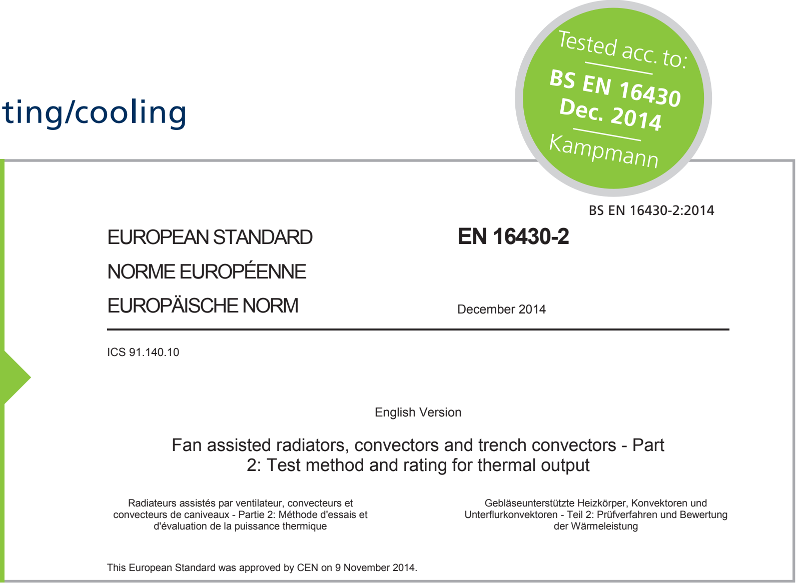
BS EN 16430

New BS EN standard for trench heating/cooling



Tested acc. to:
BS EN 16430
Dec. 2014
Kampmann

BS EN 16430-2:2014

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16430-2

December 2014

ICS 91.140.10

English Version

Fan assisted radiators, convectors and trench convectors - Part 2: Test method and rating for thermal output

Radiateurs assistés par ventilateur, convecteurs et convecteurs de caniveaux - Partie 2: Méthode d'essais et d'évaluation de la puissance thermique

Gebläseunterstützte Heizkörper, Konvektoren und Unterflurkonvektoren - Teil 2: Prüfverfahren und Bewertung der Wärmeleistung

This European Standard was approved by CEN on 9 November 2014.

Thermal outputs and cooling capacities finally comparable!

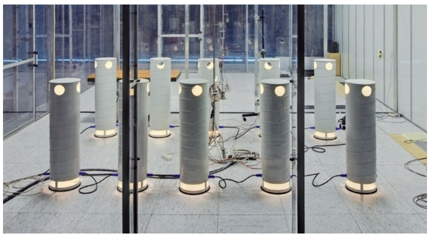
Until now there has been no uniform standard for determining the performance of heating/cooling trenches. The BS EN 16430 valid as from December 2014 provides common standards which apply with immediate effect.

The BS EN 16430 defines details for measuring performance data for heating/cooling trenches under real-life conditions and puts an end to uncertainties in the design and in comparing performance data of different manufacturers.

Thermal outputs and cooling capacities
The standard defines details for measuring performance data for heating/cooling trenches based on EN 442. Three parts of BS EN 16430 specify the measurements.

Part 1 ▸ Technical specifications and requirements
Part 2 ▸ Test method and rating for thermal output
Part 3 ▸ Test method and rating for cooling capacity

The BS EN 16430 part 3 considers the special requirements for cooling mode. The reference air temperature is measured in the centre of the test booth at a distance of 2 m from the façade at a height of 0.75 m above FFL. The reference air temperature must not be mixed up with the entering air temperature into the coil which may deviate due to the inevitable short-cut between leaving air and entering air.

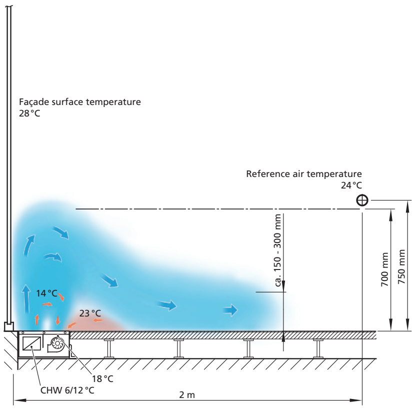


Test set-up, cooling test

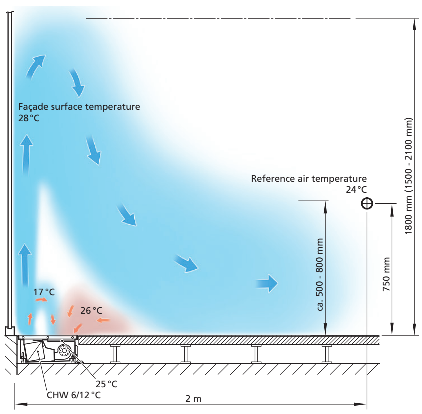
Comparison of air flow patterns
The diagram shows the major differences of the air flow of short-cut optimised and non short-cut optimised heating/cooling trenches in cooling mode. With the short-circuit optimised model the air at the façade rises significantly higher, blends and penetrates deeper into the room at a higher temperature. The result is a more even temperature distribution and higher comfort in the occupied zone.

