

Zehnder COS Cooling Duct

zehnder





Zehnder COS Cooling Duct incorporated into an office.

Zehnder COS Cooling Duct – the cool answer to heated situations.

Large glass facades play a major role in today's architecture – in both new and renovated buildings.

For situations such as these Zehnder has developed a really cool solution: the patented Zehnder COS Cooling Duct, which enhances comfort levels especially in the summer's heat.

Zehnder COS operates with circulated air cooling based on the gravitation principle. No fan, therefore no noise and no work-generated energy. The Zehnder COS Cooling Duct simultaneously dehumidifies the air. This and many more features make it a comfort must in old and new buildings. In offices, conference rooms, hotel rooms and in private living areas.

Title page illustration: Zehnder COS Cooling Duct in the conference room.

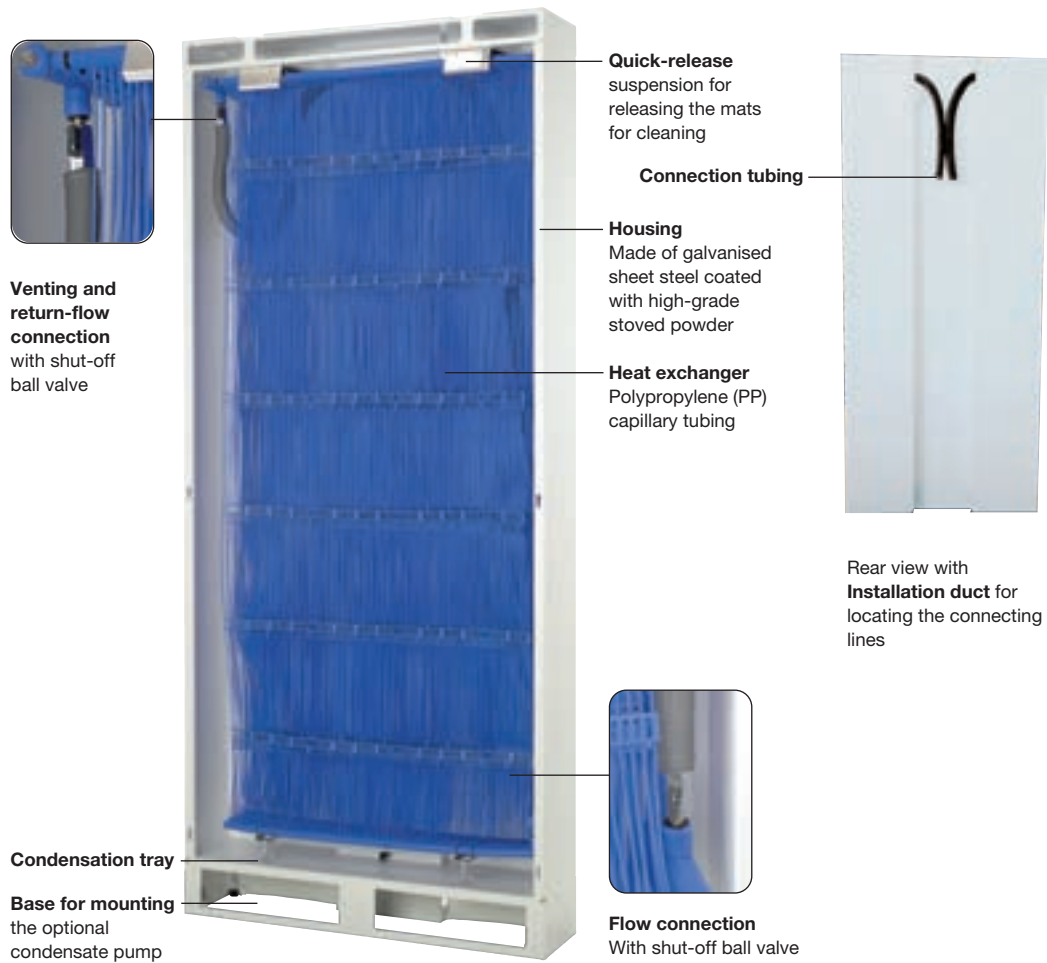


The Zehnder COS Cooling Duct in a medical practice.

