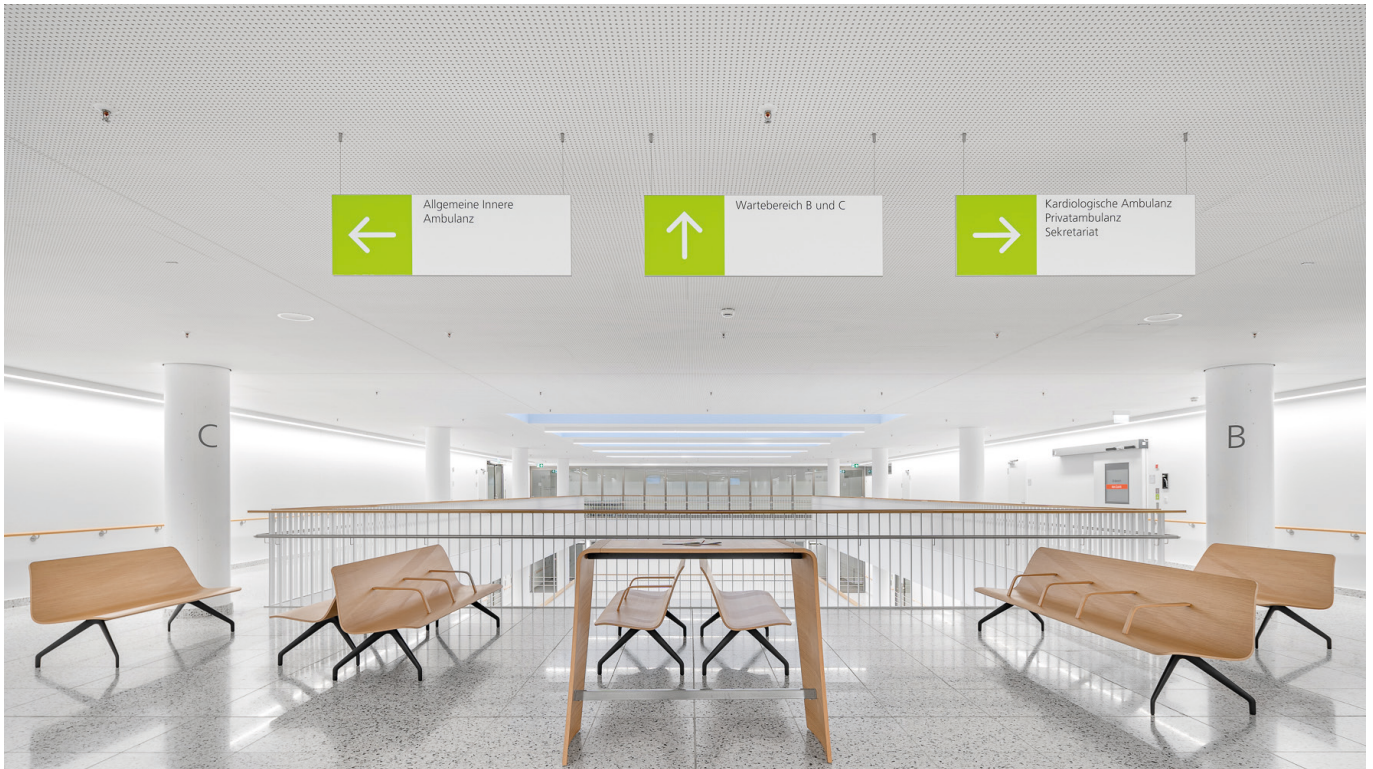


VARICOOL UNI

Radiant ceiling jointless



QUICK FACTS

- Thermal comfort according to EN ISO 7730
- Building material class: A2-s1, d0, EN 13501-1
- High heating & cooling capacity
- Acoustically effective (class C)
- Can be used as a closed radiant ceiling or sail
- Coils are easy to install
- Coils replace parts of the substructure
- Full-surface ceiling activation possible
- Integration of various components
 - Different lighting designs
 - Sprinklers
 - Smoke detectors
 - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 77 W/m ² (8 K), EN 14240:2004	Up to 103 W/m ² (15 K), EN 14037:2016
Acoustics	
α _w : up to 0,65	

Technical description

General

The jointless VARICOOL UNI radiant ceiling is suitable for properties in which a combination of aesthetics and thermal comfort is required. It is visually indistinguishable from a conventional drywall ceiling. Full-surface ceiling activation, installations and customised ceiling designs with 3D elements are all possible with this solution. VARICOOL UNI can also be used as a sail.

