

# ECO M-C

Radiant metal ceiling with magnetic technology



Microtec, Brixen | Hitek GmbH, Italy

## QUICK FACTS

- Thermal comfort according to EN ISO 7730
- High heating and cooling capacity
- Active area ratio: 65 %
- Advanced acoustic properties (class B)
- Easy to install
- Integration of various components
  - Different lighting designs
  - Sprinklers
  - Smoke detectors
  - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 72 W/m <sup>2</sup> (8 K), EN 14240:2004	Up to 71 W/m <sup>2</sup> (15 K), EN 14037:2016
Acoustics	
$\alpha_w$ : up to 0,85	

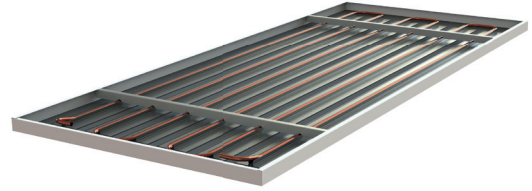
# Technical description

## General

ECO M-C is a water-based radiant ceiling system in which the heating/cooling coil is securely attached to the ceiling panels by an innovative magnetic connection. The system works predominantly according to the radiation principle, which offers high thermal comfort, optimum energy efficiency and a pleasant, draught-free indoor climate.

In addition, room acoustics are good due to a specially developed acoustic fleece that is glued into the perforated ceiling panelling. With indirect lighting via the reflective ceiling surface, glare-free illumination of the room can be achieved.

This radiant ceiling system is characterised by a wide range of application and design options. It is primarily used in office and administration buildings, shops, training/conference facilities and hospital treatment rooms.



## 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 ECO 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 ECO M-C heating and cooling coil and the sheet steel ceiling panels are manufactured separately and then assembled on site. This reduces the time needed to complete the ceiling as a whole, as the coil and ceiling panels can be (pre-)fabricated and then installed at the same time.

ECO M-C heating and cooling coils can be clamped into the ceiling panel by means of an optional holding rail. This is useful if inspection hatches in the ceiling are planned.

In addition to their thermal function – cooling and heating – they can be fitted with additional features, such as acoustic elements, smoke detectors and lighting.

If only partial coverage is required initially, additional ECO M-C coils can be easily installed at a later date. ECO M-C is also ideal for retrofitting old, thermally inactive metal ceilings in radiant ceiling systems without having to remove the ceiling panels from the building.

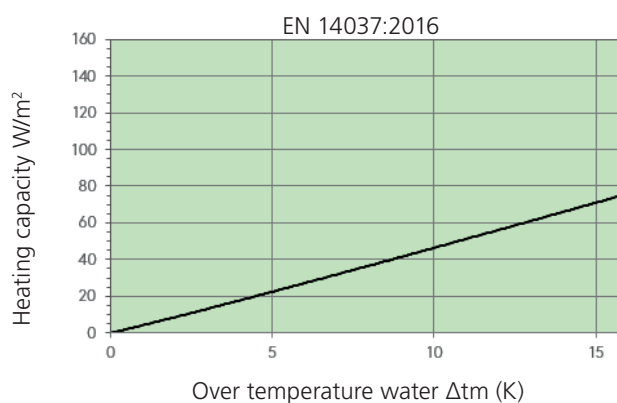
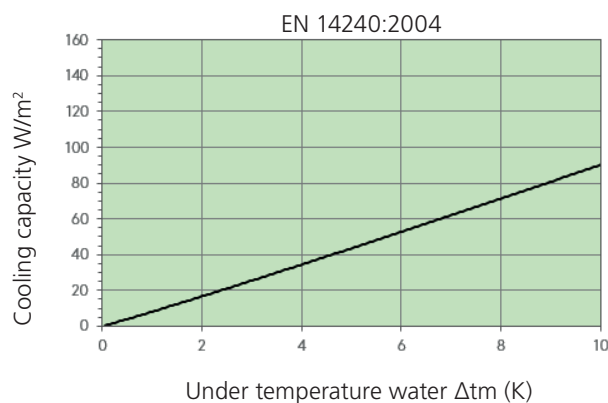
# Technical data

## Capacity

Initial data is presented below.

Pipe spacing	130 mm
Supply/extract air <small>(Combination options with ventilation system on request. With supply air, the rating increases by +5 % in office spaces and by up to +30 % in industrial environments.)</small>	without

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



Version	Cooling 8 K	Cooling 10 K	Heating 15 K
Steel 130 mm	up to 72 $W/m^2$	up to 90 $W/m^2$	up to 71 $W/m^2$

### 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  $\Delta t$  (VL-RL):
  - Cooling 2 – 3 K
  - Heating 3 – 5 K
- Pressure drop: 20 – 25 kPa
- Water flow: 90 – 200 l/h
- Max. operating pressure up to 9 bar
- Water quality according to: SWKI BT 102-01, BTGA 3.003, VDI 2035

