

WEM Climate Panel MV-D

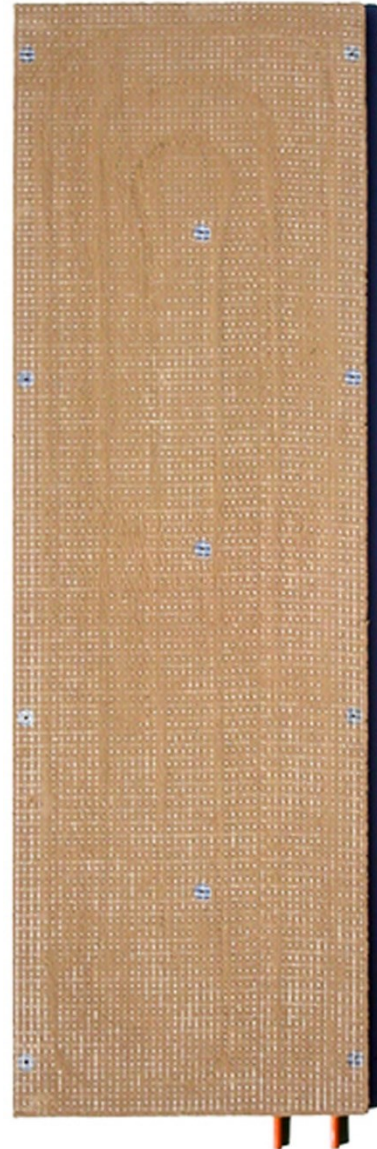
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Description The WEM Climate Panel MV-D is 25-mm-thick stabilised clay panel with integrated pipes made of oxygen-proof multi-layer composite material that are suitable for heating and cooling purposes.

Scope of application The WEM Climate Panel MV-D is a dry construction panel, which is used for the following applications:

- in ceiling assembly
- or as a wall heating/cooling system if a high moisture load is to be expected in later operation (e. g. due to condensate formation at high cooling loads).

The low-temperature heating can be used as an exclusive source of heating/cooling or to support the existing heating/cooling system. It is suitable for new construction as well as for renovation and refurbishment of old buildings. As a dry construction component, the WEM Climate Panel MV-D is ideally suited for solid timber houses and timber frame houses.



Benefits

- High noise protection
- Very short drying times
- Easy and quick installation
- Minimum increase in humidity due to thin plaster coats
- Capillary conductive
- The multi-layer composite pipe with a diameter of 16 mm is completely impermeable to oxygen and vapour.
- It is moisture-resistant due to an admixed dispersion solution but offers almost constant permeability to vapour.

III. 1

Materials

Panel	Natural construction loam, plant fibres, mixed-grained washed sand, polymer dispersion < 1 % (only for Climate Panel MV-D)
Heating pipe	WEM Multi-Layer Composite Pipe, \varnothing 16 x 2 mm (PE-RT/aluminium/PE-RT), tested as per DIN DVGW* * DVGW = German Technical and Scientific Association for Gas and Water
Reinforcement	Glass-fibre fabric

Technical data

Max. temperature/pressure	95 °C/10 bars
Connections	WEM® Press-Fit Fittings (press contour U16)
Heating power* * see page 4	85 W/m ² at T _O = 12.5 °C 170 W/m ² at T _O = 22.5 °C
Cooling power* * see page 5	e. g. 52 W/m ² ; at T _{indoor} 25 °C, T _{supply} 16 °C and T _{return} 18 °C
Bulk density	1 400 kg/m ³
Compressive resistance σ_d	> 2.5 N/mm ²
Thermal conductivity λ	0.59 W/m·K
Specific thermal capacity C _p	1.0 kJ/kg·K
Vapour diffusion resistance μ	5 to 10
Material class	A2 (non-combustible) as per DIN EN 13501-1
Edge shape	Blunt
Automatic control	Room thermostats and motorized actuators in the heating manifold or thermostat valves (WEM Multibox)
Fastening	Screws, \varnothing 4.5 to 6 mm, cramps
To be ensured on site	Protect against moisture, store in dry location, installation temperature \geq 5 °C

