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Texts for invitation to tender e1525

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PLASTERED WALL HEATING/COOLING

SystemWall

SWHK2 SystemWall

Pipe spacing 100 mm, consisting of:

* VarioRail 16
VarioRail made of PE with a panel thickness of just 21 mm, for latching the VarioProFile pipe 16x2, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 50 mm
* ScrewFix
for attaching the VarioRail 16 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* Retaining clamp for affixing the VarioProFile pipe in the return of the wall heating/cooling
* Eco heating plaster
* Special plaster for wall heating (flush-mounting, purely organic material, IBO certified), high heat conductivity, steam permeable, hygroscopic, shock resistant, good adhesive properties, suitable for machine plastering and manual application.
* Plaster lattice 7 x 8 mm
Special glass fibre cloth, reduces plaster tearing, 7 x 8 mm mesh size, maximum tensile load 2000 Nm/5 cm, tested as per DIN EN 12127 / DIN EN ISO 13934-1

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 125 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 60 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: SWHK2***

***m²***

SWHK3 SystemWall

Pipe spacing 100 mm, consisting of:

* VarioRail 16
VarioRail made of PE with a panel thickness of just 21 mm, for latching the VarioProFile pipe 16x2, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 50 mm
* ScrewFix
for attaching the VarioRail 16 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* Retaining clamp for affixing the VarioProFile pipe in the return of the wall heating/cooling

*The waste (approx. 5 %) must be taken into account!*

***Part no.: SWHK3***

***m²***

EasyFlexWall

EWHK77 EasyFlexWall

Pipe spacing 77 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating/cooling

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 115 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 54 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EWHK77***

***m²***

EWHK115 EasyFlexWall

Pipe spacing 115 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating/cooling

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 90 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 43 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EWHK115***

***m²***

EWHK77P EasyFlexWall

Pipe spacing 77 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating/cooling
* Special plaster for wall heating (flush-mounting, purely organic material, IBO certified), high heat conductivity, steam permeable, hygroscopic, shock resistant, good adhesive properties, suitable for machine plastering and manual application
* Plaster lattice 7 x 8 mm
Special glass fibre cloth, reduces plaster tearing, 7 x 8 mm mesh size, maximum tensile load 2000 Nm/5 cm, tested as per DIN EN 12127 / DIN EN ISO 13934-1

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EWHK77P***

***m²***

EWHK115P EasyFlexWall

Pipe spacing 115 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating/cooling
* Special plaster for wall heating (flush-mounting, purely organic material, IBO certified), high heat conductivity, steam permeable, hygroscopic, shock resistant, good adhesive properties, suitable for machine plastering and manual application
* Plaster lattice 7 x 8 mm
Special glass fibre cloth, reduces plaster tearing, 7 x 8 mm mesh size, maximum tensile load 2000 Nm/5 cm, tested as per DIN EN 12127 / DIN EN ISO 13934-1

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EWHK115P***

***m²***

PLASTERED CEILING COOLING/HEATING

EasyFlexCeiling

EDKH77 EasyFlexCeiling

Pipe spacing 77 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 86 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 64 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EDKH77***

***m²***

EDKH115 EasyFlexCeiling

Pipe spacing 115 mm, consisting of:

* VarioRail 11.6
VarioRail made of PE with a panel thickness of just 17 mm, for latching the VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe), can be extended to any length required using special click technology, grid spacing 38.5 mm
* VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)
* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee
* ScrewFix
for attaching the VarioRail 11.6 and the retaining clamp in solid walls, diameter 6 mm, length 60 mm
* Retaining clamp for affixing the VarioModular pipe in the return of the wall heating

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 67 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 49 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: EDKH115***

***m²***

WALL HEATING/COOLING SYSTEM FOR DRY CONSTRUCTION – Modular Wall

ModularWall

MW-C ModularWall-Classic

consisting of:

* ModularPanels-Classic
	+ Gypsum fibre board which has been tested for their healthy building properties 18 mm
	+ With pre-installed VarioModular pipe 11.6x1.5,
	(Aluminium multi-layer composite pipe), pipe spacing 75 mm
	+ Marking of the screwing points on the front side
* Gypsum fibre board which has been tested for their healthy building properties 18 mm
* Proportionate press-fit couplings
* Proportionate joint adhesive
* Proportionate dry wall screws

Substructure must be prepared on-site!

