

Design

Range of application

WEM Radiant Panel Heating Systems are installed in new and old buildings and are suitable for timber and solid masonry houses. They satisfy the demands as an exclusive source of heating, but you can also use them in combination with other panel heating or conventional radiator systems.

These systems are also appropriate for radiant cooling.

You can fit Climate Panels to walls, in roof pitches or on the ceiling.

Thermal protection

The structures of exterior walls in new and old buildings must comply with the requirements of the German Energy Saving Ordinance EnEV in its currently applicable version. For existing buildings, subsequent interior or exterior thermal insulation might be required. For interior insulation, we recommend materials that are capillary active and permeable to vapour diffusion. A certificate of building physical testing should be available for these materials. We will be pleased to give advice to interested designers.

There are no requirements concerning the thermal insulation of interior walls, you should however consider the risk of uncontrolled heat transmission to unheated spaces and avoid it.

The German Energy Saving Ordinance EnEV requires a limitation of the heat emission of manifold pipes. This requirement must always be observed. The following excerpts taken from the Ordinance apply to WEM Radiant Panel Heating Systems:

Row	Type of pipe	Minimum insulation thickness (at $\lambda = 0.04 \text{ W/m}\cdot\text{K}$)	Minimum insulation requirement
1	Pipes through unheated rooms	26 mm	100 %
5	Pipes in wall and ceiling penetrations, in pipe crossing areas, at pipe connection points, on central pipe manifolds	13 mm	50 %
6	Pipes that are laid in structural components separating heated spaces of different occupants	13 mm	50 %
7	Pipes in flooring structures / with impact protection	4 mm	

Notice: For other thermal insulator qualities (λ unequal to $0.04 \text{ W/m}\cdot\text{K}$), convert the values accordingly.



Flächenheizung und -kühlung

Sound insulation, fire protection

If requirements concerning sound proofing and fire protection are to be complied with, they refer to the entire wall structure. Under normal conditions, the heating system designer and the architect take care of these requirements in the design.

The WEM Climate Panels and Clay Panels coated with WEM Clay Fine Finish Plaster have been tested as per DIN EN 13501-1 and comply with fire behaviour class A2 (not flammable).

In cooperation with the University of Koblenz, the sound-proofing properties of the WEM products have been examined. The results are specified in the respective technical product information.

Dimensioning, quantity survey

The calculation of the required quantities for the wall heating to be installed is based on the calculation of the standard thermal load as per DIN EN 12831. The guidance values obtained in this calculation are used for the design of the heating system in each room in accordance with the demands of the subsequent occupation.

If a load calculation as per DIN EN 12831 is not available, WEM GmbH will render this service subject to a fee.

We will be pleased to prepare an estimate of the heating loads for your building project based on our many years of experience.

To request a calculation, call us at +49 261 9833990 or send an e-mail to kalkulation@wandheizung.de.

Kunde:		Kaufverhältnisse:	
Name: Musterfamilie	Adresse: Stadtzentral	Name: Musterfamilie	Adresse: Stadtzentral
Ort: Musterstadt	Ort: Musterstadt	Ort: Musterstadt	Ort: Musterstadt
Tele: jwm@wandheizung.de	Tele: jwm@wandheizung.de	Tele: jwm@wandheizung.de	Tele: jwm@wandheizung.de
eMail: jwm@wandheizung.de	eMail: jwm@wandheizung.de	eMail: jwm@wandheizung.de	eMail: jwm@wandheizung.de



Wandheizfläche: Die angegebenen Heizleistungen gelten für die WEM Wandheizungssysteme in Verbindung mit den WEM Lehmputzen bzw. Kalkputzen und sind nicht auf andere Produkte übertragbar.

