

NOOXS THINK TANK CLIMATE CONTROL MODULE

BEST ROOM CLIMATE FOR OPTIMAL WORK.

Room-within-a-room systems are not only used for short meetings, but increasingly also serve as fully-fledged workstations, used over longer periods of time. This presents additional challenges for maintaining the air quality. Warmth generated by people and equipment needs to be managed in a stable and efficient way, and an adequate supply of fresh air needs to be provided, in order to keep the CO2 level in the air within a healthy range

for breathing. Normal ventilation is not sufficient for this purpose, so an air-conditioning system is needed. Bene is now offering a new climate control module for the NOOXS room-within-a-room system. This energy-efficient climate control module is simple to use and condensate-free. The Bene climate control module meets the most exacting requirements and ensures a pleasant indoor air quality.

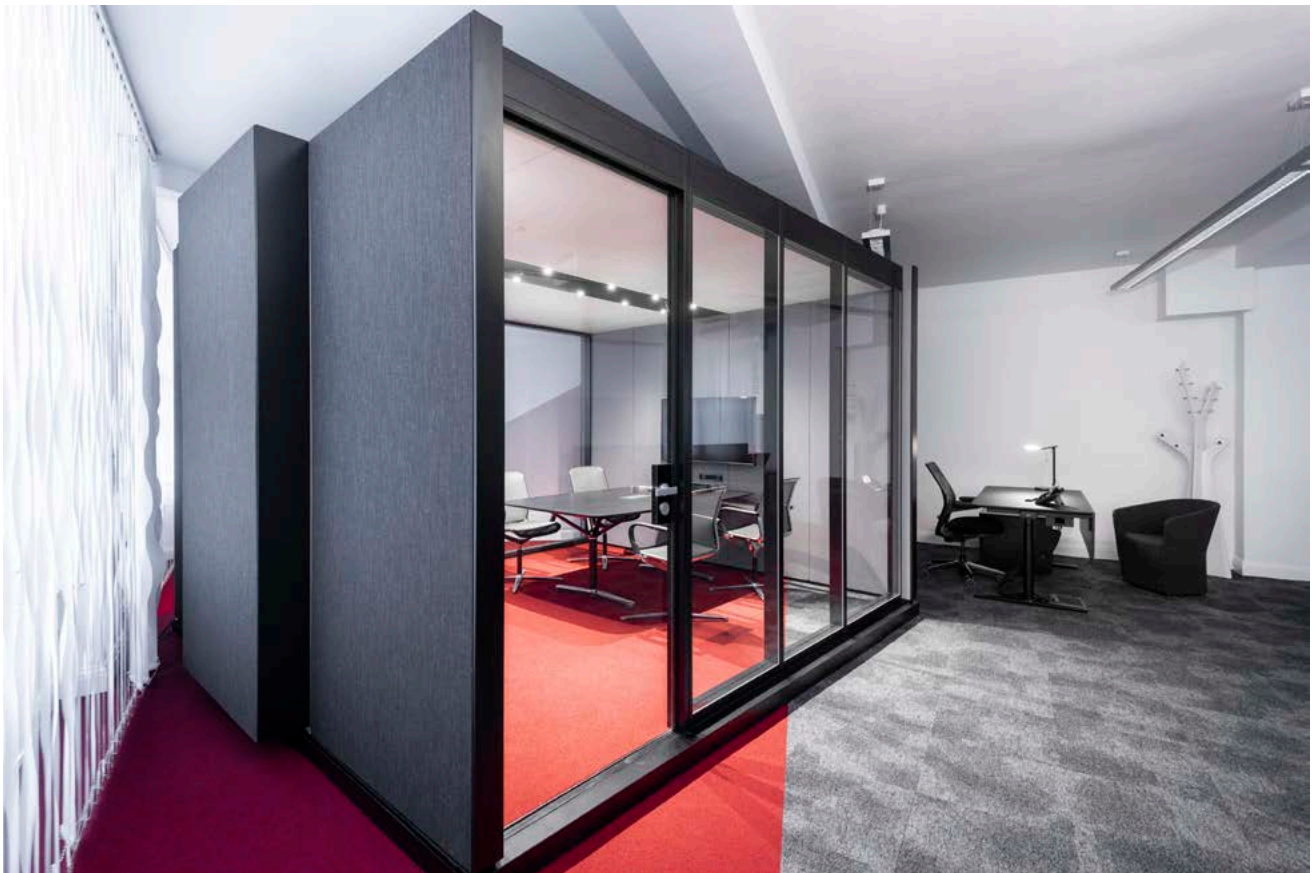


bene

INSPIRING OFFICES. SINCE 1790.