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 111 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 53 W/m²*

*Assumed amounts for assembly set price:*

*85 % fully fitted panels, 15 % partially fitted panels (with a variable height)*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: MW-C***

***m²***

WALL CEILING COOLING/HEATING SYSTEM FOR DRY CONSTRUCTION – Modular Ceiling

ModularCeiling

MD-C ModularCeiling-Classic

consisting of:

* ModularPanels-Classic
	+ Gypsum fibre board which has been tested for their healthy building properties 18 mm
	+ With pre-installed VarioModular pipe 11.6x1.5,
	(Aluminium multi-layer composite pipe), pipe spacing 75 mm
	+ Marking of the screwing points on the front side
* Proportionate press-fit couplings
* Proportionate joint adhesive
* Proportionate drywall screws

Substructure must be prepared on-site!

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 82 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 60 W/m²*

*Assumed amounts for assembly set price:*

*85 % fully fitted panels, 15 % partially fitted panels (with a variable height)*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: MD-C***

***m²***

MD-A ModularCeiling-Acoustic

consisting of:

* ModularPanels-Acoustic
	+ Gypsum fibre board which has been tested for their healthy building properties 18 mm
	+ With pre-installed VarioModular pipe 11.6x1.5,
	(Aluminium multi-layer composite pipe), pipe spacing 75 mm
	+ Marking of the screwing points on the front side
	+ Different sized holes to improve the acoustic characteristics
	+ Acoustic fleece on the rear side
* Proportionate press-fit couplings
* Proportionate joint adhesive
* Proportionate dry wall screws

Substructure must be prepared on-site!

*- Heat output at ti = 20 °C: tv/tr = 40/30 °C = 82 W/m²*

*- Cooling at ti = 26 °C: tv/tr = 16/20 °C = 60 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: MD-A-F06*** *(continuous hole size 6 mm)*

***Part no.: MD-A-B08*** *(block hole size 8 mm)*

***Part no.: MD-A-F12*** *(continuous hole size 12 mm)*

***m²***

**FLOOR HEATING FOR DRY CONSTRUCTION**

**The superslim VarioComp**

VarioComp RA10 floor heating system

Pipe spacing 100 mm, for laying on load-bearing substructures, consisting of:

• VarioComp board (V290), 1000 x 600 mm for pipe spacing of 100 mm

* Gypsum fibre board which has been tested for their healthy building properties 18 mm
* Pipe bracket and heat conducting panel

• VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

• VarioComp filling compound T7

Special filling compound for filling the pre-laid VarioComp panels with inserted VarioProFile pipe 11.6x1.5 (Aluminium multi-layer composite pipe).

The surface of the VarioComp complies with ÖNORM DIN 18 202 (Table 3 – limits for evenness deviations, Row 3); floor covering can be laid after just a brief drying period (observe the installation instructions)

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 83 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHK10***

***m²***

VarioComp RA15 floor heating system

Pipe spacing 150 mm, for laying on load-bearing substructures, consisting of

**Caution! Not recommended for living or bare-foot areas**

consisting of:

• VarioComp board (V295), 900 x 600 mm for pipe spacing of 150 mm

* Gypsum fibre board which has been tested for their healthy building properties 18 mm
* Pipe bracket and heat conducting panel

• VarioProFile pipe 11.6x1.5, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+10 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

• VarioComp filling compound T7

Special filling compound for filling the pre-laid VarioComp panels with inserted VarioProFile pipe 11.6x1.5 (Aluminium multi-layer composite pipe).

The surface of the VarioComp complies with ÖNORM DIN 18 202 (Table 3 – limits for evenness deviations, Row 3); floor covering can be laid after just a brief drying period (observe the installation instructions)

*- Heat output see Variotherm design manual “Thermal performance. Cooling Performance”*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHK15***

***m²***

**Accessories for floor heating for dry construction**

Edge insulation strip 75 mm

as per EN 1264-4, 75 mm high, 10 mm thick, made of PE foam, front side with self-adhesive, welded overlapping foil for the sealed connection of edge insulation strips and PE construction foil, rear side with bitumen adhesive strips (consumption: approx. 1.1 m/m²)

