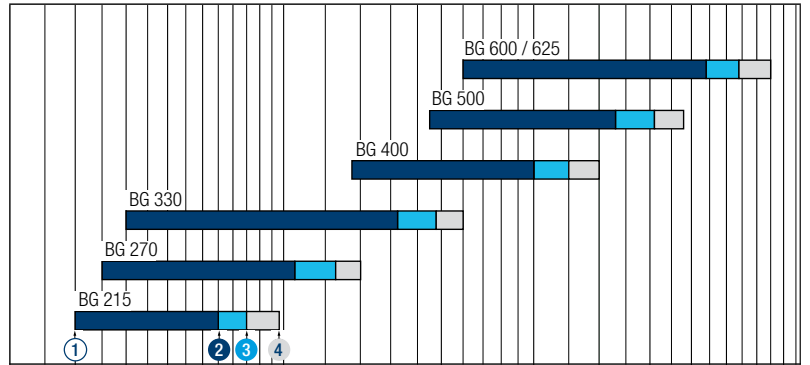
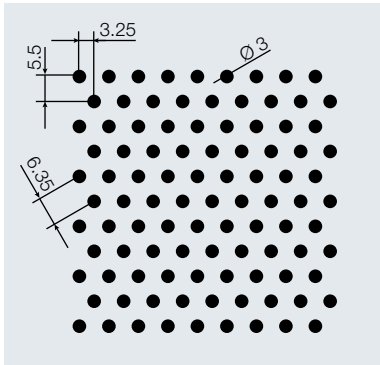
**320g**

Ø 3 mm  
 Number of holes  
 20 %  
 Rg 3 – 6  
 (acc. to DIN 24041)



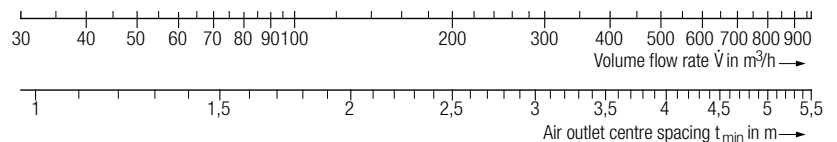
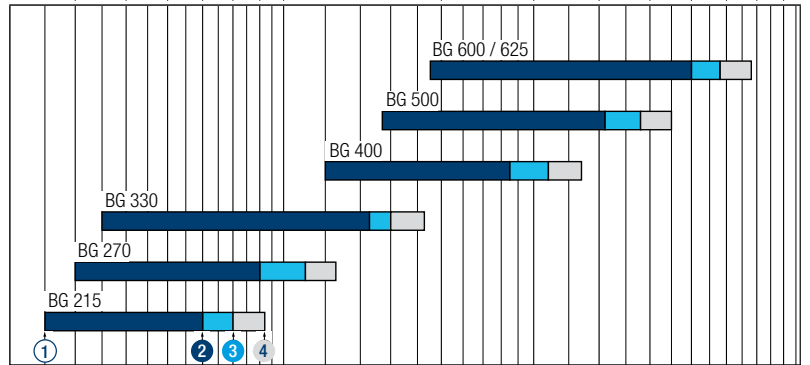
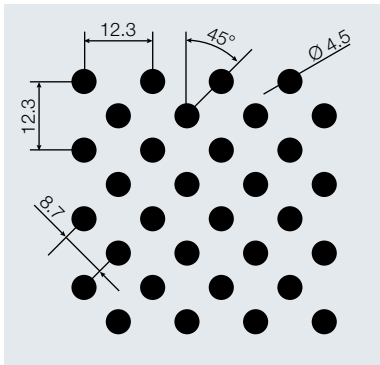
**320v**

Ø 3 mm  
 Number of holes  
 20 %  
 Rv 3 – 6.35  
 (acc. to DIN 24041)



**4522**

Ø 4.5 mm  
 Number of holes  
 22 %  
 Rd 4.5 – 8.7  
 (acc. to DIN 24041)





**Demonstration in the Krantz research and development centre in Aachen, Germany**

## Opticlean in closed metal ceilings or ceiling tiles

### Combination of Opticlean with central HVAC system

The connection to the supply air duct network is carried out either directly using a flexible hose or with a connecting box.

### Combination of Opticlean and fan coil

The Opticlean and fan coil are arranged on the top side of both the metal ceiling tile or the exposed ceiling.

### Combination of Opticlean and chilled ceiling

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.

### Test bench for all commercially available ceiling tiles

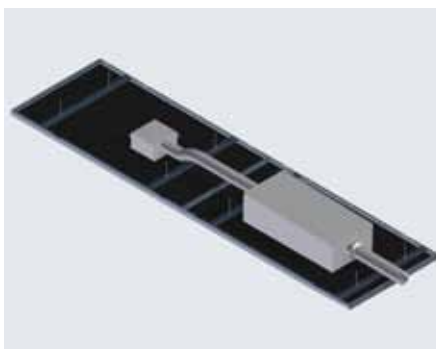
In their research and development centre, Krantz has developed a special test bench for the Opticlean.