Wandheizfläche:	Lehm	WEM Universalputz oder Naturkalkputz
WEM Putzsysteme (wählbar durch anklicken)	45	°C
Vorlauftemperatur (wählbar durch anklicken)	170	W/m²
Wärmelast der Heizfläche	200	W/m²
Klimaelement	20	W/m
Klimarohr	20	W/m

Voraussetzungen: Altbau gedämmt

Erdgeschoß		Trochsenbau: Klimaelement			Nasssystem: Klimaregister oder / und Rohrsystem											
Pot.	Raum	Raumgröße m²	Heizlast je m²	Wärmebedarf in Watt	KE 200 in Stück	KE 160 in Stück	KE 80 in Stück	KR 200 in Stück	KR 160 in Stück	KR 80 in Stück	Rohr in m	Zahn-schienen in Stück	Wandheizfläche in m²	Heizleistung in W	Differenz Leistung/Bed. in W	Heizkreise
2.1	Küche / Essen	23,0	63	1449				5	1			0	7,3	1.450	OK	1
2.2	Bad	8,5	85	723				3				0	3,8	750	OK	1
2.3	Wohnen	22,0	45	990				4				0	5,0	1.000	OK	1
2.4	Schlafzimmer	18,5	60	1110				2	3			0	5,5	1.100	OK	1
	Summe	72,0		4272	0	0	0	14	4	0	0	0,0	21,5	4.300	29	4

I. Obergeschoß		Trochsenbau: Klimaelement			Nasssystem: Klimaregister oder / und Rohrsystem											
Pot.	Raum	Raumgröße m²	Heizlast je m²	Wärmebedarf in Watt	KE 200 in Stück	KE 160 in Stück	KE 80 in Stück	KR 200 in Stück	KR 160 in Stück	KR 80 in Stück	Rohr in m	Zahn-schienen in Stück	Wandheizfläche in m²	Heizleistung in W	Differenz Leistung/Bed. in W	Heizkreise
3.1	Kind 1	23,5	45	1059				3	1	1		0	5,3	1.250	OK	1
3.2	Bad	6,5	75	489				2				0	2,5	500	OK	1
3.3	Kind 2	22,0	40	880				2	2			0	4,5	900	OK	1
3.4	Schlafzimmer	19,0	38	722				3				0	3,8	750	OK	1
	Summe	71,0		3147	0	0	0	10	3	1	0	0,0	16,0	3.200	53	4

Gesamt		Beheizte Wohnfläche m²	Wärmebedarf in Watt	KE 200 in Stück	KE 160 in Stück	KE 80 in Stück	KR 200 in Stück	KR 160 in Stück	KR 80 in Stück	Rohr in m	Zahn-schienen in Stück	Wandheizfläche in m²	Heizleistung in W	Differenz Leistung/Bed. in W	Heizkreise
		143,00	7419	0	0	0	24	7	1	0	0,0	37,5	7500	82	8

Design temperatures

We recommend designing the system for a maximum temperature of 45 °C in the supply flow. Depending on the energetic characteristics of the heat generator (heat pump), another design temperature, e. g. 35 °C for heat pumps, might be more reasonable.

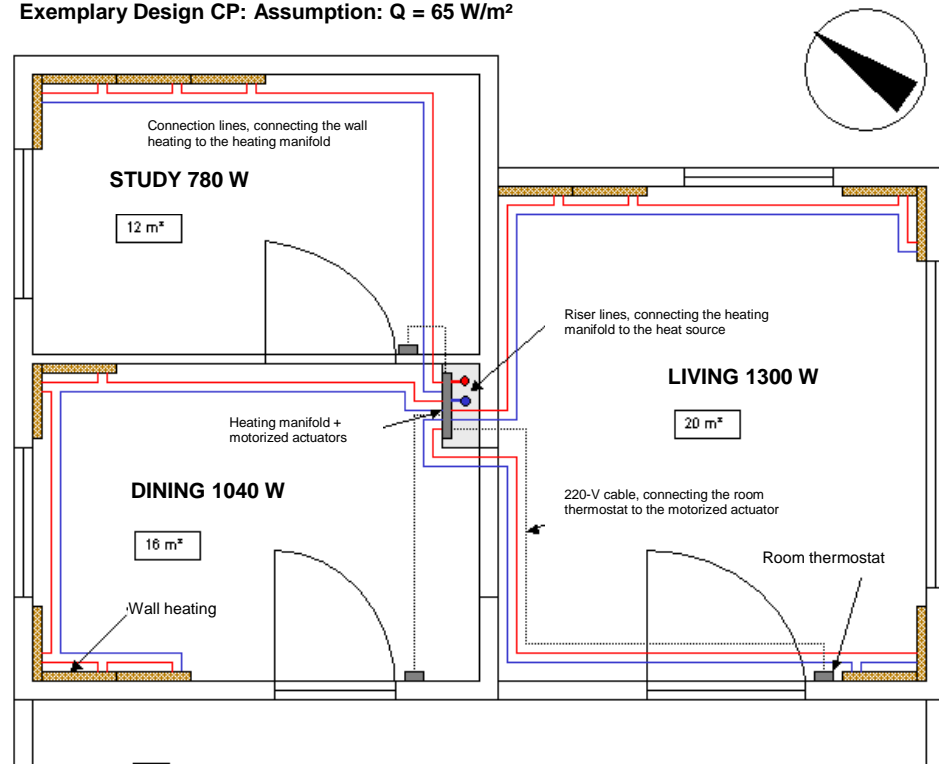
Where radiant ceiling heating systems are concerned, supply temperatures of max. 35 °C should be considered if the clear room height does not exceed 2.7 m.