USP's

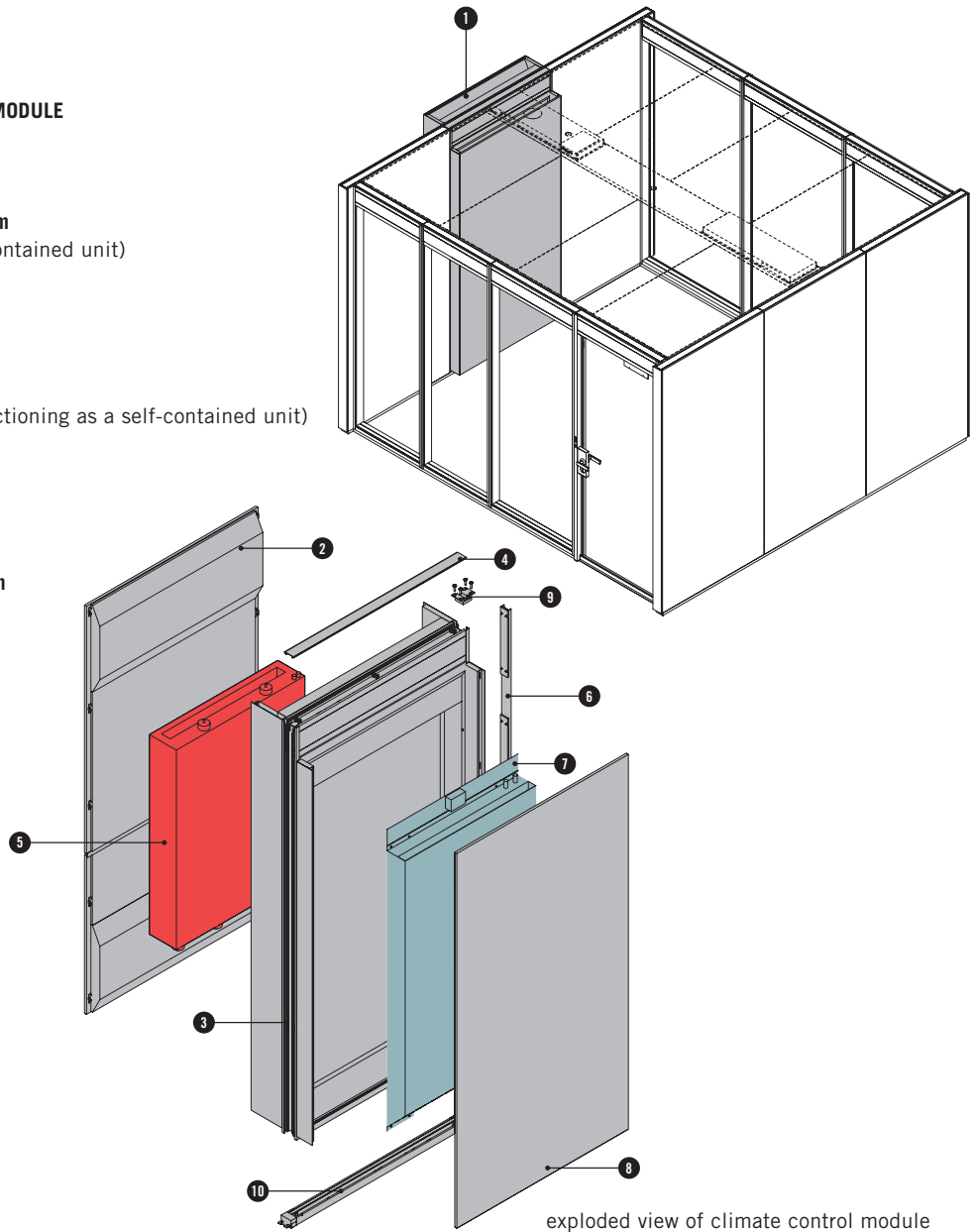
- **DRY COOLING WITH NO CONDENSATION TO SURROUNDING AMBIENT TEMPERATURE – NO HYGIENE PROBLEM**
- **STAND-ALONE OPERATION, ALTERNATIVELY CONNECTION TO BUILDING COLD WATER SUPPLY**
- **ALMOST NOISELESS**
- **OPTIMAL COMFORT WITH NO DRAUGHTS**
- **MINIMAL ENERGY CONSUMPTION WHEN CIRCULATING AIR COOLER IS USED**
- **NO DIRECT-MOUNTED CEILING, ROOM HEIGHT IS NOT AFFECTED**