Perforated plasterboard panels with acoustic fleece applied to the back can be used to satisfy the acoustic requirements. An additional insulation layer can be provided in order to increase sound absorption in particularly sensitive areas.

The heating/cooling coils are adapted to the standard substructure and replace parts of it. The system is suitable for use with plasterboard, expanded glass granulate and aluminium honeycomb panels.

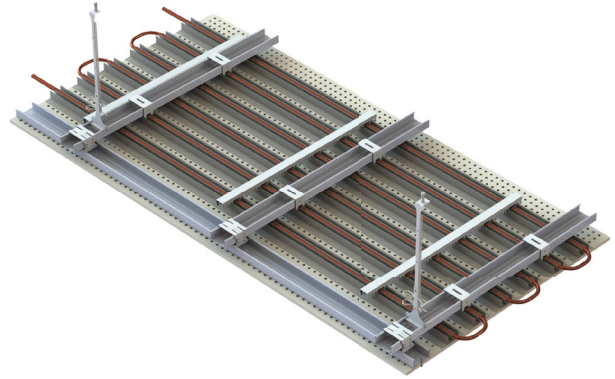
Activation

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 VARICOOL UNI radiant ceiling system consists of meandering copper pipes (outside diameter 12 mm) which are pressed into aluminum heat-conducting profiles. The activation is installed as part of the ceiling substructure. The plasterboard is screwed directly to the heat-conducting profiles. This creates an optimal connection between activation and ceiling, and the active areas do not require any fastening profiles for the ceiling paneling. The system enables an occupancy rate of up to 100%. In this way, a maximum thermal effectiveness related to the room surfaces can be achieved.

Functions

The VARICOOL UNI radiant ceiling is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts, various built-in components (e.g. smoke detectors, lighting).



Technical data

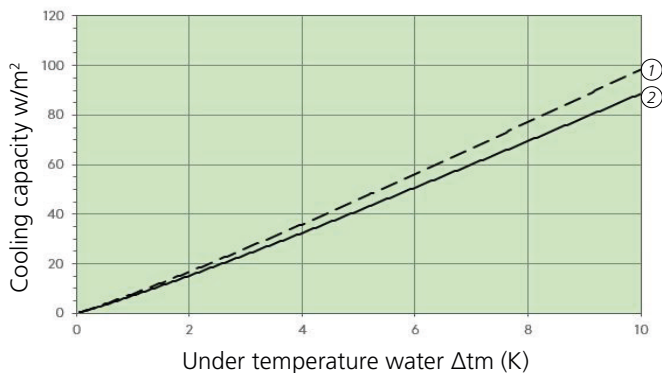
Capacity

Initial data is presented below.

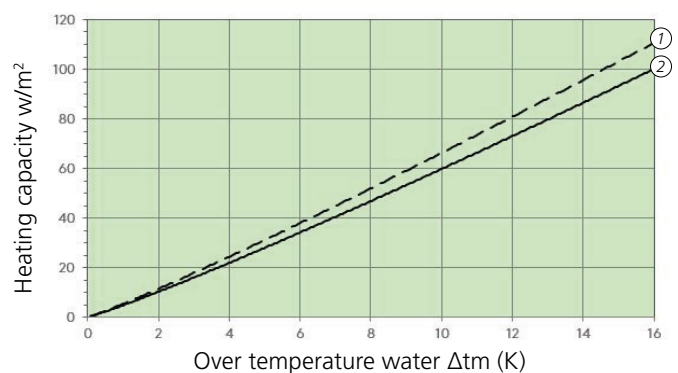
Plasterboards perforated	high density with graphite --- ①	high density — ②
Edge joint	with	with
Distance heat conducting rails (hcr)	120 mm	120 mm
Acoustic inlay	Fleece	Fleece
Additional inlay	without	without