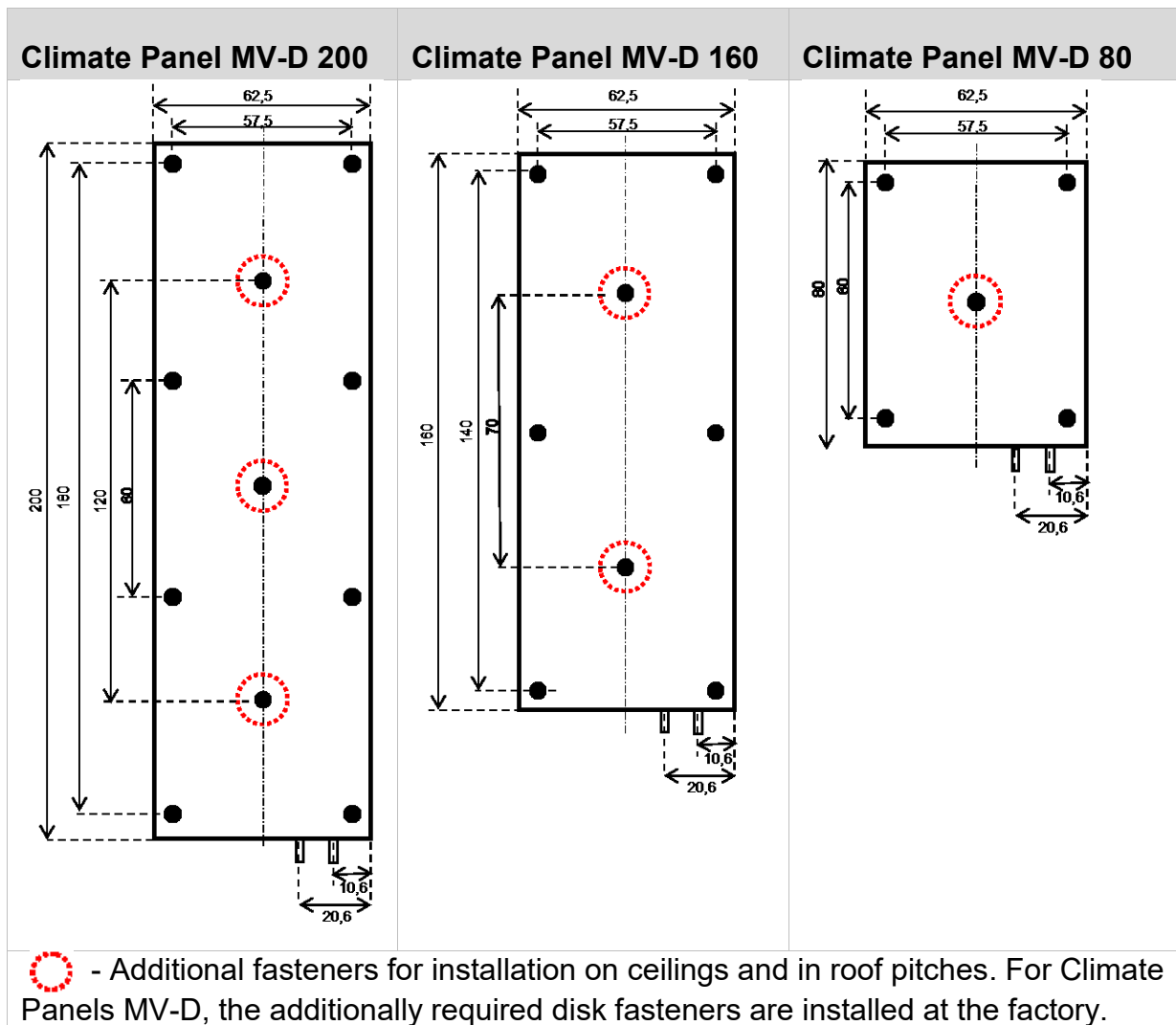
Noise protection

Solid structure	Reduction: 2.8 dB*
Solid timber	Reduction: 8.5 dB*
Timber frame	Reduction: 10.6 dB*

* see page 6

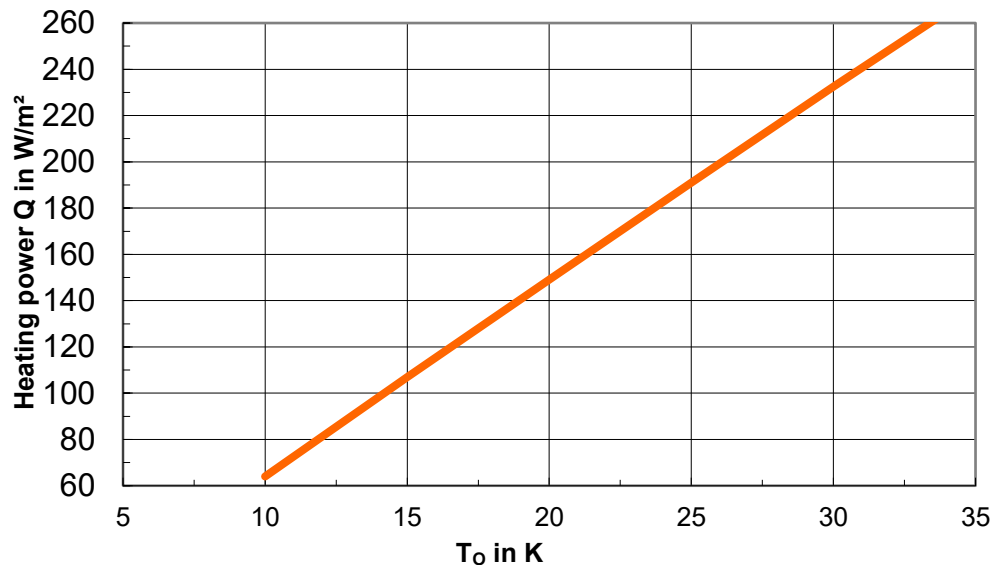
	Climate Panel MV-D 200	Climate Panel MV-D 160	Climate Panel MV-D 80
Dimensions	200 x 62.5 x 2.5 cm	160 x 62.5 x 2.5 cm	80 x 62.5 x 2.5 cm
Heating area	1.25 m ²	1.0 m ²	0.5 m ²
Weight	approx. 43 kg	approx. 35 kg	approx. 18 kg
Water content	approx. 1.3 kg	approx. 1.1 kg	approx. 0.6 kg
Pipe length	12 m	10 m	5 m
Pressure loss	For information concerning the pressure drop, see “Design” on page 4.		