PRODUCT DESCRIPTION

STRUCTURE OF THE CLIMATE CONTROL MODULE

- 1 Climate control module
- 2 External cover made of acoustic foam
(only when functioning as a self-contained unit)
- 3 NOOXS frame with supporting panel
- 4 Cover profile
- 5 Water-based cooler (only when functioning as a self-contained unit)
- 6 Element connector
- 7 Circulating air cooler
- 8 Internal cover made of acoustic foam
- 9 Connector
- 10 Base



exploded view of climate control module

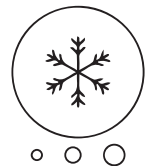
+1.5 KWH WHEN USED BY 6 PEOPLE



- Although the system exchanges the air up to 20 times per hour, the heat energy generated by people and equipment cannot be completely dissipated, which can lead to a slight warming of the interior space, depending on the intensity of use.
- Even slight differences in temperature compared to the surrounding office space can create an interior climate that feels unpleasant.

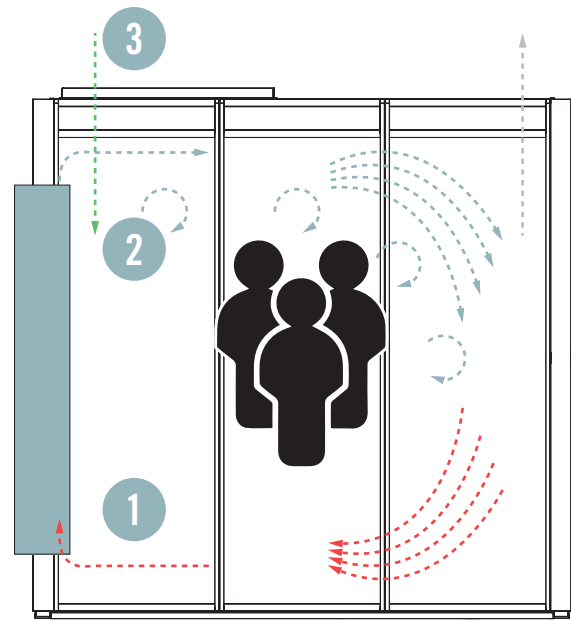
FACTS

- Cools air to surrounding ambient temperature
- Dry cooling with no condensation
- High-level comfort with no draughts thanks to the displacement ventilation with low flow rates
- Additional inflow of fresh air to ensure optimal CO2 levels
- Reduced energy consumption due to circulated air cooling inside the pod
- Almost noiseless operation; external <38 dB, internal <42 dB (at level 1)
- 2 operating modes: connection to building cold water supply/self-contained functioning
- Simple maintenance for all components at standing height
- Room height is not affected, in contrast to a ceiling-mounted cooling system



FUNCTIONAL PRINCIPLE

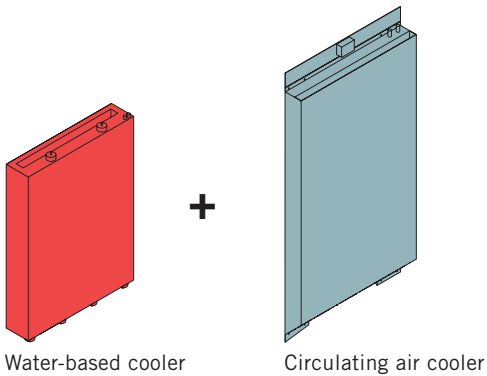
- 1 Room air is drawn in at the bottom of the module.
- 2 Using the principle of displacement ventilation, cooled air is blown out along the ceiling at low speed, but high volume.
- 3 At the same time sufficient fresh air is drawn in to regulate the CO2 level.