Place of installation

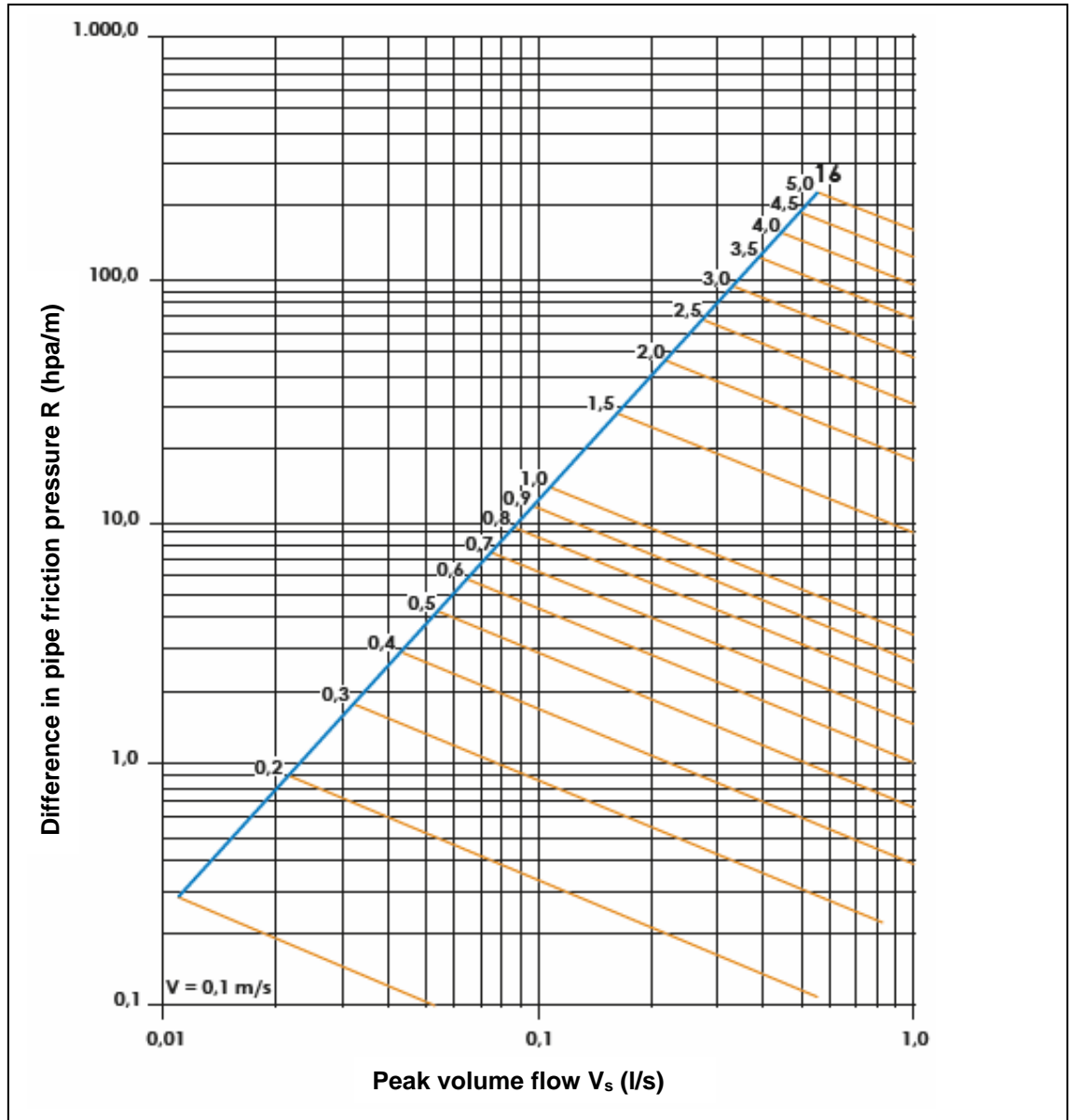
In old buildings, the calculated amount of WEM radiant panel heating is preferably installed on the inner face of exterior walls to avoid heat radiation from the human body towards these potentially cold surfaces. This ensures a high level of comfort.