***Part no.: V299***

***m***

PE construction foil

for laying beneath the VarioComp board,

made of recycled material,

50 m2 per roll, 1 m wide, 0.1 mm thick

***Part no.: V2895***

***m²***

VarioComp XPS underlay board

For use as a thermal insulation board directly beneath VarioComp floor heating

* Panel size 1250 x 600 mm (0.75 m²)
* Panel thickness 10 mm
* Compressive strength at 10 %: 200 kPa (20 t/m²)
* Thermal conductivity: 0.035 W/mK
* Impact sound reduction: up to 14 dB

***Part no.: V2898***

***m²***

VarioComp SILENT underlay panel

For use as a thermal insulation board directly beneath VarioComp floor heating

* Panel size 790 x 590 mm (0.466 m²)
* Panel thickness 5 mm
* Compressive strength at 10 %: 150 kPa (15 t/m²)
* Thermal conductivity: 0.071 W/mK
* Impact sound reduction: up to 17 dB

***Part no.: V2899***

***m²***

FLOOR HEATING FOR SCREED FLOORS

**VarioClip | Wire mesh system**

VarioClip RA10 floor heating system

Pipe spacing 100 mm, for laying on thermal insulation and impact sound insulation prepared by the customer,

consisting of:

• Wire mesh

* Spot-welded mesh made of galvanised wire, with edge wire
* Mesh width: 100 x 100 mm
* Wire size ø 2.9 mm
* Dimensions: 2103 x 1203 mm = 2.53 mm²

• VarioClip

* For fastening the VarioProFile pipe 16x2 to the wire mesh
* Putting the VarioClips quickly with setter
* With tilt protection – clips do not fall over

• VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 81 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHC10***

***m²***

VarioClip RA15 floor heating system

Pipe spacing 150 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 69 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHC15***

***m²***

VarioClip RA20 floor heating system

Pipe spacing 200 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 61 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHC20***

***m²***

VarioClip RA25 floor heating system

Pipe spacing 250 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 53 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHC25***

***m²***

VarioClip RA30 floor heating system

Pipe spacing 300 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHC30***

***m²***

VarioRast | Rail system

VarioRast RA10 floor heating system

Pipe spacing 100 mm, for laying on thermal insulation and impact sound insulation prepared by the customer,

consisting of:

• Grid foil

* Separating layer for the necessary covering of the thermal insulation acc. To EN 1264-4
* Made from 100 % polyethylene recycling granulate
* 50 mm graticule
* 0.2 mm thickness, one roll contains 50 m² of foil

• VarioRail K16

* For latching the VarioProFile pipe 16x2
* Can be extended to any length required using special click technology
* Grid spacing 50 mm, with adhesive strip
* Made of PE

• Fixing needles for affixing the VarioRail K16 to the thermal insulation

• VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 81 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBH10***

***m²***

VarioRast RA15 floor heating system

Pipe spacing 150 mm, for laying on thermal insulation and impact sound insulation prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 69 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBH15***

***m²***

VarioRast RA20 floor heating system

Pipe spacing 200 mm, for laying on thermal insulation and impact sound insulation prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 61 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBH20***

***m²***

VarioRast RA25 floor heating system

Pipe spacing 250 mm, for laying on thermal insulation and impact sound insulation prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 53 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBH25***

***m²***

VarioRast RA30 floor heating system

Pipe spacing 300 mm, for laying on thermal insulation and impact sound insulation prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBH30***

***m²***

VarioFix | Nap system

VarioFix RA10 floor heating system

Pipe spacing 100 mm, for laying on thermal insulation and impact sound insulation or levelling compound (e.g. polystyrene concrete) prepared by the customer, consisting of:

• VarioFix panel

* Pipe bracket and separating layer
* Dimension of the panel 1450 x 850 mm, (useable surface 1400 x 800 mm)
* Pipes spaces at 50 mm
* Bridges raise the VarioProFile pipe from the panel
* Form-fitting connection as first row of naps overlaps
* Panel thickness incl. naps 20 mm
* Surface sufficiently stable to walk on

• VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 81 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHF10***

***m²***

VarioFix RA15 floor heating system

Pipe spacing 150 mm, for laying on thermal insulation and impact sound insulation or levelling compound (e.g. polystyrene concrete) prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 69 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHF15***

***m²***

VarioFix RA20 floor heating system

Pipe spacing 200 mm, for laying on thermal insulation and impact sound insulation or levelling compound (e.g. polystyrene concrete) prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 61 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHF20***