(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 Plasterboard high density with graphite	up to 77 w/m^2	up to 98 w/m^2	up to 103 w/m^2
② Plasterboard high density	up to 69 w/m^2	up to 88 w/m^2	up to 93 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 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

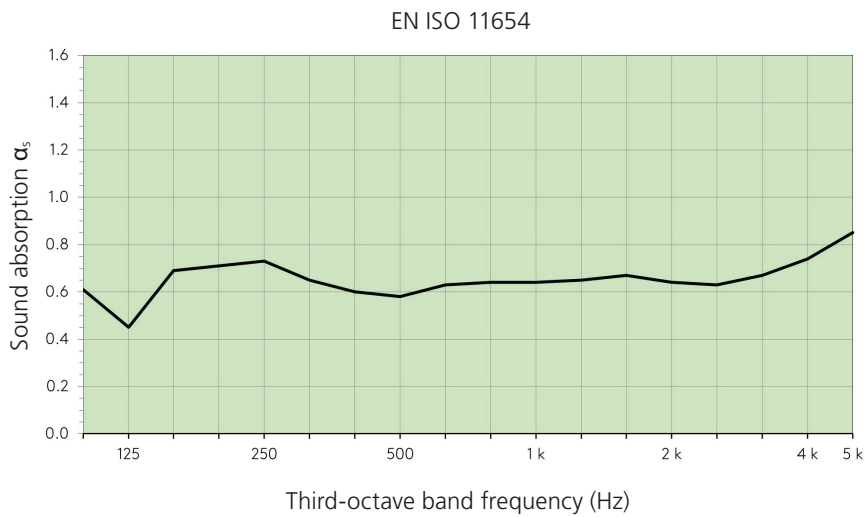
Surrounding

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

Acoustics

Initial data is presented below.

Ceiling system	closed
Suspended ceiling	Plasterboard high density
Perforation	with (8/18 Q)
Edge joint	with
Acoustic inlay	Fleece
Additional inlay (mineral woole)	without
Sound absorption α_p	250: 0,70 500: 0,60 1k: 0,65 2k: 0,65 4k: 0,75
Sound absorption α_w	α_w : 0,65 (L)
Sound absorption class (EN ISO 11654)	C



System

Ceiling system

- Closed ceiling (also realizable as sails)

Installation system

- Installation height: min. 120 mm (incl. plasterboard 10 mm)
 - Basic construction: CD profiles
 - Supporting structure: heat-conducting profiles of activation

Materials, weight and dimensions

Material and weight

Material	Weight
Plasterboard high density 10 mm	ca. 20 kg/m ²

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

Perforation

The suspended ceiling can be implemented with invisible or visible perforations.

Invisible perforation

With the invisible perforation, a special fleece is used on the surface of the plasterboards in combination with a final acoustic color coating.

Visible perforation

With the visible perforation, the overside of the plasterboards are equipped with acoustic fleece as standard.

Perforation patterns (examples)

- Regularly perforated round
 - 6/28 R
 - 8/18 R
 - 12/25 R
 - 15/30 R
- Staggered perforation round
 - 8-12/50 R
 - 12-20/66 R
- Scattered perforation round
 - 8-15-20 R
 - 12-20-35 R
- Regularly perforated square
 - 8/18 Q
 - 12/25 Q

Dimensions

Register length	Register width	Register height
min. 500 mm	min. 180 mm	min. 27 mm
max. 2500 mm	max. 1000 mm	max. 27 mm

Surface

Surface finishes

The surface treatment is regulated according to DIN 18180 and includes the following stages:

- Quality level 1 (Q1): A basic filling (Q1) is sufficient for surfaces that do not have any special requirements. This includes filling the butt joints and covering the fastening parts.
- Quality level 2 (Q2): Corresponds to the standard quality and meets the usual requirements for wall and ceiling surfaces for medium to coarsely structured wall coverings or matt-filling paints and finishing coats.
- Quality level 3 (Q3): Increased requirements for the filled surface.
- Quality level 4 (Q4): Highest demands on the filled surface.

In addition, the manufacturer-specific requirements must be observed.

Paintings

- Washable and scrubbable plastic emulsion paints
- Oil paints
- Matt lacquer colors
- Alkyd paints
- Polymer resin paints
- Polyurethane paints (PUR)

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