OPERATING MODES

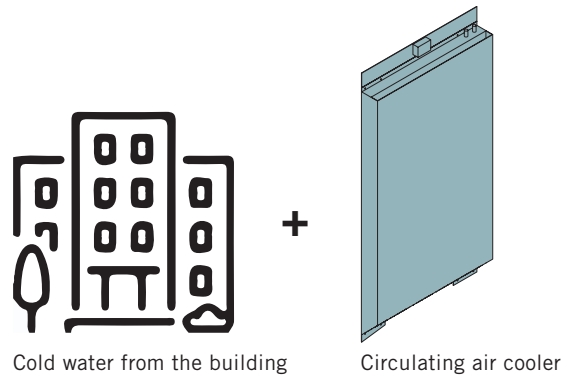
There is a choice of two operating modes.

SELF-CONTAINED OPERATION



- The water cooler produces cold water and releases heat into the surrounding office space
- The circulating air system cools the air inside the pod
- Only 230V power supply needed

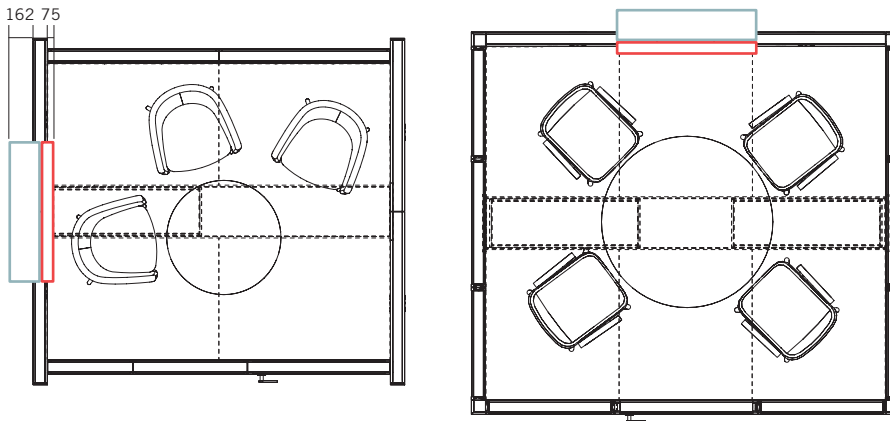
CONNECTION TO THE BUILDING'S COLD WATER SYSTEM



- Circulating air cooler is linked to the building's existing cold water system
- Optional tray for condensate and pump for flow temperature <math>< 15^{\circ}\text{C}</math>

INTEGRATION

- Element width 1.000 / 1.200 mm
- Projection of water cooler from external wall: 200 mm
- Projection of circulating air cooler from internal wall: 85 mm
- Surfaces in the Bene Spectrum
- Positioned to match the glass elements
- System can be activated by your on-site air-conditioning technicians.
The work required includes filling the system with water and general checks.