***m²***

VarioFix RA25 floor heating system

Pipe spacing 250 mm, for laying on thermal insulation and impact sound insulation or levelling compound (e.g. polystyrene concrete) prepared by the customer, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 53 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHF25***

***m²***

VarioFix RA30 floor heating system

Pipe spacing 300 mm, for laying on thermal insulation and impact sound insulation or levelling compound (e.g. polystyrene concrete) prepared by the customer,consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHF30***

***m²*VarioRoll |** **Staple system**

VarioRoll 20-2 RA10 floor heating system

Pipe spacing 100 mm, consisting of:

• VarioRoll 20-2 thermal insulation and impact sound insulation

* Insulation nominal thickness 20 mm, made from monitored impact sound polystyrene
* Swift and easy installation
* Reaction to fire: Euroclass E
* Optimal retaining power for stapler pins via the incorporated weave
* Service load on screed (acc. to EN 13163) 5 kN/m ²
* One-sided 30 mm overlap with self-adhesive strips results in an overall area without joints
* Special laminated weave foil with 50 mm grid as separating layer
* Declared thermal conduct λ = 0.040 W/mK
* Sound impact improvement 26 dB
* Compressibility ≤ 2 mm, dynamical stiffness ≤ 30 MN/m³

• Stapler pins for affixing the VarioProfile pipe to the VarioRoll thermal and impact sound insulation

• VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 81 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR10-20***

***m²***

VarioRoll 20-2 RA15 floor heating system

Pipe spacing 150 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 69 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR15-20***

***m²***

VarioRoll 20-2 RA20 floor heating system

Pipe spacing 200 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 61 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR20-20***

***m²***

VarioRoll 20-2 RA25 floor heating system

Pipe spacing 250 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 53 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR25-20***

***m²***

VarioRoll 20-2 RA30 floor heating system

Pipe spacing 300 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR30-20***

***m²***

VarioRoll 30-2 RA10 floor heating system

Pipe spacing 100 mm, consisting of:

• VarioRoll 30-2 thermal insulation and impact sound insulation

* Insulation nominal thickness 30 mm, made from monitored impact sound polystyrene
* Swift and easy installation
* Reaction to fire: Euroclass E
* Optimal retaining power for stapler pins via the incorporated weave
* Service load on screed (acc. to EN 13163) 5 kN/m², total load (acc. to ÖN B 6000) up to 6,5 kN/m²
* One-sided 30 mm overlap with self-adhesive strips results in an overall area without joints
* Special laminated weave foil with 50 mm grid as separating layer
* Declared thermal conduct λ = 0.040 W/mK
* Sound impact improvement 28 dB
* Compressibility ≤ 2 mm, dynamical stiffness ≤ 30 MN/m³

• Stapler pins for affixing the VarioProfile pipe to the VarioRoll thermal and impact sound insulation

• VarioProFile pipe 16x2 plus+, (Aluminium multi-layer composite pipe)

* The perfect pipe for surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Profiled surface (+15 %) for optimum heat transfer
* Tested as per EN ISO 21003
* 10-year guarantee

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 81 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR10-30***

***m²***

VarioRoll 30-2 RA15 floor heating system

Pipe spacing 150 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 69 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR15-30***

***m²***

VarioRoll 30-2 RA20 floor heating system

Pipe spacing 200 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 61 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR20-30***

***m²***

VarioRoll 30-2 RA25 floor heating system

Pipe spacing 250 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 53 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR25-30***

***m²***

VarioRoll 30-2 RA30 floor heating system

Pipe spacing 300 mm, consisting of: see RA10

*- Heat output at ti = 20 °C, d/ = 0.01-0.02 m²K/W, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHR30-30***

***m²***

Accessories for screed floor heating systems

***Edge insulating strip 150 mm***as per EN 1264-4, 150 mm high, 10 mm thick, made of PE foam, with fold 40 mm, front side with self-adhesive, welded overlapping foil for the sealed connection of edge insulation strips and grid foil, rear side with bitumen adhesive strips (consumption: approx. 1.1 m/m²)

***Part no.: V278***

***m***

***Screed admixture***

Cement screed admixture for the fluidisation and plastification of the screed, increases flexural strength and initial strength. (Consumption: 0.2 kg/m² with 70 mm cement screed)