The Comfort Steps in Detail

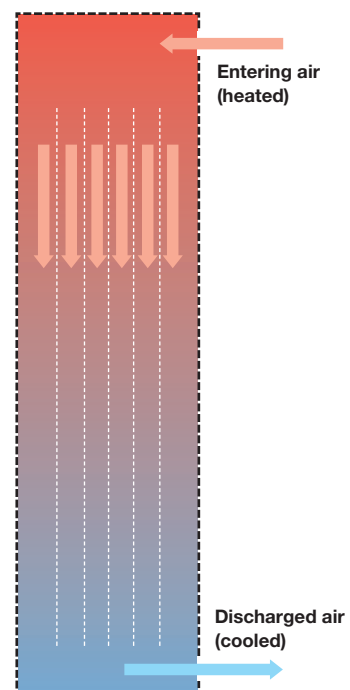
- Each Zehnder Cooling Duct has a cooling capacity of up to 1000 watts.
- Small footprint – high cooling capacity.
- Simultaneous cooling and dehumidification of the room air.
- No fan, therefore noiseless and power-saving.
- Low air velocities mean no noticeable draughts.
- Integrated condensate pump (on request).
- Ideal for installation during reconstruction and renovation activities.
- Also suitable for on-wall installation.
- Easily incorporated in cupboards and wall surfaces.
- Easy to install.
- Extremely long service life.
- No cleaning problems thanks to easily removable heat exchanger.

Zehnder COS Cooling Duct



Circulated Air Cooling Based on the Gravity Principle

Cold water, from the chiller or from the ground, flows through the capillary tube mats. The air is cooled by the mats and, due to gravity, flows downwards through the cooling duct and into the room through the outlet grille. Heated air is simultaneously drawn in through the intake grille. The circuit is thus completed.



Made-to-Measure Performance

There are two types of cooling:

Dry cooling

In the dry cooling mode, the flow temperature of the cooling water is so high that no condensation takes place. The capacity of the dry cooling depends on the feed, return and room temperatures.

Cooling with Dehumidification

When cooling with dehumidification the chosen feed temperature is low enough for condensation to take place at the heat exchanger. The capacity of the cooling with dehumidification depends on the feed, return and room temperatures as well as on the room-air humidity.

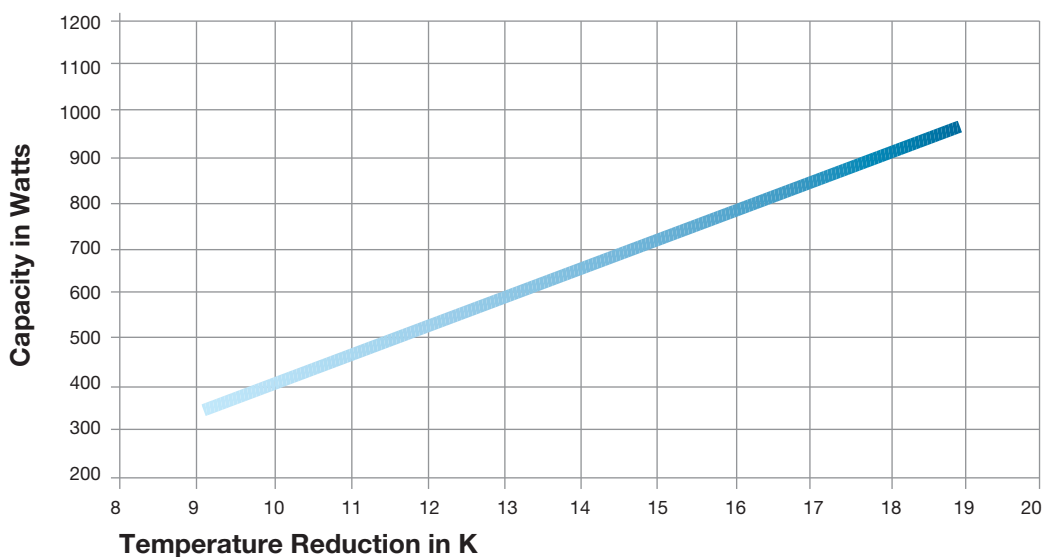
The room air is dried when cooling takes place with dehumidification. This is very important for that feeling of comfort. The cooling capacity with dehumidification can be up to 50 % higher than with dry cooling.



