VARICOOL TKM

Radiant textile ceiling sail

QUICK FACTS

- Thermal comfort according to EN ISO 7730
- In combination with CAURUS
- Very high heating & cooling capacity
- Advanced sound absorption values (class B)
- Building mass connection
- Fresh air intake is silent and draught-free

Output (water)	
Cooling	Heating
Up to 95 W/m² (8 K), EN 14240:2004	Up to 103 W/m² (15 K), EN 14037:2016

Acoustics
αw: up to 0,80

In cooperation with

BARCOL-AIR by Swegon

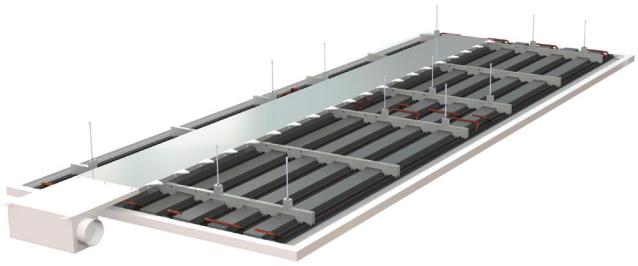
ROOSLI FUNKTIONS-DECKEN

Technical description

General

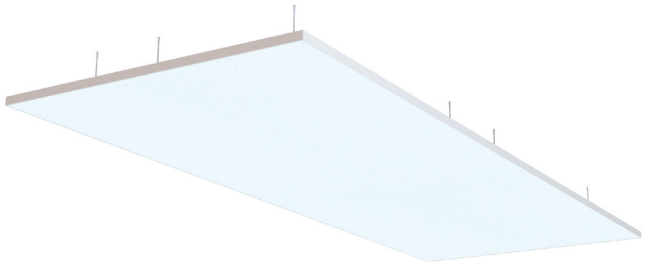
The VARICOOL TKM radiant textile ceiling sail is a water-based radiant ceiling system. In conjunction with the CAURUS hybrid system, it guarantees an optimum room climate in any environment. This combination has very high heating and cooling capacities, convenient supply air ducting and superior acoustic properties. In addition, the system incorporates the storage mass for dissipating heat loads into the overall room thermal concept using the thermally active building system principle. This further reduces energy requirements and operating costs.

The VARICOOL TKM can be used as a sail or closed radiant ceiling.



Activation

Water system: The radiant ceiling is a passive system that absorbs room heat through the ceiling surface and transfers it to water in activation coils for cooling or emits heat when heating is required.



Functions

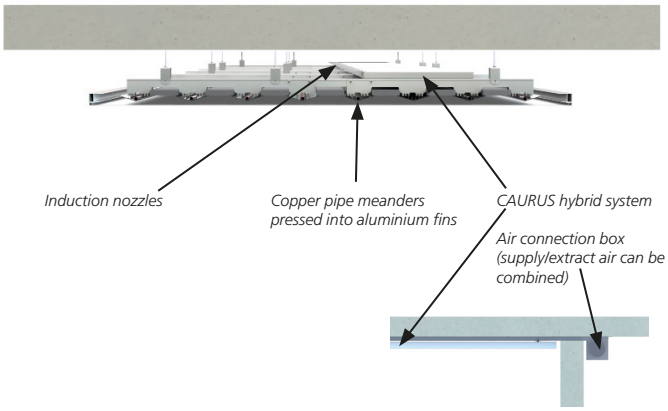
In addition to its thermal functions of cooling/heating, it can be used in combination with the CAURUS hybrid system.

Combinations

- VARICOOL TKM radiant textile ceiling sail + CAURUS

Functional description of CAURUS

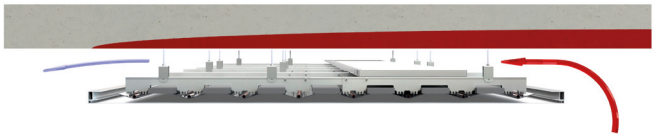
With supply air flow rates of up to 35 m³/h*linear metre per sail, the supply air is introduced horizontally into the room on one side above the textile sail. Specially developed high capacity induction nozzles draw in warm room air on the opposite side of the sail and accelerate it via the supply air channel, thus achieving high energy transfer into the concrete. The energy temporarily stored in this way can be dissipated at night – with free cooling if possible. Due to the highly effective ventilation results, draught-free mixing of the air throughout the room with a homogeneous temperature profile is established within a very short time.