***Part no.: V279*** *(5 kg)*

***or***

***Part no.: V284*** *(10 kg)*

***Canister***

T-joint profile

for movement joints, height: 70 mm, length 1 m, with adhesive strip

***Part no.: V2893***

***m***

Sleeve tube

for protecting the VarioProFile pipes in the area of movement joints, length: 400 mm

***Part no.: V2894***

***Pcs.***

INDUSTRIAL FLOOR HEATING SYSTEM

VarioSolid

VarioSolid RA20 floor heating system

Pipe spacing 200 mm, consisting of:

• VarioModular pipe 20x2, (Aluminium multi-layer composite pipe)

* The perfect pipe for industrial surface heating/cooling systems
* Flexible, easy to bend manually, retains the curved form
* No oxygen diffusion whatsoever
* Tested as per EN ISO 21003
* 10-year guarantee

• Wire reel (proportionate) for binding tool

* Reel of solid wire for binding tool (W044)
* 95 m of plain solid wire, for approx. 120 connections,
consumption approx. 1 connection per 1.5 meter of pipe

*- Heat output at ti = 20 °C, 200 mm concrete, pipe covering 150 mm, tv/tr = 40/30 °C = 52 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHS20***

***m²***

VarioSolid RA25 floor heating system

Pipe spacing 250 mm, consisting of: see RA25

*- Heat output at ti = 20 °C, 200 mm concrete, pipe covering 150 mm, tv/tr = 40/30 °C = 46 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHS25***

***m²***

VarioSolid RA30loor heating system

Pipe spacing 300 mm, consisting of: see RA30

*- Heat output at ti = 20 °C, 200 mm concrete, pipe covering 150 mm, tv/tr = 40/30 °C = 39 W/m²*

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHS30***

***m²***

VarioSolid RA35 floor heating system

Pipe spacing 350 mm, consisting of: see RA35

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHS35***

***m²***

VarioSolid RA40 floor heating system

Pipe spacing 400 mm, consisting of: see RA40

*The waste (approx. 5 %) must be taken into account!*

***Part no.: FBHS40***

***m²***

Battery powered binding tool, complete

For rapid fastening of the VarioModular pipe to the reinforcing bar grid, in a sturdy plastic case, containing:

 - Battery powered binding tool MAX RB397

 - 2x rechargeable batteries and charger

 - Extension arm for upright installation work

***Part no.: W044***

***Pcs.***

Sleeve tube

for protecting the VarioModular pipes in the area of movement joints, length: 50 m

***Part no.: V2897R***

***Roll***

# SKIRTING HEATING

Delta skirting heating

Mini Delta skirting heating system

consisting of:

* Mini heating element 35 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 35 x 78 mm
* Mini Delta cladding, pre-packed in cardboard, sheet steel 1.0 mm, powder-coated in RAL 9001 (Cream)
(special colours possible - price on request!)

• Mini Delta bracket set, made of glass fibre reinforced polypropylene, white, 130 mm high, 41 mm deep, complete incl. affixing material

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 141 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Proportionate formed parts such as inside corners, outside corners, connecting elements and end completion elements should be stated separately.*

*Dimensions: Height: 160 mm, depth: 42 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: HLMINIDELTA***

***m***

Connector, mini Delta

for covering the butt joints with straight continuation of the cladding for the mini Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1250***

***Pcs.***

Inside corner 90°, mini Delta

for covering the butt joints of the cladding for the mini Delta skirting heating type with 90° inside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1300***

***Pcs.***

Outside corner 90°, mini Delta

for covering the butt joints of the cladding for the mini Delta skirting heating type with 90° outside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1350***

***Pcs.***

End cap left, mini Delta

End completion element of the cladding for the mini Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1400***

***Pcs.***

End cap right, mini Delta

End completion element of the cladding for the mini Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1450***

***Pcs.***

Ia Delta skirting heating system

consisting of:

* Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm
* Ia Delta cladding, pre-packed in cardboard, sheet steel 1.0 mm, powder-coated in RAL 9001 (Cream)
(special colours possible - price on request!)

