

Application technology, 5th edition

Volume III:

Fonterra radiant heating and cooling



Fonterra Side 12

Planning

System description

The wall heating system Fonterra Side 12 is perfectly suited for use in modern low-energy buildings, not only residential houses but also sports halls, hospitals, children's daycare centres etc.

The system convinces with various benefits: a reduction of the risk of accidents, no obstruction of utility spaces, and added comfort. Also for reconstruction of old buildings, Fonterra Side 12 offers tried-and tested mounting options, e.g. for loft conversions. Here, two work steps can be combined: heating installation and dry construction.

The dry construction system consists of 18 mm thick gypsum fibre system elements with integrated polybutene pipes 12 x 1.3 mm.

The wall heating pipes are factory-embedded in the system elements which thus can be directly mounted on a sub-construction. The wall elements are fastened at an interval of 31 cm on a sub-construction suitable for dry interior construction. Various panel sizes for easier mounting to the wall or window parapet.

The panels are mounted with the smooth side facing the wall. After joint filling, the system element can be painted, papered, tiled or plastered.

Wall heating panels of max. 5 m² can be series-connected directly to the manifold.

Suitable for operating temperature of max. 50 °C.



Installation situation of the Fonterra Side 12 wall heating

Fig. 167: Installation situation of the Fonterra Side 12 wall heating

System features

- Easy mounting because system panels are available for window parapets or wall surfaces of different sizes
- The system panels are mounted in a suitable sub-construction at intervals of 31 cm
- Total height of the system panel 18 mm, plus sub-construction and wall cladding
- Wall heating panel with integrated heating pipes
- Oxygen-seal polybutene pipe 12 x 1.3 mm
- Fonterra wall heating systems can also provide cooling
- Supply temperature max. 50 °C, optimum wall surface temperature approx. 35 to 40 °C
- Connection of the system panels connected in series up to approx. 5 m² to the manifold
- Easy connection of the system panels with press connectors in the floor structure or in the free area of the sub-construction
- Surface finishes such as paint coats, wall paper, textured render, and tiles can be applied without any problems
- The positions of the wall heating pipes can be identified by means of temperature foil

Temperature foil on the wall

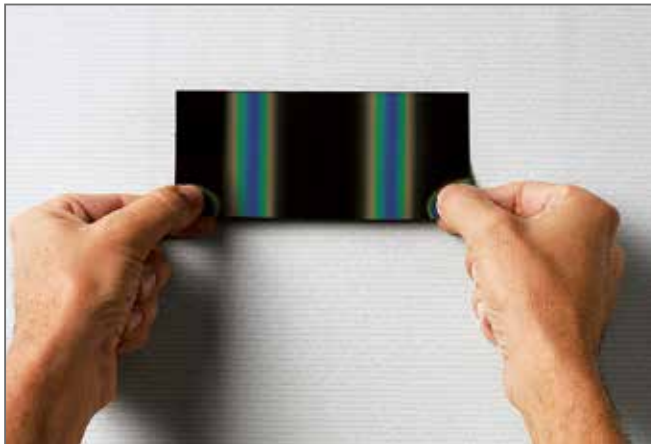
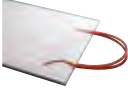
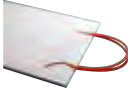







Fig. 168: Temperature foil on the wall

System components

System surface	
 <p>Fonterra Side wall heating panel 620x2000 mm 310x2000 mm 620x1000 mm</p>	 <p>Fonterra Side wall heating panel 70% assigned 620x1000 mm</p>
 <p>Plaster board for residual surfaces 620x2000 cm</p>	
Fastening and connection elements	
 <p>Coupling with SC-Contur 12x1.3mm</p>	 <p>Connection screw fitting with SC-Contur</p>
 <p>Drywall screws</p>	 <p>Joint adhesive</p>

System components

Name	Article number
PB pipe 12x 1.3 mm, 120 mm	707712
PB pipe 12x 1.3 mm, 240 mm	615680
PB pipe 12x 1.3 mm, 650 mm	616502
PB pipe 12x 1.3 mm, 120 m in protective pipe	609658
Fonterra Side wall heating panel 2000 x 620 x 18 mm	615635
Fonterra Side wall heating panel 2000 x 310 x 18 mm	615642
Fonterra Side wall heating panel 1000 x 620 x 18 mm	615666
Fonterra Side wall heating panel 70% 1000x620x18mm	615659
Plaster board 2000 x 620 x 18 mm	615673
Protective pipe for joints 12 x 18 mm	668945
Joint adhesive	624897
Drywall screws 45 mm	625184
Temperature foil	624910
Pipe guide 90°	609498
Connection screw fitting 12 x 1.3	614508
Connection screw fitting 12 x 1.3 with SC-Contur	614584
Coupling for plastic pipe 12 x 1.3	614669
Coupling with SC-Contur 12 x 1.3	614676
Adapter with SC-Contur 12 x 1/2	636166

Tab. 76: System components

Tools

Name	Article number
Viega pipe shear	652005
Hand press tool 12	401436
Viega press jaw 12	616915
Press machine, e.g. Pressgun Picco	735470

Tab. 77: Tools

Technical data

Side 12 panels	
Dimensions W x H x D	e.g. 620x2000x18mm
Material	Gypsum board
Fire rating class	A1 acc. to EN 13501-1 A2 acc. to DIN 4102-1
Weight	21.5 kg/m ²
Pipe clearance	75 mm
Max. permissible supply temperature	50 °C
Max. heating circuit length	80 m/5 m ²
Movement joint	from 6.5 m active surface
Damp rooms	suitable for residential areas*

**Technical data
system panels**

Tab. 78: Technical data system panel

* Note Brochure 5, Bundesverband der Gipsindustrie e. V. »Bäder und Feuchträume im Holz- und Trockenbau« (Bathrooms and damp rooms in timber and dry construction) and the data sheet of the Zentralverband des deutschen Baugewerbes ZDB (Association of the German Building Trade).

