

WEM climate element MV-D

Art. 02011-3

Description

The WEM climate panel MV-D is a 25 mm thick, stabilized clay panel with integrated heating and cooling pipes made of an oxygen-tight multilayer composite pipe.

Application

The WEM climate panel MV-D is a dry construction panel and is used:

- During ceiling mounting
- or as wall heating/cooling if high humidity levels are expected during later operation (e.g. due to condensation during high cooling loads).

As a low-temperature heating system, it is used to support existing heating or cooling systems or as the sole heating/cooling system. It is suitable for both new construction and the renovation of older buildings. As a dry construction panel, the WEM climate panel MV-D is ideal for solid wood houses and timber frame houses.

Advantages

- High sound insulation
- Minimum drying times
- Simple and quick processing
- Minimal moisture ingress through thin plaster layers
- Pure natural product without any added substances
- Diffusion-open and capillary-conductive
- The 16 mm thick multilayer composite pipe is absolutely gas-tight against oxygen and water vapor.

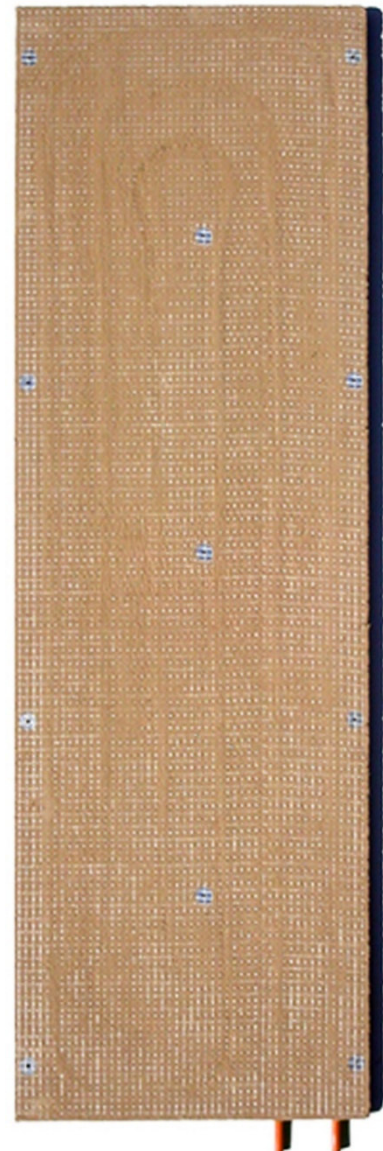


Fig. 1

Materials

plate	Natural building clay, plant fibers, mixed-grain washed sand, polymer dispersion <1% (only in climate element MV-D)
heating pipe	WHOM Multilayer composite pipe Ø16 x 2 mm (PE-RT/ Aluminium/ PE-RT), DIN DVGW tested
reinforcement	fiber optics

Technical data

Max. temperature/pressure	95°C/10 bar
Connection technology	WEM [®] press connector (press contour U16)
Flow temperature	35°C - 45°C
Heating output* <i>*see page 4</i>	85 W/m ² at T _ü = 12.5°C 170 W/m ² at T _ü = 22.5°C
Cooling capacity* <i>*see page 5</i>	e.g. 52 W/m ² ; at T _{room} 25 °C, T _{flow} 16 °C and T _{return} 18 °C
Bulk density of the clay mixture	approx. 1560 kg/m ³
Compressive strength σ_d	< 2.5 N/mm ²
Thermal conductivity λ	0.7 W/mK
Specific heat capacity C _p	1.0 kJ/kgK
Vapor diffusion resistance μ	5 – 10
Building material class	A2 (non-flammable) according to DIN EN 13501-1
Edge shape	blunt
control	Room thermostats and actuators in the heating circuit manifold or thermostatic valves (WEM Multibox)
fastening	Screws, Ø4.5 - 6 mm, staples
Building-related requirements	protect from moisture, Store in a dry place, Processing temperature ≥ 5°C