It is recommended that the dry cooling capacity be taken as a design basis since the room humidity can vary.

Large areas of glass increase the internal heat load. Cooling becomes essential in summer. The Zehnder COS Cooling Duct as part of the cupboard unit, flush-mounted and colour-matched.

Dry Cooling Capacity

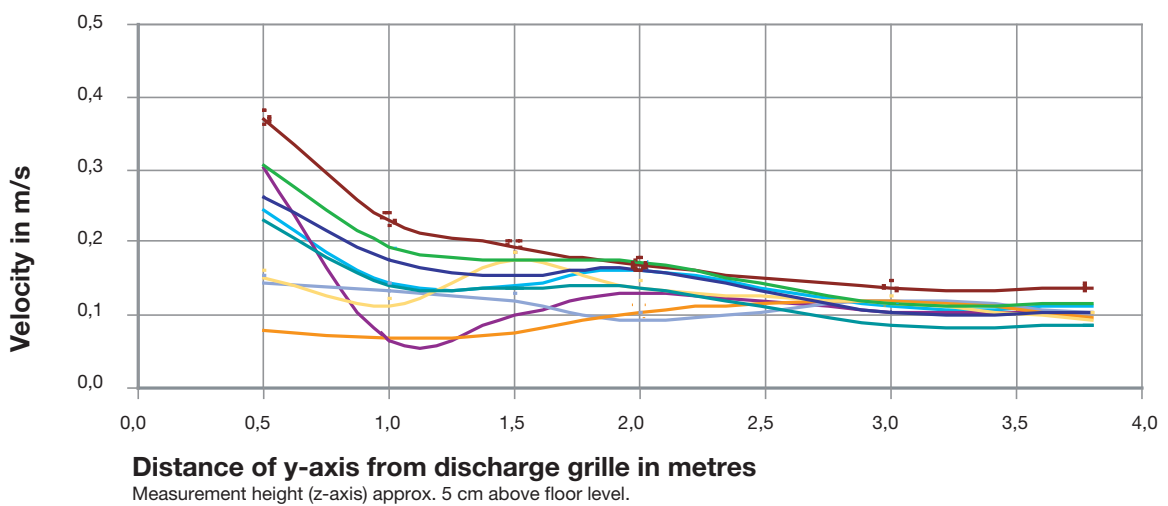


Velocity and Temperature of Discharged Air

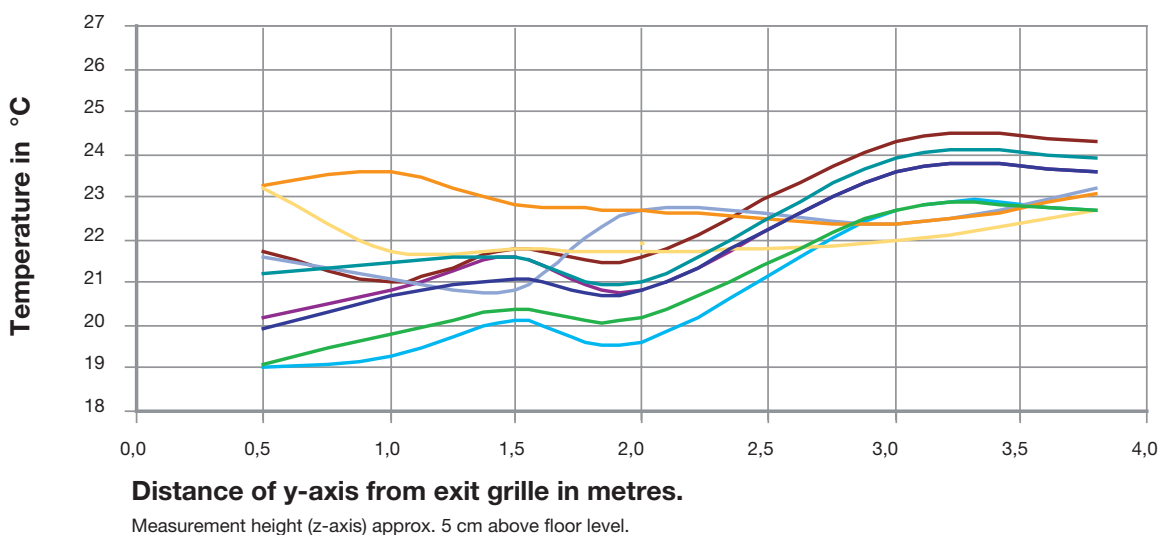
These factors determine the comfort provided by air systems. Zehnder has therefore designed the exit grille for the lowest possible discharge velocities. This form permits the mixing of the room air with the air discharged