System pipe	PB 12x1.3mm
Dimensions [mm]	12 x 1.3
Minimum bending radius	5 x d _a
Operating condition acc. to ISO 10508 Class 4 [MPa] (bar) Class 5	1,0 (10) 0,8 (8)
Max. operating temperature [°C]	95
Mounting temperature [°C]	> 5
Water volume [l/m]	0,069
Heat conductivity λ [W/(m·K)]	0,22
Linear coefficient of length expansion [K ⁻¹]	1.3 x 10 ⁻⁴
Weight [g/m]	50

**Technical data
system pipe**

Tab. 79: Technical data system pipe

Wall structures

Fonterra Side 12 system panels can be mounted on an on-site sub-structure to all suitable walls of sufficient carrying capacity.

The system surface facing the room transmits and distributes the heat.

Wall construction Fonterra Side 12

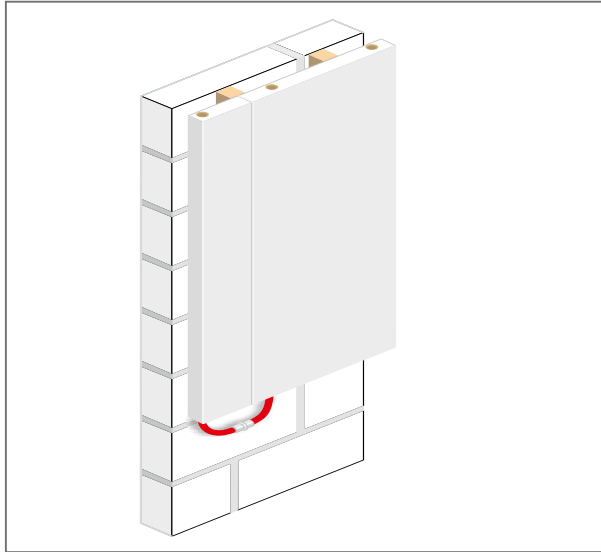


Fig. 169: Wall construction Fonterra Side 12

When installing a wall heating in a building, a range of structural aspects must be considered, e.g.:

- Free available wall surface
- Large areas obstructed by furniture
- Quality of the underground
- Existing installations

Flexible mounting options matching the individual structural aspects

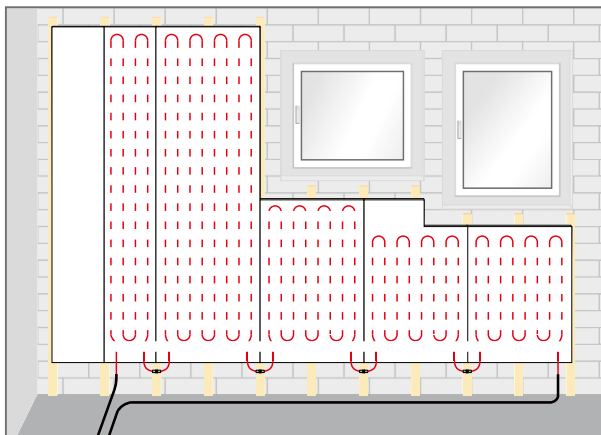


Fig. 170: Flexible mounting options matching the individual structural aspects

Notes on dimensioning

The new EnEV regulations concern wall heating systems regarding the execution of the external walls or pitched roof areas, or walls bordering on unheated rooms or soil.

If, in heated rooms, walls bordering on unheated rooms are to be replaced or installed for the first time or modified in such a way that insulation layers are provided, the maximum values specified in Appendix 3 line 5 are applicable.

Line 1	Outer walls and pitched roof areas	0.24 W/(m ² K)
Line 5a	Walls bordering on unheated rooms or soil	0.30 W/(m ² K)

**Excerpt from
Appendix 3, Table
1**

Tab. 80: Excerpt from Appendix 3, Table 1

Subject to adherence to the above-named values, no additional heat insulation behind the wall heating must be provided. If additional insulation is required nevertheless, e.g. with internal walls against rooms with much lower inside temperatures, soft fibre timber panels can be mounted between the battens.

External walls should be insulated only on the "cold side", i.e. the outer side of the external wall, for example by installation of upgraded insulation.

In the special situation of an insulation layer at the interior-room side of the external wall, the requirements of §8 sentence 1 are considered met if the thermal transmission coefficient of the resulting wall construction does not exceed 0.35 W/(m²K). Interior insulation of external walls makes sense for example when refurbishing half-timbered houses, but requires particular expert knowledge: Since the dew point will shift to the inside of the building, suitable vapour/moisture barriers must be installed to prevent moist inside air from getting behind the insulation layer and condensing there.



