SPECTRA M-C

Radiant metal ceiling with magnetic technology

QUICK FACTS

- Thermal comfort according to EN ISO 7730
- High heating & cooling capacity
- Active area ratio: 75 %
- Advanced sound absorption values (class B)
- Ceiling panels and activation coils are connected using magnetic technology
- Tool-free fitting and removal of the coils
- Fully recyclable by material type
- Existing metal ceilings can be retrofitted with the SPECTRA M magnetic system
- Can be combined with AQUILO, VENTAMIC
- Integration of various components
  - Different lighting designs
  - Sprinklers
  - Smoke detectors
  - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 83 W/m² (8 K), EN 14240:2004	Up to 87 W/m² (15 K), EN 14037:2016

Acoustics
αw: up to 0,85

BARCOL-AIR by Swegon

Technical description

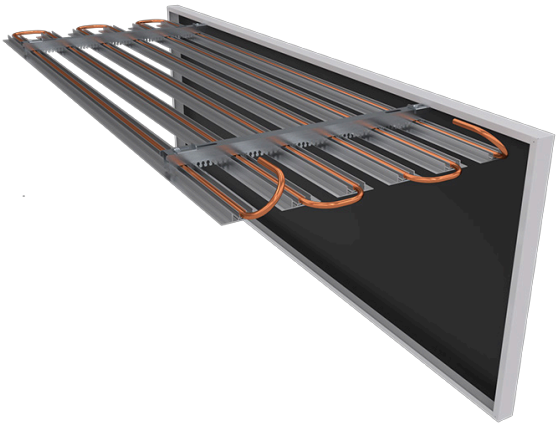
General

The SPECTRA M-C radiant ceiling is a water-based radiant ceiling system with high thermal and advanced acoustic effectiveness. The magnetic connection of the activation coil and ceiling panel allows both components to be prefabricated concurrently and delivered separately to the construction site for assembly there. As a result, the manufacturing time for the ceiling as a whole is significantly reduced.

The SPECTRA M coil is ideal for refurbishing buildings in which existing metal ceilings are to be activated at a later stage. Furthermore, the coils can be fitted and hydraulically connected independently of the ceiling panels, meaning that the cooling technology can be installed and commissioned before the surface is finished. This also enables operation of the coils in advance for structural heating.

In particularly sensitive areas, additional insulation strips can be inserted to increase sound absorption without reducing the cooling capacity. A full-surface insulation layer is also possible.

The design of the SPECTRA M coil also makes it possible to separate all components by material type for subsequent feeding into a recycling process. This contributes to a sustainable circular economy even after the useful life of the product has come to an end.



A further advantage of the system is that the magnet technology and U support rails used to secure the activation coils in place prevent the panels from sagging, even with larger panel formats.

Activation

Water system: The radiant ceiling is a passive system that in the case of cooling absorbs heat from the room via the ceiling surface, transfers it to the water, which is conducted in activation registers, and dissipates it, respectively emits heat in the case of heating.

The activation of the SPECTRA M-C radiant metal ceiling system consists of meandering copper pipes (outside diameter 12 mm), which are pressed into aluminum heat-conducting profiles. The connection between the activation register and the ceiling panel is made with magnet technology.

Functions

The radiant metal ceiling Spectra M is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts, use of the special supply air box Quello, various built-in components (e.g. smoke detectors, lighting).

Combination

- SPECTRA M-C radiant Metal Ceiling + AQUILO
- SPECTRA M-C radiant Metal Ceiling + VENTAMIC

Technical data

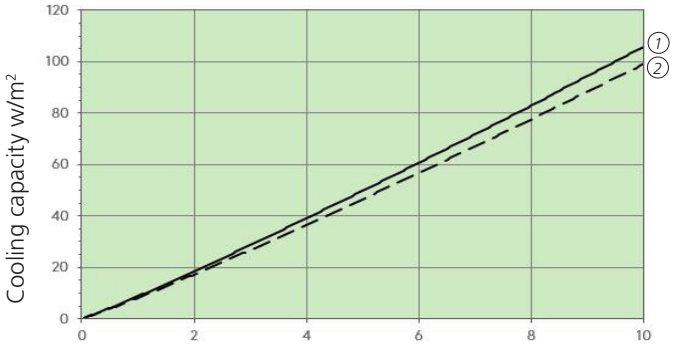
Capacity

Initial data is presented below.