Dimensions and fastening points:



Heating power

The heating power depends on the supply and return temperatures of the heating medium and the desired indoor temperature. The characteristic represents the heating power at different temperatures.



$$T_O = \frac{T_S + T_R}{2} - T_I$$

T_O mean overtemperature
 T_S supply temperature
 T_R return temperature
 T_I indoor temperature (20 °C in the example)

The table below gives an overview of typical temperature conditions and the associated heating power.

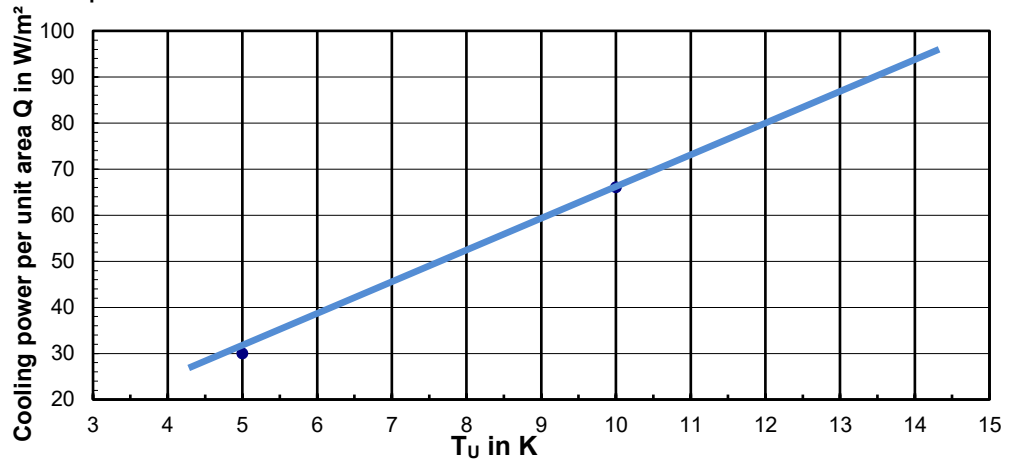
T _{Supply} [°C]	T _{Return} [°C]	Q [Watt/m ²]
35	30	85
40	35	128
45	35	150
45	40	170
50	40	190
50	45	212
55	45	232
55	50	255

The specified values only apply if WEM Clay Plaster is used and the plaster coat does not exceed a thickness of 8 mm.

Characteristic taken from the test report in accordance with DIN EN 442; testing institute: HLK Stuttgart, 02/2004

Cooling power

The cooling power depends on the supply and return temperatures of the cooling medium and the desired indoor temperature. The characteristic represents the cooling power at different temperatures.



$$T_U = \frac{T_R - T_S}{\ln \left[\frac{T_I - T_S}{T_I - T_R} \right]}$$

T_U logarithmic undertemperature
 T_S supply temperature
 T_R return temperature
 T_I indoor temperature

The table below gives an overview of typical temperature conditions and the associated cooling power.

T_{Indoor} [°C]	T_{Supply} [°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 values only apply if WEM Clay Plaster is used and the plaster coat does not exceed a thickness of 8 mm.

Characteristic taken from the test report in accordance with DIN 4715-1; testing institute: HLK Stuttgart, 02/2004

Noise protection

A master thesis at the University of Koblenz examined the influence of 25 mm WEM Clay Panels (LP) and Climate Panels on three typical wall structures:

Solid structure: 175 mm lime-sand bricks with a cement plaster coat of 10 mm thickness

Solid timber: 170 mm solid construction timber (Wood100)

Timber frame: Timber studs 6/12 cm, with 12 cm wood fibres, planked on both sides with diagonal boarding (2.5 cm)

	Solid structure	Solid timber	Timber frame
Without planking	55.0 dB	39.3 dB	35.0 dB
1 x Clay Panel + 8 mm clay finish coat	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 Clay Panel + 16 mm clay finish coat	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 fibres + Clay Panel + 8 mm clay finish coat	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>