If, generally, measures are taken during reconstruction according to EnEV § 9 sentence 1 (thermal transmission coefficient of the external building parts) and if the thickness of the insulation layer provided according to these measures is restricted for technical reasons, the requirement is considered met if the insulation layer is installed with the greatest possible thickness achievable according to the recognized state of practice (with a calculation value of the heat conductivity of 0.035 W / (m·K).

Heating circuits and mounting times	System requirement	
	Installation data for Fonterra system	Side 12
	Max. heating circuit area	5 m ² or 80m ¹)
Mounting time in group minutes	20 min./m ²	

Tab. 81: Heating circuits and mounting times

¹⁾ Connection lines to the manifold must be considered

Material requirement for 1 m ²	System components	Available quantities/ packing units	Pro-rata requirement
	PB pipe 12x1.3 mm, in protective pipe	120 m	for supply lines supply/return flow
	Fonterra Side wall heating panel 620 x 2000 mm	30 pieces	0.80 pc./m ² ¹⁾
	Fonterra Side wall heating panel 310 x 2000 mm	30 pieces	1.60 pc./m ² ¹⁾
	Fonterra Side wall heating panel 620 x 1000 mm	30 pieces	1.60 pc./m ² ¹⁾
	Drywall screws 45 mm	1000 pieces	25 pc./m ²
	Joint adhesive	310 ml	200 ml/m
	Press connector with SC-Contur 12x1.3 mm	5 pc.	1 pc./m ²

Tab. 82: Material requirement for 1 m²

¹⁾ With full-surface coverage

Installation example

Viega recommends the following process for approximate dimensioning of the required wall heating surface:

- Select the supply temperature. Depending on the system, a supply temperature between 25 and 50 °C can be selected which is valid for the entire building.
- Calculation of the heating fluid overtemperature (see reading example output diagram).
- Dimensioning with Fonterra Side 12 diagram. Read-off of the heat output into the room, determination of the required wall heating surface.
- Examination of the maximum heating circuit surface, determination of the manifold outlets.
- Calculation of the actual mass flow, examination of the pressure losses, calculation of the valve settings.



To ensure premium comfort, the mean heating surface temperature should not exceed 40 °C.

Assumptions

- Residential building:
New "low-energy house"
- Heat requirement:
approx. 45 W/m^2
- Heating system:
Heat generator supply temperature = $42 \text{ }^\circ\text{C}$, return temperature = $37 \text{ }^\circ\text{C}$
- Room to be dimensioned:
Living room with 45 m^2 enclosing walls surface and 25 m^2 floor space ($4.65 \text{ m} \times 5.38 \text{ m}$), room height 2.75 m , room temperature $20 \text{ }^\circ\text{C}$
- External wall:
OHTC value = $0.20 \text{ W/m}^2\text{K}$, brickwork
Wall surface for wall heating $W \times H = 4.65 \times 2.75$ (2.0) m
(incl. 1 window 1.2×1.0 m) and 5.38×2.75 (2.0) m (incl. 1 door 1.8×2.02 m)
- Wall heating system:
Fonterra Side 12

Sample room

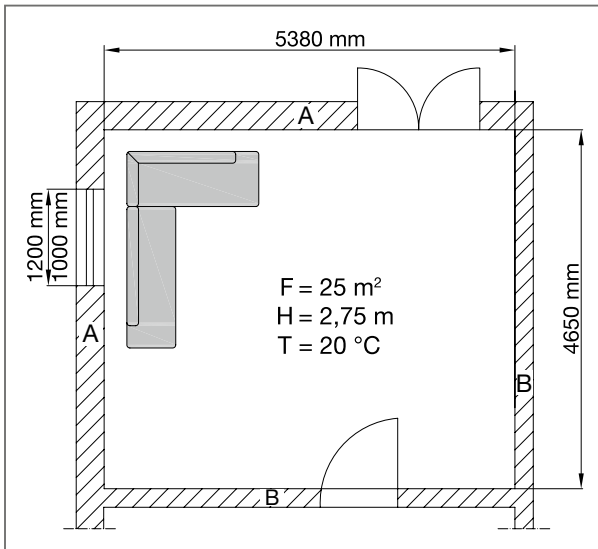


Fig. 171: Sample room

Key

- A - External wall
- B - Internal wall
- F - Area
- H - Room height (building shell dimension)
- T - Room temperature

Calculation

- Take over the room heat requirement from the heating load calculation:
Heat requirement room = $25 \text{ m}^2 \times 45 \text{ W/m}^2 = 1125 \text{ W}$
- Output Side 12 in W/m^2 :
 $T_m = 39.5 \text{ }^\circ\text{C}$ minus $RT \text{ } 20 \text{ }^\circ\text{C} = 19.5 \text{ K}$ (heating fluid overtemp.) acc. to diagram with $19.5 \text{ K} > 118 \text{ W/m}^2$
- Required wall heating surface:
 $1125 \text{ W} / 118 \text{ W/m}^2 = 9.5 \text{ m}^2$ Fonterra Side 12
- Number of heating circuits:
max. 5 m² per heating circuit (manifold outlet) > 2 heating circuits
- Subdivision of the wall heating surface Fonterra Side 12:
Coverable surface external wall:
 $B = 4.65 \text{ m}$, $H = 2.0 \text{ m}$
 $F = 9.3 \text{ m}^2 - 1.20 \text{ m}^2$ (window) = 8.1 m^2 and
 $B = 5.38 \text{ m}$, $H = 2.0 \text{ m}$
 $F = 10.76 \text{ m}^2 - 3.64 \text{ m}^2$ (door) = 7.12 m^2
 $F_{\text{total}} = 15.22 \text{ m}^2$ (required: 9.5 m^2)
See the illustration for potential arrangement of the system panels



The supply temperature of the heating installation should be set as low as possible.