When locating radiant panel heating on interior wall surfaces, the main intention is to create comfort zones, such as in dining recesses, in areas with seat groups, near desks or in relax areas.

Exemplary Design CP: Assumption: $Q = 65 \text{ W/m}^2$



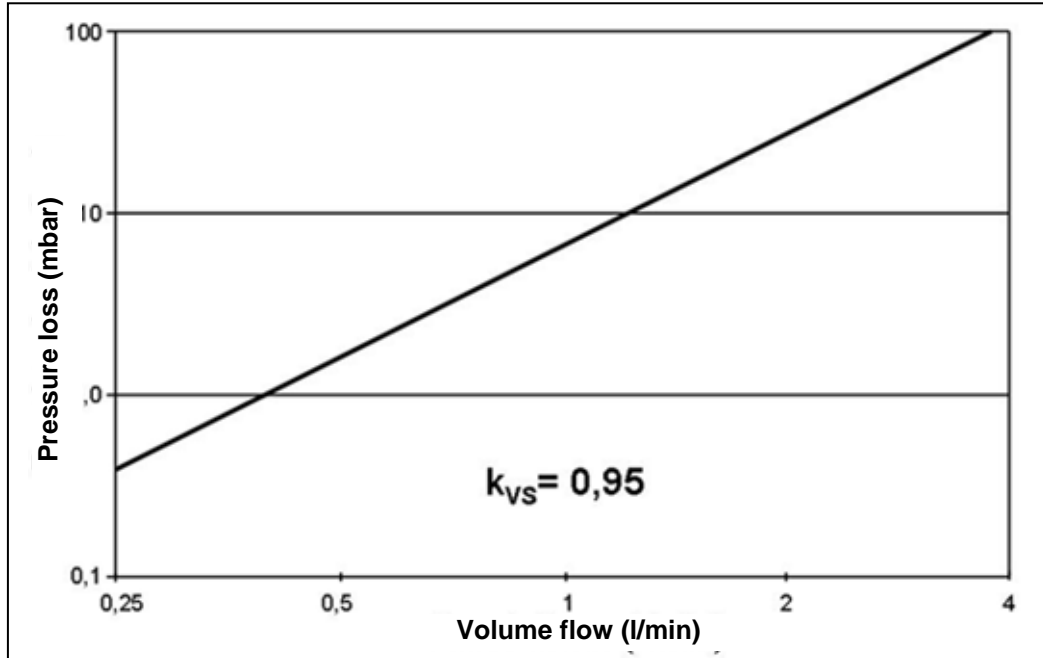
Pressure loss WEM Composite Metal Pipe



Pressure loss

WEM Press-fit Fittings	Zeta value ζ	Equivalent pipe length
WEM Press-fit Coupler $\varnothing 16$ mm	1.70	0.8 m
WEM Press-fit Elbow $\varnothing 16$ mm	4.4	2.0 m
WEM Press-fit Junction R $\frac{1}{2}$ " NT, $\varnothing 16$ mm	1.70	0.8 m
WEM Press-fit Junction R $\frac{1}{2}$ " FT, $\varnothing 16$ mm	1.70	0.8 m
WEM Press-fit Screw Fitting (Euro cone), spigot nut R $\frac{3}{4}$ " FT, $\varnothing 16$ mm	1.70	0.8 m

Pressure loss **WEM Heating Manifold**



Pressure loss **Multibox K and K-RTL**