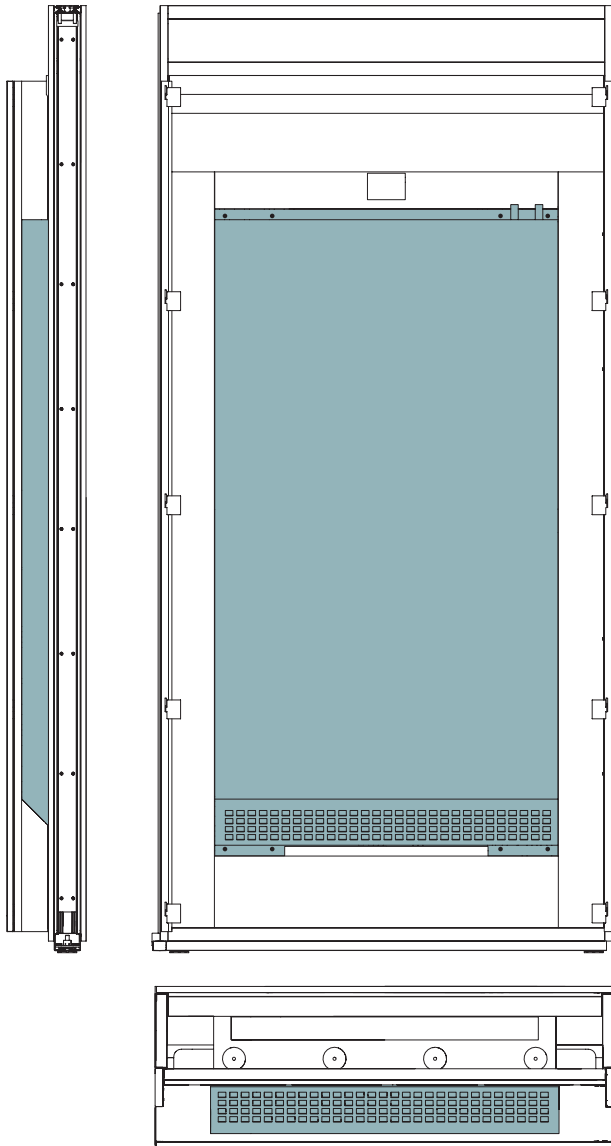


OPERATION

- Target temperature $\sim 1-2^{\circ}\text{C}$ below surrounding ambient temperature
- User can choose between 3 levels of air circulation. This not only changes the room temperature, but also affects the air flow rate and consequently the maximum cooling capacity. The level selected is indicated by blue LEDs.
- Dry operation $\sim 1,500\text{W}$ (with condensate $\sim 2,700\text{W}$)
(requires condensate tray and condensate drainage)
- Noise level: external $<38\text{ dB}$, internal 42 dB (at level 1)
- System errors are indicated by blue flashing LEDs



CIRCULATING AIR COOLER MODULE



Connections

power supply 230 V and control line/water connection to 1/2 IG/building supply with flexible hose 1/2 AG/optional condensate hose ~ 1 m, d= 9 mm

The connecting cables and hoses must not protrude into the air flow path or restrict it in any way.

If the cooler has a floating condensation element in the condensate collection tray, ensure the installation is horizontally level.

Cooling capacity

1,570W at water temperature of 15°C

Electricity supply

220 V; 16 A

Weight

46 kg

COOLING CAPACITY WITH WATER AT 15°C

n	V [m ³ /h]	L _{pA} [dBA]	Q _k /Δt [W/K]	Q _k /Q _{ges} [W]	W _{ok} /ΔP _w [kg/h]/[kPa]	P _{el} [W]	V _{M-st.} [V]	water discharge
1	650	38.8	143	1,570	400/19	42	10.0	18.4
2	500	35.7	120	1,330	400/19	36	7.5	17.8
3	310	33.5	85	940	400/19	22	5.0	17.1

n = operating level

V = flow rate (± 10%)

L_{pA} = noise level at a distance of 1m, measured in open-space surroundings

(values may vary depending on the installation situation, location and floor surface)

Q_k = total cooling capacity

t = temperature difference between intake temperature and water inlet temperature

Q_{ges.} = total cooling capacity

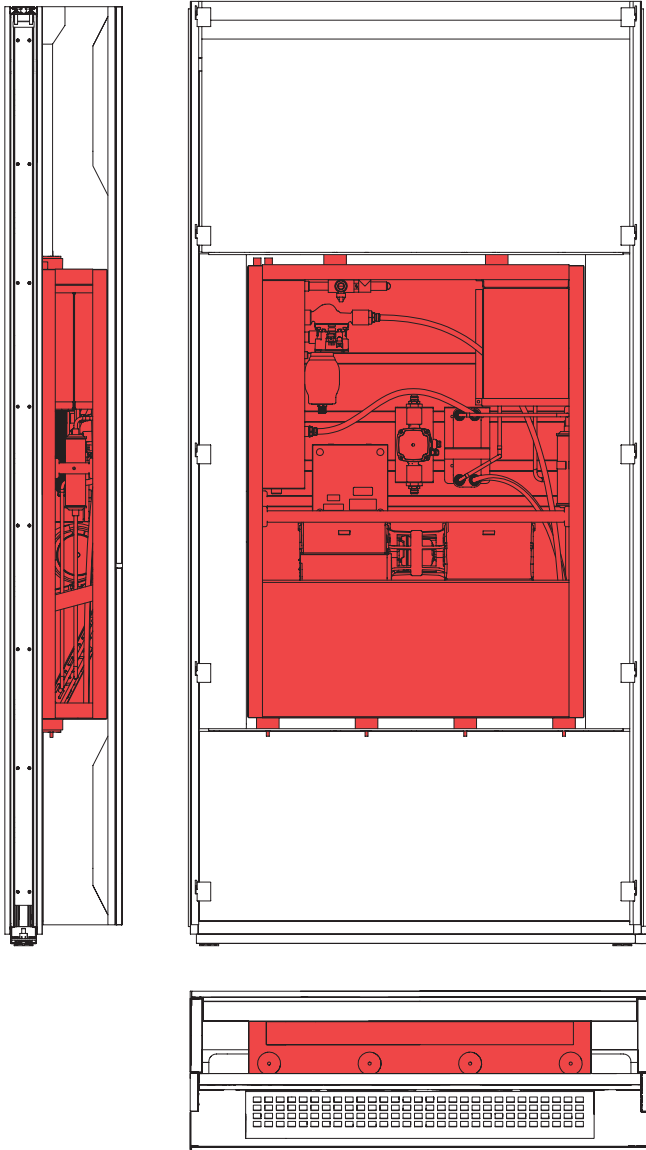
W_{ok} = nominal flow during cooling/heating