In the test bench, all commercially available ceiling tile sizes can be tested for their suitability with all Opticlean variants.

### The test bench has the following features:

- Supply air volume flow rate from 35 to 850 m<sup>3</sup>/h
- Measuring technology for pressure loss and air velocity
- Supply air temperature can be set in the range between 12 and 35 °C
- Smoke generators to make the discharge pattern visible
- Inspection window to taking photos and making videos

More special test rooms are available for further project-related room discharge examinations.



**Multifunction exposed ceiling with Opticlean and fan coil**



**Multifunction exposed ceiling with Opticlean**



**Multifunction exposed ceiling in an office**





**Metal ceiling system with Opticlean**

## Opticlean – Well suited for individual demands

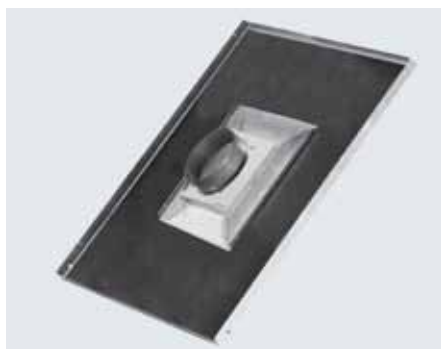
Special solutions adapted to the ceiling system exist for many established metal cassette ceilings with clamp fastening or insertion ceiling tiles. However, deviating flow-related or acoustic data may result.

Depending on the perforation of the ceiling tile selected, we recommended the use of additional flow stabilisers.

**Krantz has developed different solutions for this purpose.**

**Use our expertise for you project!**

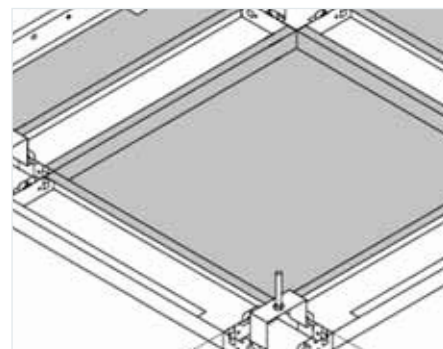
**Please contact us!**



**Air distribution element with perforated ceiling tile**



**Air distribution element fixed using clamping profiles on the ceiling tile**



**Example of a ceiling system – individual solutions possible**



Test setup in the room flow laboratory



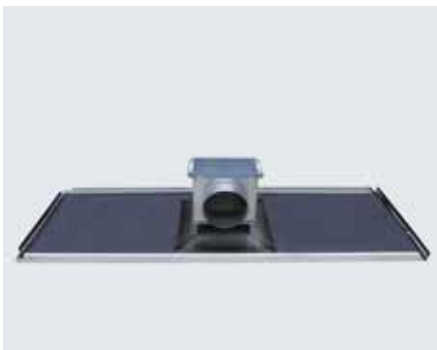
## Customised solutions are possible

As standard, Opticlean air outlets are intended for use with ceiling tiles with a sheet metal thickness of 0.6 mm and a diagonally offset round perforation with 2.8 mm hole pattern. In their air-related function, they have been optimised for use in these ceiling tiles. Generally, they can be used on many other ceiling tiles, too.

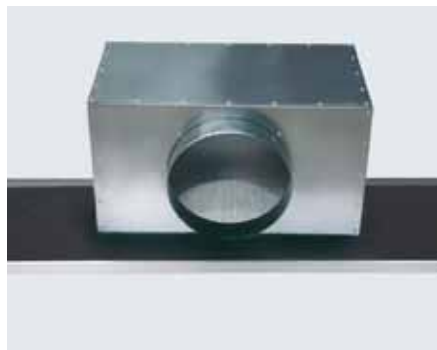
There are adapted solutions for most conventional metal ceiling tiles. Special design sizes are also available for specific dimensions of the ceiling tiles.

By means of measurements in our research and development centre, we guarantee safe and individual solutions for all requirements in commercial applications.

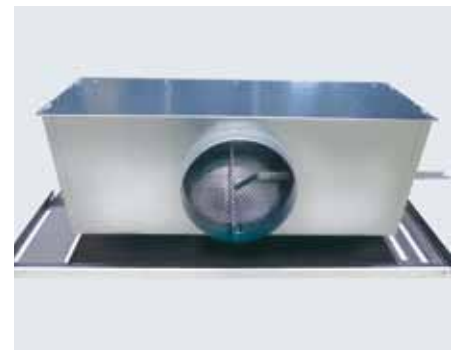
### Opticlean OC-Q



Connection box as single element



Connection box as double element



Connection box as threefold element



## The solution for comfortable indoor air conditions



The Opticlean air outlet is being used more frequently by planners and architects world wide as, compared with conventional ceiling air outlets, it convince in its aesthetic as well as in its functional benefits.





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