from the cooling duct. The air being discharged approaches the room air temperature more quickly, an additional advantage for comfort.

Discharge velocity of air



Temperature of discharged air



Distance of y-axis from exit grille in metres.

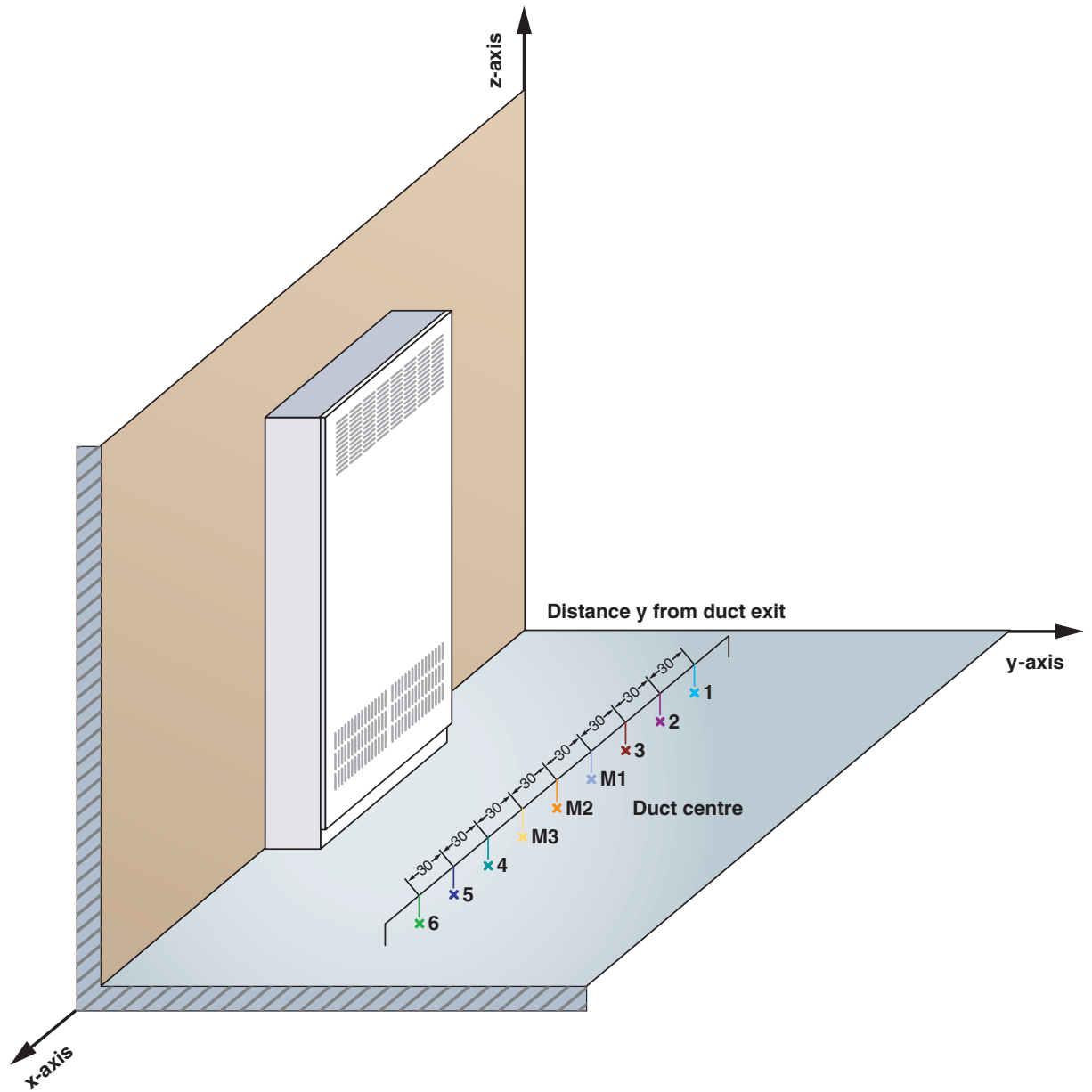
Measurement height (z-axis) approx. 5 cm above floor level.