This results in covering of large heating surfaces, which avoids radiation asymmetries and increases the comfort factor.



The arrangement of the wall heating panels shown in the illustration is by way of example only and must be coordinated with the building owner in respect of the furniture setup etc.

In the example, the heating panels were installed at the external wall and behind the sofa to create a comfortable room climate.

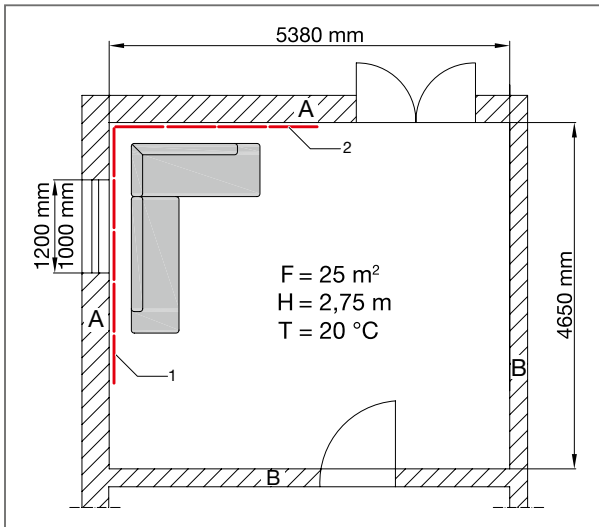


Fig. 172: Potential arrangement of the required wall heating panels

Sample room
Surface: 25m²
 Height: 2.75 m
Temperature:
 20 °C

Key

A - External wall

B - Internal wall

① - Fonterra Side 12 heating circuit 1 (4.58 m²)

② - Fonterra Side 12 heating circuit 2 (4.96 m²)

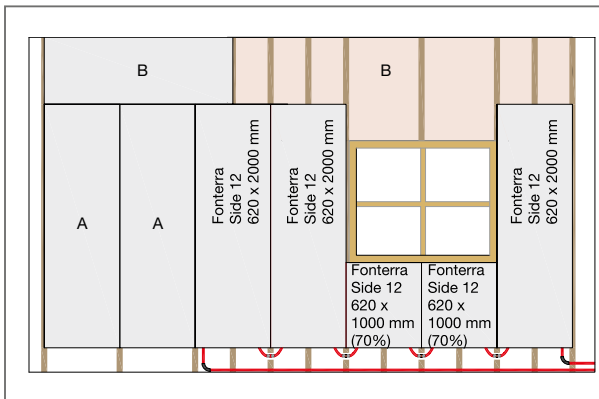


Fig. 173: Sample room with potential arrangement of system panels (wall view heating circuit 1)

Wall view Sample room with potential arrangement of system panels

Key

A - Plaster board 620x2000 mm

A - Plaster board cut to size

Output data

Output data Fonterra Side 12

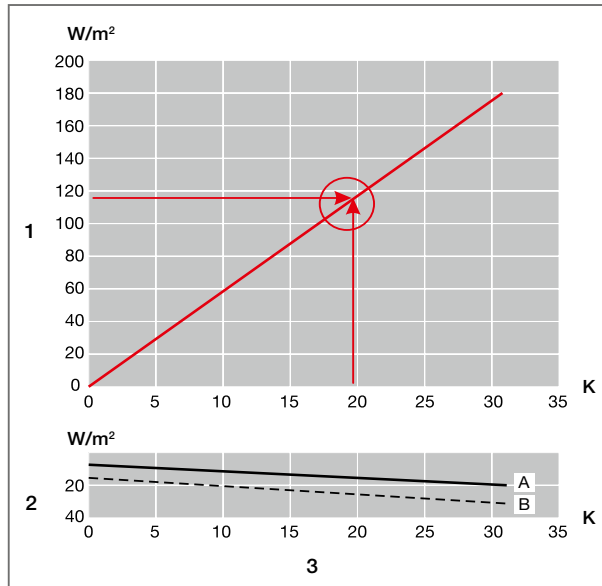


Fig. 174: Output diagram Fonterra Side 12

Key

A - Wall, $k = 0.35 \text{ W/m}^2$

B - Wall, $k = 0.50 \text{ W/m}^2$

- ① Heat output into the room q_i in $[\text{W/m}^2]$
- ② Dissipation through the external wall q_a^* in $[\text{W/m}^2]$
- ③ Heating fluid overtemperature $\Delta\theta H$ in $[\text{K}]$

Reading example - output dissipation diagram

■ Calculating the main heating water temperature

$$\frac{\text{Supply temperature} + \text{return temperature}}{2} \quad \text{e.g.} \quad \frac{42^\circ\text{C} + 37^\circ\text{C}}{2} = 39.5^\circ\text{C}$$

- Deduct the room temperature
z. B. $39.5^\circ\text{C} - 20^\circ\text{C} = 19.5^\circ\text{C}$

- The result is the heating fluid overtemperature
e.g. 19.5°K (value for diagram)