• Ia Delta bracket set, made of glass fibre reinforced polypropylene, white, 200 mm high, 62 mm deep, complete incl. affixing material

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 235 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Proportionate formed parts such as inside corners, outside corners, connecting elements and end completion elements should be stated separately.*

*Dimensions: Height: 235 mm, depth: 65 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: HL1ADELTA***

***m***

Connector, Ia Delta

for covering the butt joints with straight continuation of the cladding for the Ia Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1251***

***Pcs.***

Inside corner 90°, Ia Delta

for covering the butt joints of the cladding for the Ia Delta skirting heating type with 90° inside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1301***

***Pcs.***

Outside corner 90°, Ia Delta

for covering the butt joints of the cladding for the Ia Delta skirting heating type with 90° outside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1351***

***Pcs.***

End cap left, Ia Delta

End completion element of the cladding for the Ia Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1401***

***Pcs.***

End cap right, Ia Delta

End completion element of the cladding for the Ia Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1451***

***Pcs.***

IIa Delta skirting heating system

consisting of:

* Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm
* IIa Delta cladding, pre-packed in cardboard, sheet steel 1.0 mm, powder-coated in RAL 9001 (Cream)
(special colours possible - price on request!)

• IIa Delta bracket set, made of glass fibre reinforced polypropylene, white, 200 mm high, 85 mm deep, complete incl. affixing material

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 316 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Proportionate formed parts such as inside corners, outside corners, connecting elements and end completion elements should be stated separately.*

*Dimensions: Height: 235 mm, depth: 87 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: HL2ADELTA***

***m***

Connector, IIa Delta

for covering the butt joints with straight continuation of the cladding for the IIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1252***

***Pcs.***

Inside corner 90°, IIa Delta

for covering the butt joints of the cladding for the IIa Delta skirting heating type with 90° inside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1302***

***Pcs.***

Outside corner 90°, IIa Delta

for covering the butt joints of the cladding for the IIa Delta skirting heating type with 90° outside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1352***

***Pcs.***

End cap left, IIa Delta

End completion element of the cladding for the IIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1402***

***Pcs.***

End cap right, IIa Delta

End completion element of the cladding for the IIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1452***

***Pcs.***

IIIa Delta skirting heating system

consisting of:

* 2 x Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm
* IIIa Delta cladding, pre-packed in cardboard, sheet steel 1.0 mm, powder-coated in RAL 9001 (Cream)
(special colours possible - price on request!)

• IIIa Delta bracket set, made of glass fibre reinforced polypropylene, white, 200 mm high, 85 mm deep, complete incl. affixing material

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 390 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Proportionate formed parts such as inside corners, outside corners, connecting elements and end completion elements should be stated separately.*

*Dimensions: Height: 235 mm, depth: 87 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: HL3ADELTA***

***m***

Connector, IIIa Delta

for covering the butt joints with straight continuation of the cladding for the IIIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1252***

***Pcs.***

Inside corner 90°, IIIa Delta

for covering the butt joints of the cladding for the IIIa Delta skirting heating type with 90° inside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1302***

***Pcs.***

Outside corner 90°, IIIa Delta

for covering the butt joints of the cladding for the IIIa Delta skirting heating type with 90° outside corners

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1352***

***Pcs.***

End cap left, IIIa Delta

End completion element of the cladding for the IIIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1402***

***Pcs.***

End cap right, IIIa Delta

End completion element of the cladding for the IIIa Delta skirting heating type

*Colour: (standard: Cream RAL 9001):* \_\_\_\_\_\_\_\_\_\_\_\_\_

***Part no.: V1452***

***Pcs.***

Classic skirting heating

Skirting heating, mini Classic type

consisting of:

• Mini heating element 35 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 35 x 78 mm

• mini Classic bracket set:

made of glass fibre reinforced polypropylene, white, 130 mm high, 41 mm deep, complete incl. affixing material

• Cladding (e.g. wood) installed by the customer

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 141 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Dimensions without cladding: Height: 160 mm, depth: 44 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C, room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

***Part no.: HLMINICLASSIC***

***m***

Skirting heating, Ia Classic type

consisting of:

• Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm

• Ia Classic bracket set:

made of glass fibre reinforced polypropylene, white, 200 mm high, 62 mm deep, complete incl. affixing material

• Cladding (e.g. wood) installed by the customer

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 235 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Dimensions without cladding: Height: 240 mm, depth: 65 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C, room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

***Part no.: HL1ACLASSIC***

***m***

Skirting heating, IIa Classic type

consisting of:

• Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm

• IIa Classic bracket set:

made of glass fibre reinforced polypropylene, white, 200 mm high, 85 mm deep, complete incl. affixing material

• Cladding (e.g. wood) installed by the customer

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 316 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Dimensions without cladding: Height: 240 mm, depth: 88 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C, room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

***Part no.: HL2ACLASSIC***

***m***

Skirting heating, IIIa Classic type

consisting of:

• 2 x Heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm

• IIIa Classic bracket set:

made of glass fibre reinforced polypropylene, white, 200 mm high, 85 mm deep, complete incl. affixing material

• Cladding (e.g. wood) installed by the customer

*- Heat production at ti = 20 °C, tv/tr = 55/45 °C = 390 W/m*

*The waste (approx. 5 %) must be taken into account!*

*Dimensions without cladding: Height: 240 mm, depth: 88 mm*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C, room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_ W/m*

***Part no.: HL3ACLASSIC***

***m***

TRENCH HEATING

Trench heating type BKH1

consisting of:

• Complete: Fully pre-assembled with aluminium side walls and end cover (black anodised), black-grey aluminium base, air baffles, heating element mounting bulkheads, interior adjustment screws for height adjustment, anodised aluminium grid (linear or rolled), site strips green, fixing brackets, heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm (single-layer)

• Thick cover plate made of carton for purity maintenance during the construction phase and stabilisation during floor laying

*Length: \_\_\_\_\_\_\_\_\_\_\_\_\_*

*Width: 180 mm*

*Height: 140 mm*

*Colour:*

*• Natural aluminium EV 1*

*• Light bronze C 32*

*• Black C 35*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_W*

***Part no.: BKH1-\_\_\_\_\_***

***Pcs.***

Trench heating type BKH1 mini

consisting of:

• Complete: Fully pre-assembled with aluminium side walls and end cover (black anodised), black-grey aluminium base, air baffles, heating element mounting bulkheads, interior adjustment screws for height adjustment, anodised aluminium grid (linear or rolled), site strips green, fixing brackets, heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm (single-layer)

• Thick cover plate made of carton for purity maintenance during the construction phase and stabilisation during floor laying

*Length: \_\_\_\_\_\_\_\_\_\_\_\_\_*

*Width: 180 mm*

*Height: 90 mm*

*Colour:*

*• Natural aluminium EV 1*

*• Light bronze C 32*

*• Black C 35*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_W*

***Part no.: BKH1M-\_\_\_\_\_***

***Pcs.***

Trench heating type BKH2

consisting of:

• Complete: Fully pre-assembled with aluminium side walls and end cover (black anodised), black-grey aluminium base, air baffles, heating element mounting bulkheads, interior adjustment screws for height adjustment, anodised aluminium grid (linear or rolled), site strips green, fixing brackets, 2x heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm (double-layer)

• Thick cover plate made of carton for purity maintenance during the construction phase and stabilisation during floor laying

*Length: \_\_\_\_\_\_\_\_\_\_\_\_\_*

*Width: 260 mm*

*Height: 140 mm*

*Colour:*

*• Natural aluminium EV 1*

*• Light bronze C 32*

*• Black C 35*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_W*

***Part no.: BKH2-\_\_\_\_\_***

***Pcs.***

Trench heating type BKH2 mini

consisting of:

• Complete: Fully pre-assembled with aluminium side walls and end cover (black anodised), black-grey aluminium base, air baffles, heating element mounting bulkheads, interior adjustment screws for height adjustment, anodised aluminium grid (linear or rolled), site strips green, fixing brackets, 2x heating element 56 x 78 mm, made of copper pipe ø18 x 0.5 mm with aluminium louvres 56 x 78 mm (double-layer)

• Thick cover plate made of carton for purity maintenance during the construction phase and stabilisation during floor laying

*Length: \_\_\_\_\_\_\_\_\_\_\_\_\_*

*Width: 260 mm*

*Height: 90 mm*

*Colour:*

*• Natural aluminium EV 1*

*• Light bronze C 32*

*• Black C 35*

*Heating medium: \_\_\_\_\_/\_\_\_\_\_ °C*

*Room air temperature: \_\_\_\_\_\_\_\_ °C*

*Thermal output: \_\_\_\_\_\_\_\_W*

***Part no.: BKH2M-\_\_\_\_\_***

***Pcs.***

# Accessories for skirting heating and/or trench heating

Thermostatic valve flow with air vent

for skirting heating connection, ½” valve with two air vents, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, straight flow, can be pre-set