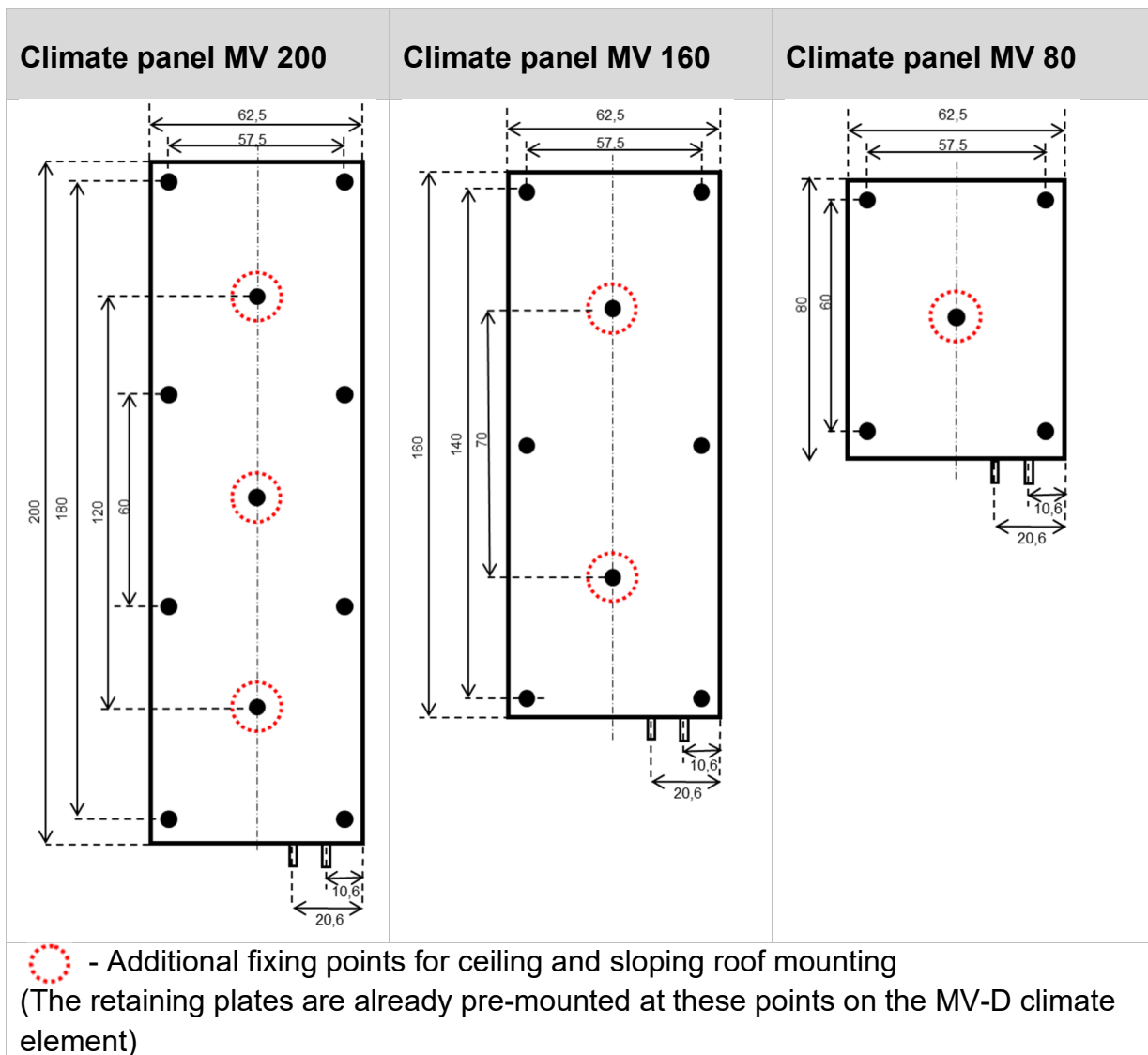
Soundproofing

Solid construction	Reduction: 2.8 dB*
Solid wood	Reduction: 8.5 dB*
wooden frame	Reduction: 10.6 dB*

**see page 6*

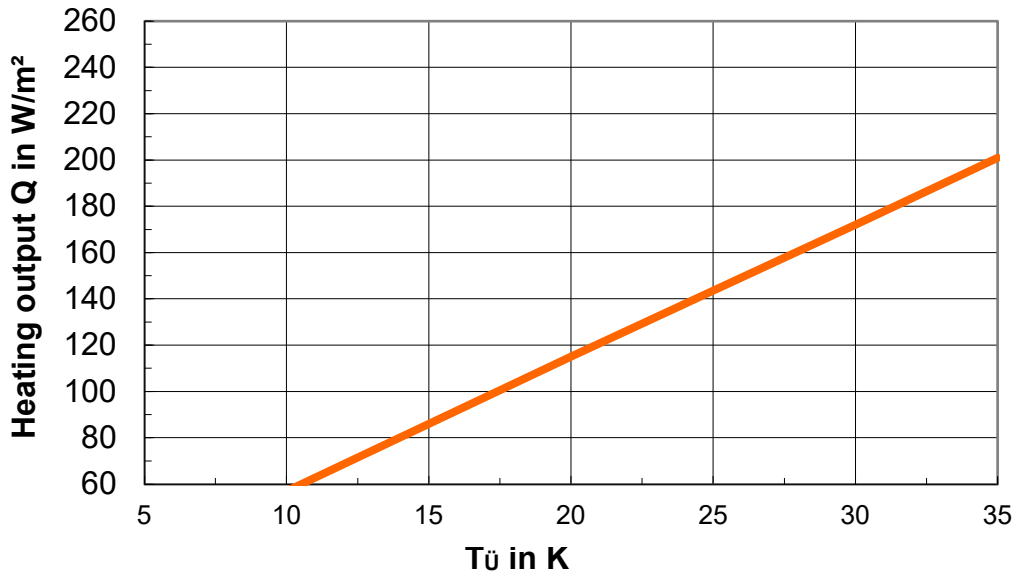
	Climate panel MV 200	Climate panel MV 160	Climate panel MV 80
Dimensions	200 x 62.5 x 2.5 cm	160 x 62.5 x 2.5 cm	80 x 62.5 x 2.5 cm
heating surface	1.25 m ²	1.0 m ²	0.5 m ²
Weight	approx. 44 kg	approx. 35 kg	approx. 18 kg
Water content	approx. 1.3 kg	approx. 1.1 kg	approx. 0.6 kg
Pipe length	12 m	10 m	5 m
Pressure loss	Information on pressure loss can be found under "Planning" on page 4.		