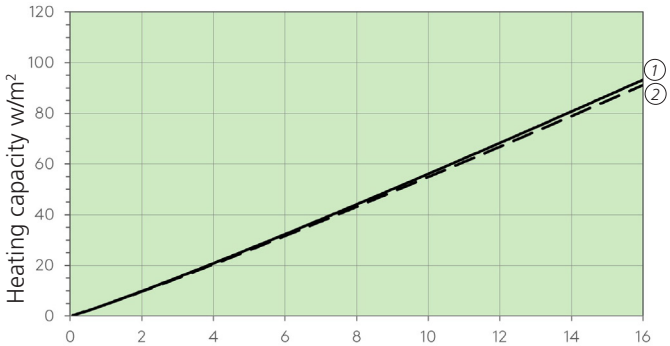
Material ceiling panel	Steel	Steel
Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	100 mm —— ①	120 mm — — ②
Acoustic inlay	Fleece	Fleece
Activation method	magnetic	magnetic

(Capacity information without project-specific performance-influencing factors.)

EN 14240:2004



EN 14037:2016



Version	Cooling 8 K	Cooling 10 K	Heating 15 K
① Steel 100 mm	up to 83 w/m²	up to 105 w/m²	up to 87 w/m²
② Steel 120 mm	up to 78 w/m²	up to 98 w/m²	up to 85 w/m²

Notice

- SN EN 14240: The cooling capacity is related to the active area according to SN EN 14240:2004. The active area is calculated according to SN EN 14240 from the number of heat-conducting rails x length of heat conducting rail x distance between heat conducting rails.
- SN EN 14037: The heating capacity is related to the active area according to SN EN 14037:2016. The active area is calculated according to SN EN 14037 from the length of the ceiling panel x the width of the ceiling panel.

Recommendations for operation

Water

- Temperature
  - Cooling 16 – 18 °C
  - Heating 28 – 37 °C
- Temperature distance Δt (VL-RL): 2 – 3 K
- Pressure drop: 20 – 25 kPa
- Water flow: 80 – 150 l/h
- Max. operating pressure up to 9 bar
- Water quality according to: SWKI BT 102-01, BTGA 3.003, VDI 2035

Surrounding

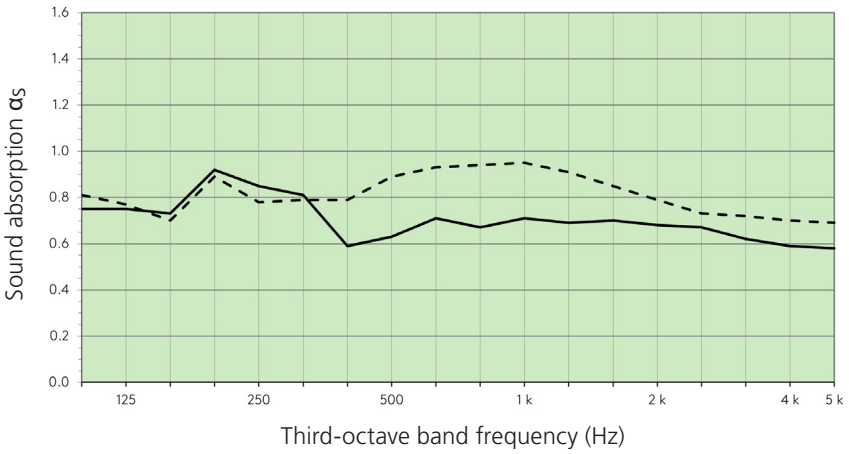
- Ambient temperatures: +5 – 50 °C
- Humidity: up to 90 % relative humidity

Acoustics

Initial data is presented below.

Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	150 mm	150 mm
Installation height	200 mm	200 mm
Acoustic inlay	Fleece	Fleece
Additional inlay (mineral wool)	without ———	with - - - -
Sound absorption α_p	250: 0,85 500: 0,65 1k: 0,70 2k: 0,70 4k: 0,60	250: 0,80 500: 0,85 1k: 0,95 2k: 0,80 4k: 0,70
Sound absorption α_w	α_w: 0,70 (L)	α_w: 0,85
Sound absorption class (EN ISO 11654)	C	B

EN ISO 11654



without additional inlay ——— with additional inlay - - - -

System

Ceiling system

- Closed ceiling
  - Rectangular panels

Installation systems

- Installation height: min. 100 mm
  - Lay-in system
  - Hook-on system
  - Clip-in system
  - C-channel systems

Materials, weight and dimensions

Materials and weight

Material	Weight (incl. activation, water)
Steel 0,70 mm	10,0 – 13,3 kg/m²

Building material class: B-s2, d0, EN 13501-1 (depending on the acoustic solution).