Operation

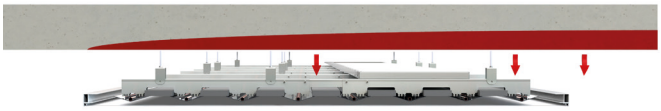
Day

The air flow (which is a hygiene requirement) is expelled through the high capacity induction nozzles. This causes induction of warm room air from behind the sail. Part of the energy is conveyed away immediately, while another part heats the concrete. The room temperature remains comfortable at all times.



Night

No supply air is required in the building overnight. The water can be cooled by means of free cooling (without using the refrigeration unit). The exchange of radiation between the warm concrete and the cold heat conducting rails recovers the energy from the concrete and prepares it for the absorption of excess energy on the following day.



Supply air flow rate

Maximum supply air flow rate per linear metre of nozzle channel at undertemperature:

6 K	35 m³/h
8 K	33 m³/h
10 K	30 m³/h

Technical data

Capacity

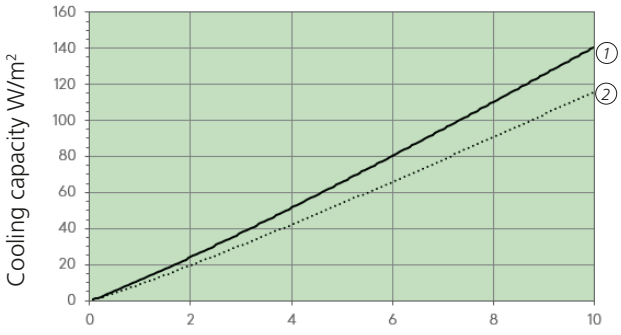
Water

Baseline data, example:

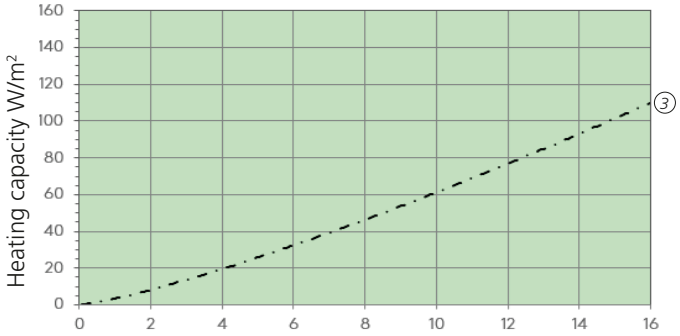
Ceiling panel material	Textile ceiling sail
Perforation	Not needed
Activation	VARICOOL TKM

(Performance data without project-specific factors that affect performance. Depending on the configuration, an additional capacity of 20 W/m² of panel area is achieved through concrete management.)

EN 14240:2004



EN 14037:2016



Activation	Version	Cooling 8 K	Cooling 10 K	Heating 15 K [1] without supply air
VARICOOL TKM	② with CAURUS	Up to 91 W/m²	Up to 116 W/m²	③ Up to 117 W/m²
VARICOOL TKM	① with CAURUS incl. mass storage	Up to 111 W/m²	Up to 140 W/m²	–

[1] With flowing supply air, there will be a 20 to 40 % higher heating capacity.

Air

Air flow rate	2 K	4 K	6 K	8 K	10 K
50 m³/h	32 W	64 W	96 W	128 W	160 W
75 m³/h	48 W	96 W	145 W	192 W	240 W
100 m³/h	64 W	128 W	192 W	256 W	320 W
200 m³/h	128 W	256 W	384 W	512 W	640 W

Basis: ρ_L = 1.15 kg/m³ / c_L = 1.006 KJ/kgK

Recommended area of application for EN ISO 7730, class A / B. Other areas of application possible with project-specific evaluation.