Read the output q_i from the diagram

e.g. 118 W/m^2 with 19.5°K = heat dissipated into the room

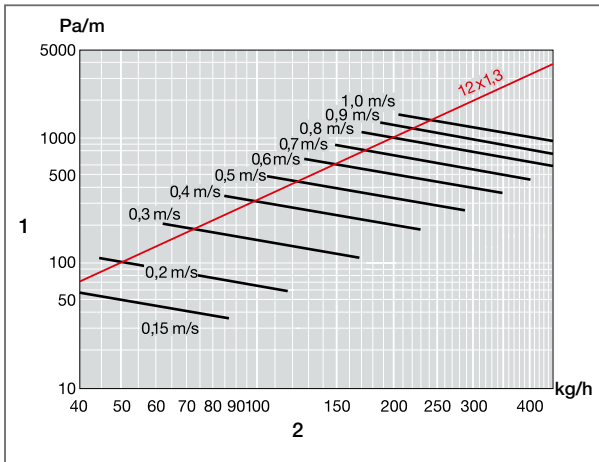


Fig. 175: Pressure loss diagram for PB pipes 12 x 1.3

Key

- ① Pressure gradient R [Pa/m]
- ② Mass flow m [kg/h] (fluid: water)

For pipes installed on external walls, take the actual losses to the outside into consideration. Next, determine the actual mass flow and R value, add the connection lines to the heating circuits, and consider them for the hydraulics.

Pressure loss diagram for PB pipes 12 x 1.3

Mounting

Structural requirements

Transport, storage, and handling conditions

Before installation, Side 12 gypsum fibre wall heating panels should be stored laying flat on a clean, dry, and frost proof underground.

Allow the system panels to adjust to the surrounding room climate which should not change significantly in the 12 hours following installation. To this end, the system panels must be brought into the building soon enough.

The wall heating panels may break; thus, transport them individually in vertical position.

Fonterra Side 12 system panels must only be installed at a relative humidity of $\leq 80\%$. The room temperature should be at least $+5\text{ }^{\circ}\text{C}$. For application, the adhesive must have a temperature of $> 10\text{ }^{\circ}\text{C}$.

If panels got damp, allow them to dry out completely before installation.

Checking the structural requirements

For installing the wall heating panels, the following work step sequence of the various trade lots must be observed:

- Windows and doors installed
- Electrical installations (wall breaking, empty pipe installation etc.) completed
- Installation work, beamfilling etc. must be observed
- Wet plasters/screeds must have been completed and cured before filling work (joint filling) is carried out.

Next, check that the wall installation surface is suitable for installing the system, i.e. dry, level, and firm. If all preconditions are met, installation can start.

Mounting instruction

Mounting on solid walls

For fastening the wall heating panels to brickwork, gas-aerated concrete etc., a sub-construction made of timber or metal profiles must be provided on which the panels are fastened in the fixing distances specified below.

Drywall screws or also suitable clamps must be used for the sub-construction. If the panels are clamped, the sub-construction must not spring. If necessary, reinforce it against the underground. Generally, the sub-construction on the walls can be mounted horizontally or vertically.



Cross joints are not permitted when mounting the wall heating panels.

For fastening, the wall heating panels are factory-fitted with bores at intervals of 33.3 cm to receive the drywall screw.



Do not dowel or glue wall heating panels directly onto the brickwork.

The wall heating panels can be interconnected by means of glued or filled joints. For filled joints, a piece of fabric (approx. 10 cm wide) must be applied over the joint.



Viega recommends to mount the wall heating panels on a vertical sub-construction with drywall screws and glue joints at intervals of 31 cm.

Note that cutouts must be made in the respective places in the sub-construction for the interconnection of the wall heating panels and for laying the connection lines.