Dimensions

Lenght	Width	Height
min. 600 mm	min. 400 mm	min. 30 mm
max. 3000 mm	max. 1200 mm	max. 40 mm

Surface

Versions

- Powder coating
- Digital printing on request

Colors

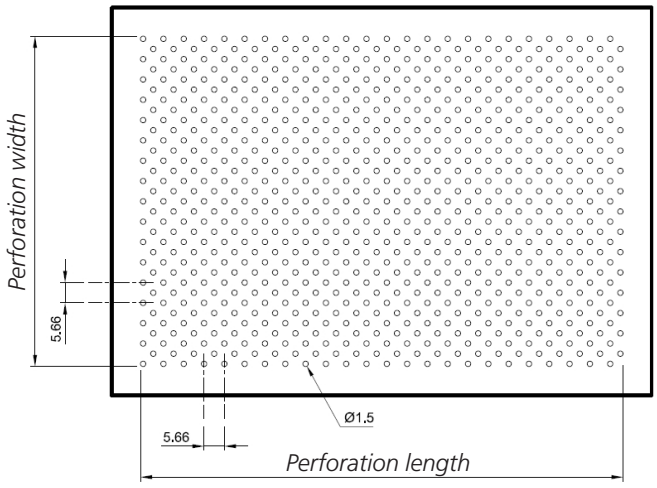
- Standard RAL 9010
- Other RAL / NCS colors on request

Perforations

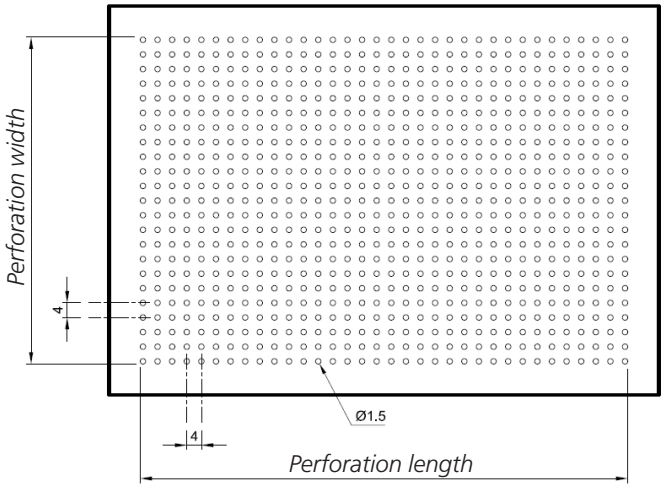
- Standard perforations
- Other perforations on request

Standard perforations:

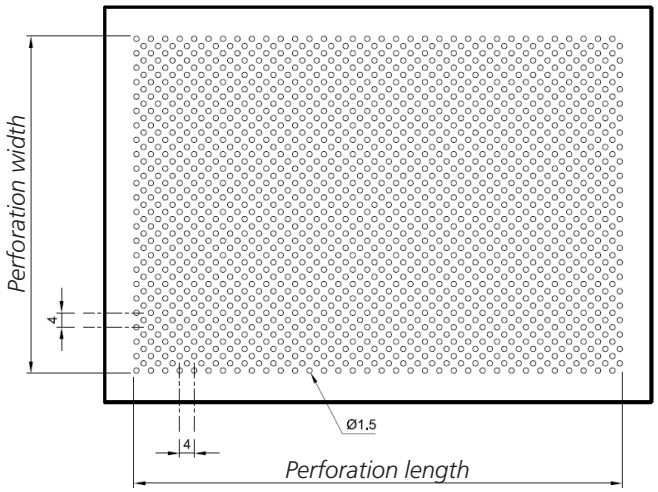
Rd 1,5 – 11 %



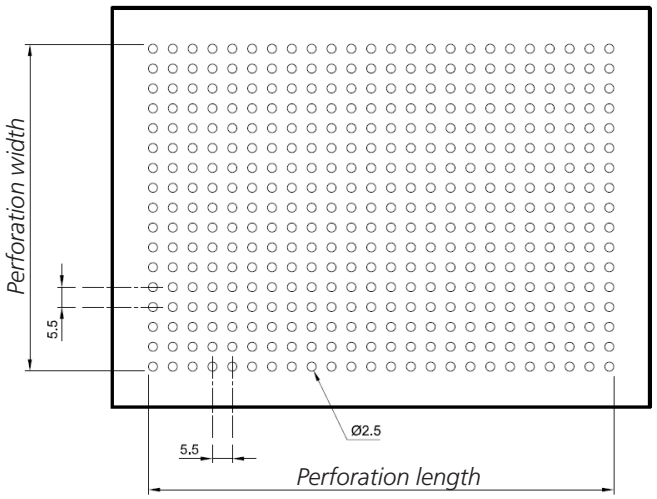
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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