- Measuring point 1
- Measuring point 2
- Measuring point 3
- Measuring point M1
- Measuring point M2
- Measuring point M3
- Measuring point 4
- Measuring point 5
- Measuring point 6

Limiting conditions
 Upstream flow temperature 8 °C
 Upstream return temperature 11 °C
 Room air temperature at inlet grille 26 °C

We recommend a distance of at least 1 metre (y-axis) from the cooling duct to the occupied area.

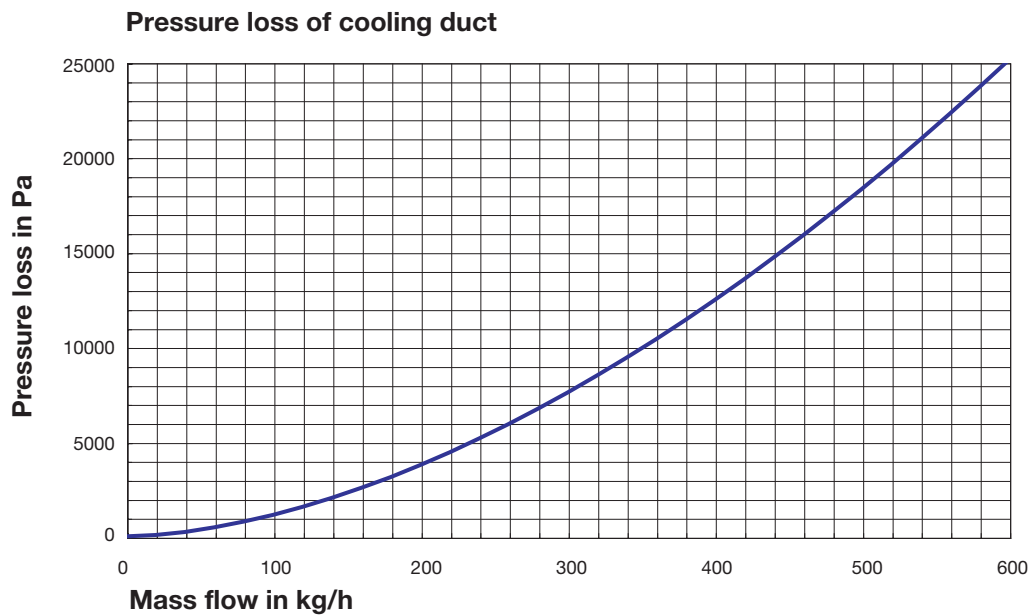
Arrangement of the measuring points in the room



The measurements were made at the Offenburg Institute of Technology under the supervision of Prof. Dr. Ing. Hesslinger.

Duct Pressure Loss

The following graph shows the variation of the upstream pressure loss of the Zehnder COS Cooling Duct (including the connection tubing) with the mass flow of the water.



Maintenance and Material

The heat exchanger can be removed from the unit to facilitate cooling duct cleaning. The housing and heat exchanger can then be cleaned without difficulty.