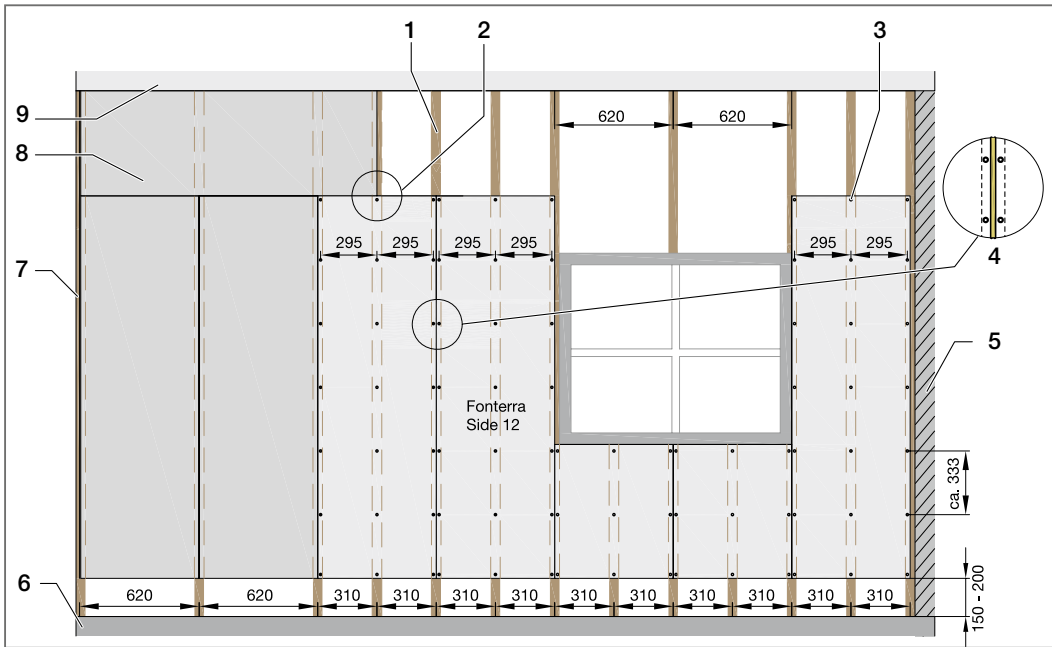


Fig. 176: Sub-construction with glue joint

Key

- ① Sub-construction e.g. 50x30 mm
- ② Cross joints are not permitted
- ③ Specified bores
- ④ Glue joints 1 mm
- ⑤ Wall, brickwork
- ⑥ Raw floor
- ⑦ Expansion joint e.g. made of acrylic approx. 6 – 7 mm (no silicone)
- ⑧ unheated surface (covered with 18 mm plaster board)
- ⑨ Lower edge ceiling

When panels are connected with glue joints, the vertical raster dimension of the sub-construction is 310 mm (observe wall connection with 316 mm), the horizontal raster dimension is approx. 333 mm (specified bores).

Mounting sequence with glue joint:

- Mount the sub-construction in the interval specified above.
- Fasten the first wall heating panel tension-free on the sub-construction at the places specified by the bores.



The smooth side of the Fonterra Side wall heating panel must face the room.

- Apply joint adhesive to the front side of the first panel and press the next wall heating panel tightly to the first panel until the adhesive appears at the joint (max. joint width 1 mm); screw tight. Proceed in the same way for the next wall heating panels. Press the panels tightly to the sub-construction. Start with the centre of the panel and work your way to the edges.
- Do not start with first attaching the four corners of the panel and then the centre.
- If necessary, cover the residual surface areas with non-milled plaster board as non-active wall heating surfaces.
- After waiting for the glue joints to cure (approx. 18 to 36 hours) and removing the protruding joint adhesive with a scraper, apply filler to cover the joints and fixing screws with a finishing layer (not required for tile coverings).
- Final finishing work (painting) after curing of the filler (min. 24 hours).



Before filling, wet screed must have cured completely (humidity < 70%, room temperature > +5 °C) and a pressure test of the wall heating system must have been completed.

Sub-construction with filled joint

When connecting the panels with filled joints, note that the width of the filler joint of approx. 7 mm will extend the vertical raster dimension of the sub-construction to 313 mm (note wall connection with 316 mm) and the horizontal raster dimension to approx. 333 mm (specified bores).

Mounting sequence with filled joint the same as with glue joint, except:

- Fill the filled joint with joint filler, reinforce the joint with glass fibre fleece (width approx. 10 cm).

Mounting on dry construction walls

For dry construction walls, a differentiation is made between single- or double-plank wall constructions made of gypsum plasterboard or plaster board panels (e.g. Fermacell), usually with metal post constructions in a raster of 62 cm.

Single-plank dry construction walls

Single-plank dry construction walls can be covered with Fonterra Side wall heating panels. Note that the raster dimension of the sub-construction must

be reduced to 31 cm. When covering it with different panel formats, note the potential height offset.

Double-plank dry construction walls

Double-planked dry construction walls should best be implemented with plaster boards, because in this case the Fonterra Side wall heating panels can be screwed directly to the plaster boards using drywall screws.

If other materials are used as bottom panel layer (e.g. gypsum plasterboard) with double-plank walls, the panels must be fastened through the specified holes all the way down to the sub-construction.

For fastening wall heating panels on wooden fibre boards, use galvanised and resin-coated clamps at intervals of under 15 cm. Here, put a plastic foil or oil paper beneath the glued joint to separate the materials.



If fire and noise protection requirements apply, observe the additional specifications.



Due to the high pressure load, blowing off of walls with insulating materials (e.g. at manufacturers of prefabricated houses) is not permitted.

Connection to unheated panels

The connection between heated wall heating panels and unheated plaster boards can be executed with glued or filled joints in the same way as the interconnection of wall heating panels.

When connecting the panels to gypsum plasterboards, provide a filled joint reinforced with glass fibre fleece (also see the paragraph "Connection to other building materials").

Movement joints

Movement joints are required after 6.5 m of active surface, or generally whenever there are movement and expansion joints in the building (building shell). Please contact our technical support for detailed questions.

The joints can either be executed as a lined hidden joint or with a ready-made extension joint profile according to the applicable regulations for dry construction.

Connection to other materials

Generally, joints must be provided when connecting the wall heating panels to other materials such as plasters, sight concrete, brickwork, steel or timber. They can either be executed as connection with divider strip (e.g. made of PE foil) or as expansion joint with a permanently elastic sealing material.

When connecting gypsum fibre wall heating panels to commercially available gypsum plasterboard, make sure to reinforce the filled joint between the different panels/boards additionally with a piece of glass fibre fleece (at least 15 cm wide). Insert the piece of glass fibre fleece during the first filling step. Glued joints are not permitted.