P_{el} = electric power consumption

P_w = water pressure loss in heat exchanger without loss of valve pressure

reference values: air intake for cooling 26°C, 50% rF

WATER-COOLED MODULE



Cooling capacity
2.3 kW at 10 to 53°C

Waste heat emission
3.3 kW

Refrigerant
R410a; 0.6 kg

Cooling cycle
closed cooling cycle (glycol additive possible), 13l/min

Electricity supply
220 V, 16 A, maximum output 0.922 kW

Weight
80 kg

CALCULATING COOLING CAPACITY

REQUIRED COOLING

These calculations assume one laptop per person and one 65" display screen.

	Heat sources in the NOOXS Think Tank					
	Transmission through the walls [watts]	Air exchange [watts]	People [watts]	Devices [watts]	Lighting [watts]	Total* [watts]
Surrounding office space temperature 24° C, NOOXS Think Tank 24° C (not dehumidified) = delta of 0° C						
NOOXS Think Tank small/3 people	0	0	450	260	41	751
NOOXS Think Tank large/6 people	0	0	900	470	91	1,461
Surrounding office space temperature 25° C, NOOXS Think Tank 24° C (not dehumidified) = delta of -1° C						
NOOXS Think Tank small/3 people	59	37	450	260	41	847
NOOXS Think Tank large/6 people	101	73	900	470	91	1,635.5
Surrounding office space temperature 30° C, NOOXS Think Tank 24° C (not dehumidified) = delta of -6° C						
NOOXS Think Tank small/3 people	356	220	450	260	41	1,327
NOOXS Think Tank large/6 people	607	440	900	470	91	2,508

Start-up, servicing and maintenance must always be carried out by a specialist company appointed by the customer.

START-UP

For the option with water cooler: filling the water cooler with water and venting the system.

For the option with a connection to the building's cold-water system: the connection must be made by a specialist company to be appointed by the customer. ATTENTION: If the temperature of the cold water in the building is less than 15°C, a condensate tray must be built in which includes a condensate drain and temperature sensor because condensate escapes due to the high difference in temperature.

Detailed information available on request.

SERVICE & MAINTENANCE

We use only high-quality components with a long lifespan, supplied by well-known international component manufacturers

As a precautionary measure, the following annual maintenance and checks should be carried out:

- Replace air filtration pad once a year
- Clean heat exchanger by vacuuming out dust
- For air-conditioning units with a condensation pump: clean the condensate tray
- Check the electrical connections
- Check the cooling hoses and connections for leaks
- Visual check of the cooling unit
- Function check of control device(s)

Maintenance must be carried out by a qualified expert.

SALES AND DISTRIBUTION INFORMATION / APPROVED MARKETS:

The system is designed for an operating voltage of 230 V / 50 Hz. Markets where a different mains voltage is specified (e.g. 110 V) cannot be supplied. A detailed list of the mains voltages for each country can be found here:

<https://www.laenderdaten.de / energiewirtschaft / netzspannung.aspx>