Dimensions and attachment points:



Heating output

The heating output depends on the flow and return temperatures of the heating medium and the desired room temperature. The specific heating output can be found in the characteristic curve.



$$T_{\dot{U}} = \frac{T_{VL} + T_{RL}}{2} - T_R$$

- T_Ü medium overtemperature
- T_{VL} Flow temperature
- T_{RL} Return temperature
- T_R Room temperature (here 20°C)

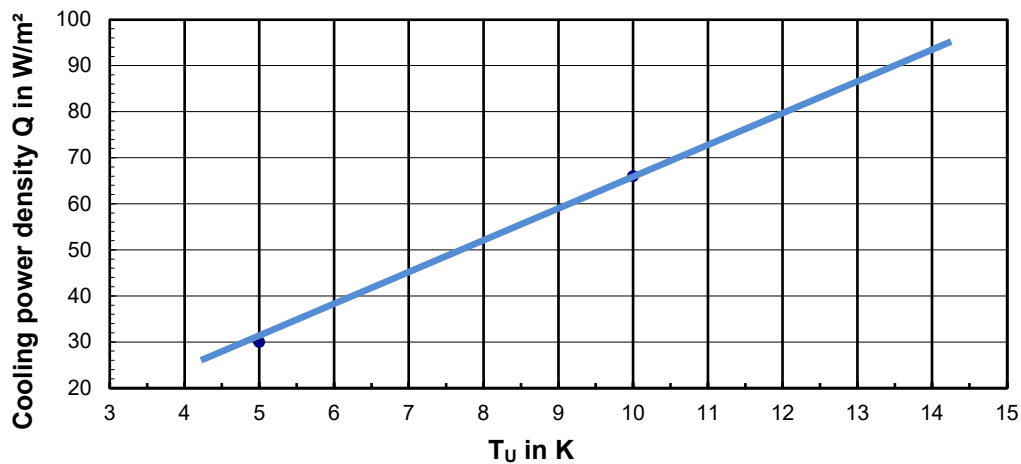
For frequently used temperature conditions, the power output can be read directly from the table.

T _{flow} [°C]	T _{Return} [°C]	Q [Watt/m ²]
35	30	72
40	35	100
45	35	115
45	40	129
50	40	144
50	45	158
55	45	172
55	50	186

The specified data only applies in conjunction with WEM clay plaster and a plaster layer of max. 8 mm.

Cooling capacity*

The cooling capacity depends on the supply and return temperatures of the coolant and the desired room temperature. The specific cooling capacity can be found in the characteristic curve.



$$T_U = \frac{T_{RL} - T_{VL}}{\ln \left[\frac{T_R - T_{VL}}{T_R - T_{RL}} \right]}$$

- T_U log. Untertemperatur
- T_{VL} Flow temperature
- T_{RL} Return temperature
- T_R Room temperature

For frequently used temperature conditions, the power output can be read directly from the following table.

T _{Room} [°C]	T _{flow} [°C]	T _{Return} [°C]	Q [Watt/m ²]
23	16	18	37
	16	20	28
	18	20	24
	18	22	-
25	16	18	52
	16	20	42
	18	20	37
	18	22	28
27	16	18	66
	16	20	57
	18	20	52
	18	22	41

The specified data only applies in conjunction with WEM clay plaster and a plaster layer of max. 8 mm.

** For wall cooling, we recommend the MV-D climate element for ceiling cooling.*

Soundproofing

As part of a master's thesis at Koblenz University of Applied Sciences, the influence of WEM clay panels 25 mm (LP) and climate elements on three typical wall structures was investigated:

Solid construction: 175 mm lime-sandstone with 10 mm cement plaster

Solid wood: 170 mm KVH (wood 100)

Wooden frame: Timber frame 6/12 cm with 12 cm wood fiber, sheathed on both sides with 2.5 cm diagonal cladding

	Solid construction	Solid wood	wooden frame
Without planking	55.0 dB	39.3 dB	35.0 dB
1 x LP + 8 mm clay fine plaster	57.8 dB <i>Reduction: 2.8 dB</i>	47.8 dB <i>Reduction: 8.5 dB</i>	45.6 dB <i>Reduction: 10.6 dB</i>
2 x LP + 16 mm clay fine plaster	58.5 dB <i>Reduction: 3.5 dB</i>	56.9 dB <i>Reduction: 17.2 dB</i>	47.7 dB <i>Reduction: 10.6 dB</i>
80 mm wood fiber + LP + 8 mm clay fine plaster	64.2 dB <i>Reduction: 9.2 dB</i>	60.2 dB <i>Reduction: 20.9 dB</i>	58.9 dB <i>Reduction: 23.9 dB</i>