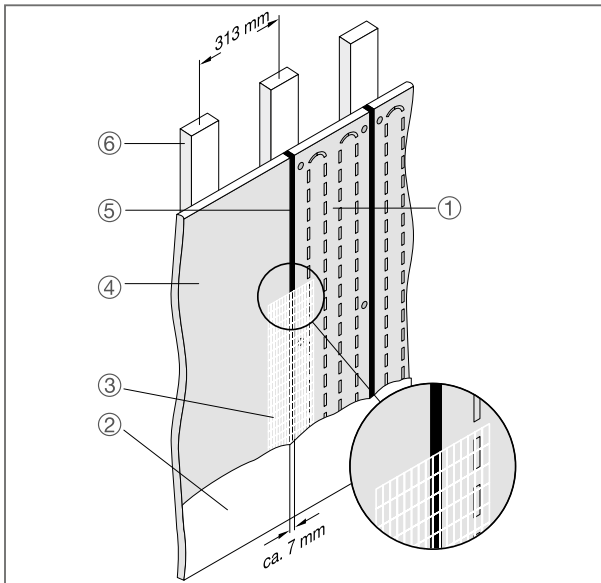


Fig. 177: Connecting a wall heating panel to a gypsum plasterboard (inactive surface)

Connecting a wall heating panel to a gypsum plasterboard (inactive surface)

Key

- ① Wall heating panel
- ② Filler
- ③ Glass fibre fleece
- ④ Gypsum cardboard
- ⑤ Filler joint
- ⑥ Sub-construction

Connecting the technical heating elements

Connecting the wall heating panels

- Check the maximum wall heating surfaces of 5 m² per heating circuit (with 2 x 10 m connection line) or maximum pipe length 80 m (incl. connection line)
- The heating circuits may supply wall heating surfaces of different sizes.
- The wall heating panels are connected with each other by the appropriate couplings.
- If applicable, the pipelines provided at the wall heating panels must be cut to length so that the couplings can be provided e.g. in the free area of the sub-construction.
- After installation, mark the position of the couplings in the plan (measure the position). The plan must be submitted to the building owner with the other documents.

Connection lines

The connection lines can be laid either on the raw floor or in the screed on the heat and footfall sound insulation.

- The 12 x 1.3 mm pipeline is laid as a supply line from the manifold to the first wall heating panel.

- It is connected to the wall heating connection with an appropriate coupling.
- The return line is laid from the last panel to the manifold.
- Mounting of heat insulation according to EnEV via the supply lines (supply and return flow) from the manifold to the wall heating panel.
- Fastening of the pipelines on the raw floor with the appropriate pipe clamps.

Requirement in the heat insulation of pipelines and fittings

Excerpt from the EnEV 2014 Appendix 5, Table 1

Line	Type of pipes	Minimum thickness of the insulation layer with a heat conductivity of 0.035 W / mK
1	Inner diameter max. 22 mm	20 mm
2	Heat distribution lines according to lines 1-4 installed after 31 January 2002 in building parts between heated rooms of different users	50% of the requirements of lines 1-4
7	Pipes in acc. with line 6 in the floor construction	6 mm

Tab. 83: Requirement in the heat insulation of pipelines and fittings

For materials with other thermal conductivities, the minimum thicknesses of the insulation layers must be converted accordingly. Here, for example, a concentric insulation of 6 mm with a heat conductivity of 035 corresponds to a concentric insulation of 9 mm with a heat conductivity of 040 with 40 °C. Table 1 does not apply if the pipes are located in heated rooms or building parts between heated rooms of one user and when the heat dissipated by such pipes can be controlled by accessible shut-off systems.



Though there are no statutory requirements, the supply lines should still be sheathed at least by a Fonterra protective pipe for joints for the following reasons:

- for avoidance of knocking and flow noises,
- for noise insulation,
- for corrosion protection,
- for reduction of heat loads

Manifold connection

Assembly steps:

- Tension-free connection of the wall heating pipe 12x1.3 mm directly to the supply or return flow or the respective manifold bar by means of Fonterra connectors
- Calibration of the flow volumes at the manifold by means of a flow quantity gauge



The combination of floor heating circuits with wall heating circuits at the manifold is also possible. The respective flow volumes can easily be set at the flow quantity gauge at the supply flow manifold.

Flushing of the pipelines

Precondition for execution of the pressure test:

- Close the supply and return flow at the manifold as well as all supply valves
- Open the valve for heating circuit 1 and flush the heating circuit via the KFE tap at the manifold until there are no longer air bubbles in the water in the return flow line
- Close the valve for heating circuit 1 again and repeat the process for all valves
- Open the supply and return flow locks at the manifold again and do a pressure test

Pressure test

- All surface heating circuits must be checked for leak tightness by means of a water pressure test. The test pressure must be double the operating pressure, minimum 0.4 MPa (4 bar), maximum 0.6 MPa (6 bar) (see pressure test log).
- This pressure must be maintained until the end of the drywall work.
- Record leak tightness and test pressure in a test log.
- After the leakage test, re-tighten all screw fittings.



Caution!

It is mandatory that system components not designed for this pressure, such as expansion vessels, safety valves etc., are shut off or removed.



Please note that a 10K change of the pipe wall temperature occurring during the pressure test will change the test pressure by 0.05 to 0.1 bar.

Commissioning

After flushing the system, do the pre-setting of the heating circuit valves according to the data in the plans submitted. This is the only way for the system hydraulics to ensure proper functioning of the heating installation.