Heating/cooling trenches with a high short-cut percentage only provide part of the performance to the room. Performance data based on the entering air temperature are especially misleading as this can be significantly lower than the reference air temperature (room air temperature).

The development and design of the Katherm HK have been optimised to minimise the short-cut as far as technically possible. All performance data refer to the reference air temperature measured at a distance of 2 m from the façade, the area in the room occupied by people.



Non short-cut optimised air outlet



Short-cut optimised air outlet

Kampmann has been measuring and publishing the thermal outputs and cooling capacities of convectors in compliance with this standard!

The following trench heaters have been designed according to BS EN 16430 and therefore correspond to the technical standard:

- Katherm NK
- Katherm QK
- Katherm HK
- Katherm NX
- Katherm QX

KAMPMANN
Genau mein Klima.

Please keep in mind when selecting trench heating/cooling:

1. The performance data of trench heating/cooling is to be measured according to BS EN 16430. This especially applies to the cooling capacity.

- Only then can you be sure that the required design data will be achieved in your projects.

Manufacturer A (catalogue extract)

- Thermal output tested in compliance with EN 442 or 470445199910 resp.
- Cooling capacity following EN 14518

Manufacturer B (catalogue extract)

Details on the cooling capacity diagrams

The total cooling capacity in condensing mode may deviate within the admissible standard tolerances due to the simplified reference to the medium heat exchanger undertemperature.

An air inlet temperature range of 22–30 °C at a relative humidity of 50 % is assumed in this case.

Manufacturer C (catalogue extract)

Calculation

Cooling output P_K (deviating from ΔT = 10 K)

For undertemperatures ΔT deviating from ΔT = 10 K the cooling output is calculated as follows:

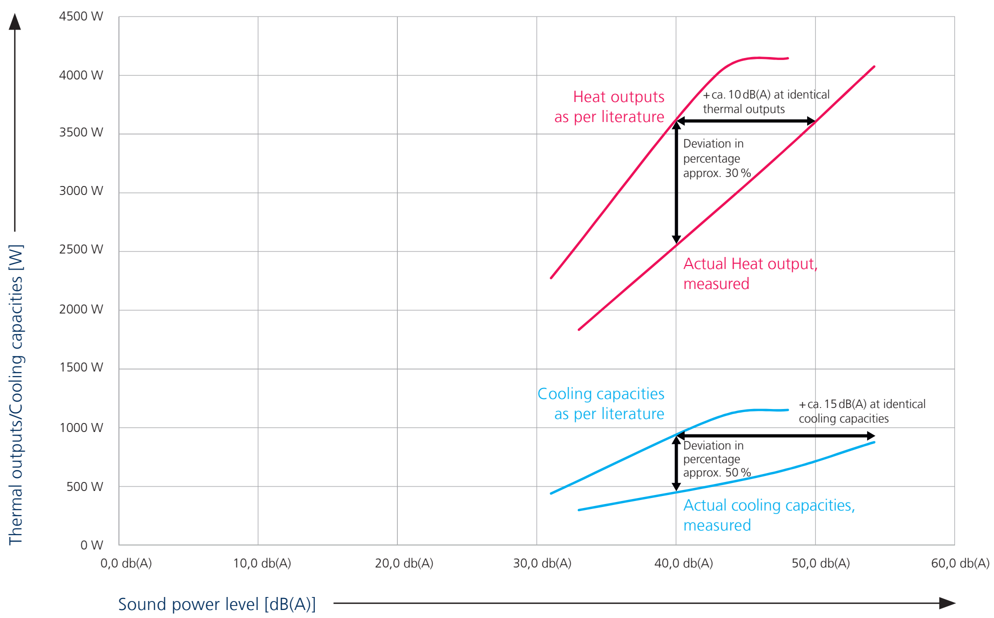
$$P_K = P_{KN} \times \left[\frac{\Delta T}{\Delta T_n}\right]^n \quad \text{oder} \quad P_K = P_{KN} \times C_K$$

t_1 [°C] = CHW Flow	t_1 = 16 °C
t_2 [°C] = CHW Return	t_2 = 18 °C
t_r [°C] = Room temperature	t_r = 27 °C
Ambient pressure	p = 1013 hPa
Relative humidity	φ = 50 %

Details of different manufacturers on the calculation of cooling capacities

2. Fan-assisted heating/cooling trenches should always be dimensioned on the basis of the sound power data. A selection based on the fan speed or fan stage is not recommended.

- Only then it can be guaranteed that the necessary thermal outputs or cooling capacities will be reached within the sound level limits.



Comparison of measured data and literature data of an alternative manufacturer.
Measuring conditions: Cooling CHW 7/12 °C, t_r = 25 °C, 50 % r. H.; Heating LPHW 75/65 °C, t_r = 20 °C