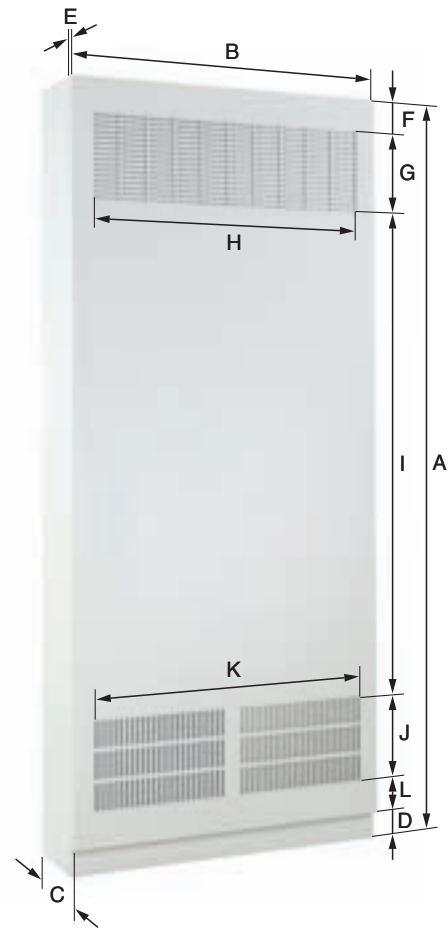
The housing and door of the cooling duct are made of galvanised sheet steel coated with high-grade stoved powder.

The heat exchanger consists of oxygen-permeable polypropylene. System-independent cooling water is recommended.

Dimensions and Connections

- Upstream flow and return connections
- Drain connections
- Electrical connection (if condensate pump is installed)

Item	Description	Dimension
A	Overall height	2290
B	Overall width	1000
C	Overall depth	270
D	Base height	85
E	Front depth	20
F	Top of cooling duct to air intake grille	100
G	Height of air intake grille	250
H	Width of air intake grille	870
I	Bottom of air intake grille to top of air exit grille	1500
J	Height of air exit grille	250
K	Width of air exit grille	880
L	Bottom of air exit grille to top of base	105



Ideal in hotel rooms – the noiseless Zehnder COS Cooling Duct



Extensive Range of Colours

The Zehnder COS Cooling Duct is available in many colours. The standard colour is RAL 9016 (white).

A selection of 8 examples from the extensive colour selection chart indicates the broad spectrum of the housing colours.



Standard colour RAL 9016



RAL 9002
C 9002



Natura
C 0035



RAL 1023
C 1023



RAL 3000
C 3000



RAL 5002
C 5002



RAL 9005
C 9005



Anathracite
M 0346



Volcanic
M 0336

Tendering Text

Zehnder COS Cooling Duct

Zehnder COS Cooling Duct for noiseless, draught-free, circulated-air cooling and dehumidification of the room air based on the gravity principle; i.e. no fan.

The patented Zehnder COS cooling Duct consists of a high-grade body with an installation duct at the rear together with a condensation tray and drain. The air flow and performance optimised entry and exit grilles are positioned in the housing front. The entire housing consists of galvanised sheet steel coated with stoved powder. The exchanger surfaces in the Zehnder COS cooling Duct consist of multiple, polypropylene capillary tubes arranged vertically in parallel and operating in the counterflow mode. The capillary tubes are arranged into mats and connected via a collector. This collector is connected via the flexible tube and ball valve, both of which are supplied. The tubes are connected to the mats by simple plug-in couplings. The cooling duct can be vented by means of a venting valve on the collector.

Surface:

High-grade stoved powder coating

- RAL 9016 (standard colour shade)
or
- Colour as required (special shade of colour)

Dimensions in mm:

W x D x H 1.000 mm x 270 mm x 2.300 mm

Connections:

Chilled water inlet and outlet, condensate drain. Electrical connection 230 V (only if condensate pump is installed)

Design Layout:

Cooling capacitywatts/duct
at water inlet temp.°C
and water outlet temp.°C
an room temperature°C

Accessories:

Condensate pump (optional)