### Surrounding

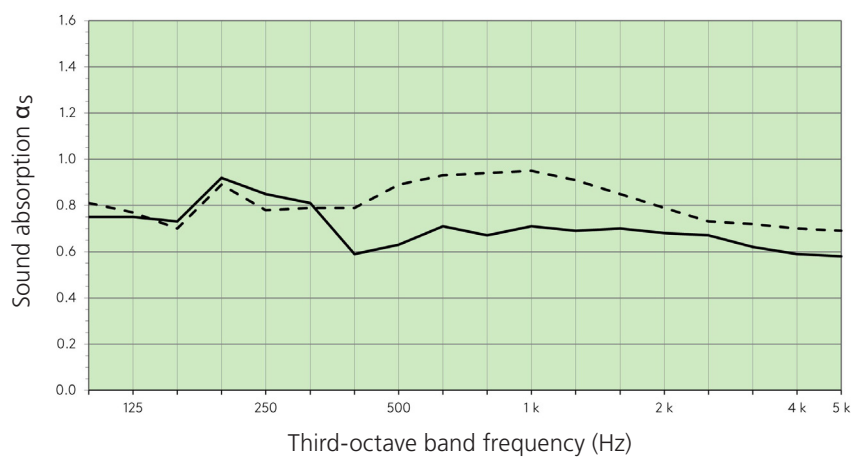
- Ambient temperatures: +5 – 50 °C
- Humidity: up to 90 % relative humidity

## Acoustics

Initial data is presented below.

Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	130 mm	130 mm
Installation height	200 mm	200 mm
Acoustic inlay	Fleece	Fleece
Additional inlay (mineral wool)	without ———	with - - - -
Sound absorption $\alpha_p$	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 $\alpha_w$	$\alpha_w$ : 0,70 (L)	$\alpha_w$ : 0,85
Sound absorption class (EN ISO 11654)	C	B

EN ISO 11654



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

# System

## Ceiling system

- Closed ceiling
  - Lay-in system
  - Hook-on system
  - Clip-in system
  - C-channel systems

## Installation systems

- Installation height: 200 mm  
Depends on the chosen ceiling system

# Materials, weight and dimensions

## Materials and weight

Material	Weight (incl. activation, water)
Steel 0,70 mm	approx. 10,0 kg/m <sup>2</sup>

Building material class: A2-s1, d0, EN 13501-1 (depending on the acoustic solution).

## Dimensions

Lenght	Width	Height
min. 500 mm	min. 300 mm	min. 30 mm
max. 2000 mm	max. 800 mm	max. 40 mm

Dimensions are dependent on the ceiling system and may vary.  
Custom dimensions on request.

## Surface

### Versions

- Powder coating
- Digital printing on request

### Colors

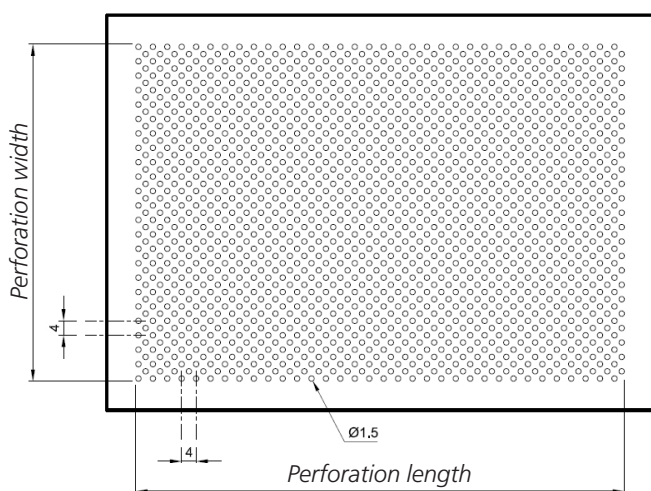
- Standard RAL 9010
- Other RAL / NCS colors on request

### Perforations

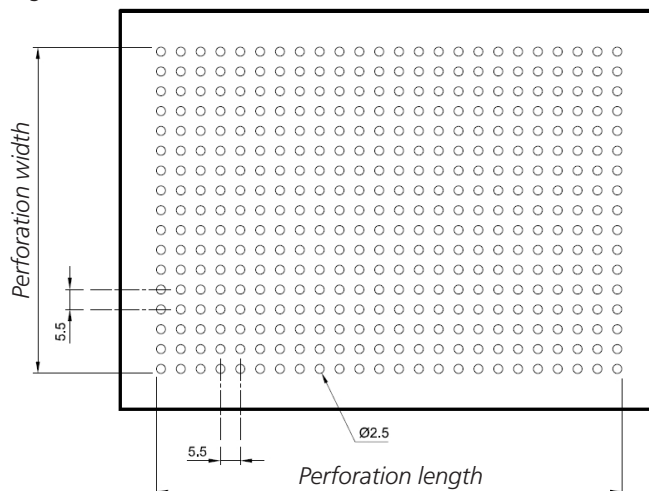
- Standard perforations
- Other perforations on request

Standard perforations:

Rd 1,5 – 22 %



Rg 2,5 – 16 %



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