- Setting of the calculated flowthrough volumes via the valves at the manifold
- Mounting the actuators
- Setting the operating temperature

Anti-freeze

If there is a risk of frost, protect the system by temperature control or use of suitable anti-freeze agents (e.g. glycol). If anti-freeze is no longer required for the intended use of a system, the system must be drained and cleaned with a suitable detergent according to manufacturer's information. After that, the system can be filled again.

When using anti-freeze agents, take the increased pressure loss into consideration when doing the calculations.

Surface finish

After smoothing, the surface of Fonterra Side wall heating panel is ready for painting. They are suitable for usual wall coverings such as:

- wall paper or wall paint
- textured plaster
- tiles and/or natural stone



Before starting to work, check the surface to be treated including the joints: It must be dry, firm, and free of spots and dust. Furthermore, plaster or grout splatters must be removed, grooves and connecting end must be filled with Fermacell filler and sanded or smoothed.

Additional priming is only necessary if required by the manufacturer of finishing systems for use on plaster board.

Application of coats of paint

To apply coats of paint on wall heating panels, proceed as with traditional plaster boards. You can use any type of commercially available paint, e.g. latex or water-based paint, or varnish. Mineral paints such as whitewash and silicate paint or other special paints, may only be used if approved for this use by the manufacturer of the painting system. Apply the paint according to the manufacturer's information in at least two worksteps.

Application of wallpaper

After preparing the underground according to manufacturer's instructions, all commercially available wallpapers (also ingrain wallpaper) can be glued directly onto the wall heating panels with wallpaper paste (no wallpaper primer required). When applying sealed, e.g. vinyl wallpaper, use a wallpaper paste with low water content. Independent of the wallpaper type, primers are only required if specified by the wallpaper paste manufacturer.

Tiles on dry system panels

After application of a suitable primer, the wall heating panels can be tiled in the usual manner with flexible adhesive.

Surfaces with a water load must additionally be equipped with sealing, so-called sealing systems or liquid sealing foils (in connection with flexible adhesives).

These sealing systems must be approved by the manufacturer for use on plaster boards. Corners and connection joints must be elastic and sealed with appropriate system accessories (e.g. sealing collars or sealing tapes).



Fonterra Side wall heating panels are factory-impregnated. Any primer applied subsequently must be allowed sufficient time for curing before further processing (usually 24 hours).

Plastering dry construction systems

If plastering of the plaster boards (e.g. with acoustic or thin textured plastering of max. 4 mm) is necessary or desirable for structural reasons, contact Viega for more detailed processing instructions and note the plaster manufacturer's specifications. Reinforcement of the joints is only required if executed as filled joint. For glued joints, no additional reinforcement is required.

Before application of a plaster system, the humidity of the wall heating panel (incl. primer, if any) must be under 1.3%. This means that the humidity in the room must have been under 70% and the air temperature over 15 °C during the last 48 hours (caution is required with previously installed wet screeds). During plastering, the surface temperature should be approx. 22 °C.

Fastening of loads at the walls


Light-weight individual loads with small projection acting vertically and parallel to the wall surface, such as pictures and decorations, can be fastened directly to the system panels with suitable commercially available fixing materials.

For walls, the total individual loads must not exceed 1.5kN/m, and with free-standing facing shells 0.4kN/m. Higher loads must be shown separately.

Pressure test

After completion of the installation work and execution of the pressure test, this document must be handed over to the planner/building owner. We recommend to retain the document.

Building project			Date	
Building owner's address				
Address of the qualified installation company				
<p>Before mounting the passive ceiling elements, the leak tightness of the heating circuits is tested with water. The leakage test is carried out at the finished but not yet covered pipelines.</p> <p>Notes on the test procedure</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fill the system with filtered water and vent it completely. <input type="checkbox"/> In case of major differences (~10K) between the ambient temperature and the filling water temperature, wait for 30 minutes after filling the system for the temperatures to adjust. <input type="checkbox"/> The leakage test is done with a test pressure of min. 0.4 MPa (4 bar) and max. 0.6 MPa (6 bar). <input type="checkbox"/> Visual inspection of the piping system/check per manometer*. <input type="checkbox"/> This pressure must be maintained until the end of the drywall work. <input type="checkbox"/> Take suitable measures to exclude freezing, for example room heating or addition of anti-freeze to the heating water. <input type="checkbox"/> If the anti-freeze is not required for normal operation, the system must be cleaned by emptying and flushing with at least three water exchanges. <input type="checkbox"/> The water temperature must be kept constant during the test. <p>* Use pressure gauges which clearly indicate pressure changes of 0.0 MPa (0.1 bar).</p>				
Materials used	Pipes	<input type="checkbox"/> 12x1.3mm		
	Pipe connectors	<input type="checkbox"/> Pressing	<input type="checkbox"/> Clamping	
Log of the pressure test				
Start of the pressure test:	Start pressure:	Water temperature [°C]:		
End of the pressure test:	Final pressure:	Water temperature [°C]:		
Visual inspection of pipe connectors carried out?		<input type="checkbox"/> yes	<input type="checkbox"/> no	
Position of couplings marked in the installation plan?		<input type="checkbox"/> yes	<input type="checkbox"/> no	
Leak tightness was established, no permanent form changes identified in any component?		<input type="checkbox"/> yes	<input type="checkbox"/> no	
Has the operating pressure been set on system handover?		<input type="checkbox"/> yes	<input type="checkbox"/> no	
Comments				
Building owner	Site management	Qualified installation company		
Date/signature/stamp				

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