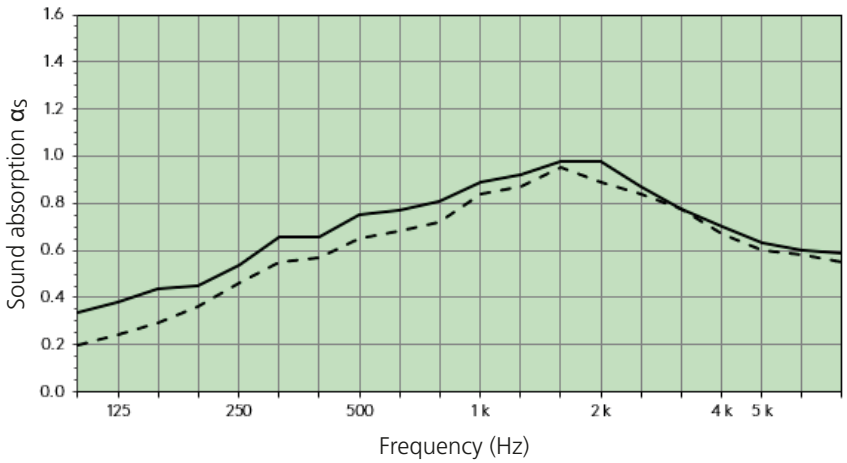
Acoustics

Sound absorption

Baseline data: VARICOOL TKM, installation height 200 / 400 mm.

Sound absorber	Mineral wool strips 80 kg/m³ between the fins	Mineral wool strips 80 kg/m³ between the fins
Installation height	200 mm - - - -	400 mm ———
Practical sound absorption α_p	250: 0.45 500: 0.65 1k: 0.80 2k: 0.90 4k: 0.70	250: 0.55 500: 0.75 1k: 0.85 2k: 0.95 4k: 0.70
Sound absorption α_w	α_w: 0.70	α_w: 0.80
Sound absorber class (EN ISO 11654)	C	B

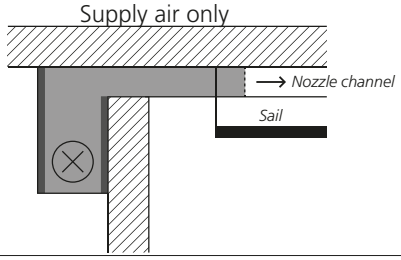
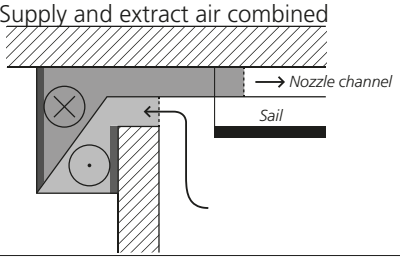
EN ISO 11654



Project-specific optimisation of sound absorption is possible.

Air connection box

Standard sound level difference (cross-talk sound attenuation)

Versions	Supply air only	Supply and extract air combined
		
Without interior insulation	Dn,e,w = 58 dB	Dn,e,w = 50 dB
With interior insulation	Dn,e,w = 62 dB	Dn,e,w = 55 dB

Sound power level L_{WA}

Supply air flow rate	q_v q_v/linear metre of channel	m³/h m³/linear metre*h	76 25	90 30	104 35	118 40	136 45
Sound power level	L_{WA}	dB	24.1	27.3	31.0	34.7	38.2

System

Ceiling system

- Textile sails (can also be used as a closed radiant textile ceiling)

System components

- CAURUS hybrid system with induction nozzles
- Air connection box for access in the corridor

Mounting systems

- Installation height: min. 180 mm
  - Threaded rods / mounting brackets

Material, weight and dimensions

Material and weight

Activation	Material	Weight (incl. activation, water)
VARICOOL TKM	Aluminium, copper, galvanised steel, mineral wool, PE and PU	9.5 kg/m²

Dimensions

Sail length	Sail width	Installation height
min. 1040 mm	min. 740 mm	min. 180 mm
Project-specific up to 50 m	max. 4940 mm	max. 500 mm

System structure without tolerance of the concrete ceiling.

Custom dimensions on request

Surface

Finishes

- Textile (250 g/m²)
- Decorative print on request

Colours

- Standard: RAL 9016
- Other colours on request
  - Decorative print (available in all colours)
  - Colour collection from the manufacturer (29 colours)

International

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