***Part no.: Z114***

***Pcs.***

Thermostatic valve corner left with air vent

for skirting heating connection, ½” valve with one air vent, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, left-hand side, can be pre-set

***Part no.: Z116L***

***Pcs.***

Thermostatic valve corner right with air vent

for skirting heating connection, ½” valve with one air vent, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, right-hand side, can be pre-set

***Part no.: Z116R***

***Pcs.***

Thermostatic valve flow with remote sensor and air vent

for skirting heating and ducted channel heating connection, ½” valve with two air vents, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, straight flow, with remote sensor (5 m conduit), can be pre-set

***Part no.: Z114V***

***Pcs.***

Thermostatic valve corner left with remote sensor and air vent

for skirting heating connection, ½” valve with one air vent, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, left-hand side, with remote sensor (5 m conduit), can be pre-set

***Part no.: Z116LV***

***Pcs.***

Thermostatic valve corner right with remote sensor and air vent

for skirting heating connection, ½” valve with one air vent, with thermostat head, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, right-hand side, with remote sensor (5 m conduit), can be pre-set

***Part no.: Z116RV***

***Pcs.***

Handwheel valve flow with air vent

for skirting heating and ducted channel heating connection, ½” valve with two air vents, with handwheel valve, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, straight flow, can be pre-set

***Part no.: Z115***

***Pcs.***

Handwheel valve corner left with air vent

for skirting heating connection, ½” valve with one air vent, with handwheel valve, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, left-hand side, can be pre-set

***Part no.: Z117L***

***Pcs.***

Handwheel valve corner right with air vent

for skirting heating connection, ½” valve with one air vent, with handwheel valve, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, right-hand side, can be pre-set

***Part no.: Z117R***

***Pcs.***

Actuator valve flow with air vent

for skirting heating and ducted channel heating connection, ½” valve with two air vents, with actuator 230V, closed when power off, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, straight flow, can be pre-set

***Part no.: Z114S***

**Pcs.**

Actuator valve corner left with air vent

for skirting heating, ½” valve with one air vent, with actuator 230V, closed when power off, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, left-hand side, can be pre-set

***Part no.: Z116LS***

***Pcs.***

Actuator valve corner right with air vent

for skirting heating, ½” valve with one air vent, with actuator 230V, closed when power off, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, right-hand side, can be pre-set

***Part no.: Z116RS***

***Pcs.***

Return valve flow

for skirting heating and ducted channel heating connection, 1/2" valve, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, straight flow, can be pre-set

***Part no.: Z129***

***Pcs.***

Return valve 90°

for skirting heating connection, 1/2" valve, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line, corner design 90°, can be pre-set

***Part no.: Z130***

***Pcs.***

Air vent elbow, manual

for skirting heating connection, 90° air vent bracket, incl. clamping screw fitting Cu 18 for the heating element (with support bracket), 3/4" Eurocone for the connection line

***Part no.: Z119***

***Pcs.***

Elbow union 90°

for skirting heating and ducted channel heating connection, for all skirting heating types, 90° elbow connection, clamping screw fitting for heating element Cu 18 (incl. support bracket), 3/4" Eurocone for the connection line

***Part no.: Z38***

***Pcs.***

Skirting heating connection set 16

for attaching the pre-insulated VarioModular pipes on the floor below the skirting heating ends before the floor (screed) is laid. Consisting of: 2 insert brackets, 2 safety wedges, 2 folding collars

***Part no.: Z101***

***Pcs.***

***Connection set for IIIa skirting heating***

For connecting two heating elements. Centre to centre 58 mm.
Consisting of 2 push fittings: 1x 90° i/a and 1x 90° i/i

***Part no.: Z112***

***Set***

***Connection set for BKH2 / BKH2 mini***

for connecting two heating elements. Centre to centre 81 mm.

Consisting of 2 pcs. push-in fitting elbow 90° 18 (i/i) (F921) and 1 pce. 60 mm copper pipe 18 × 0.5 mm

***Part no.: Z113***

***Set***

# *DISTRIBUTION AND CONTROL / ACCESSORIES*

# Accessories for all heating/cooling systems

VarioManifold 5.0 without clamping screw fittings

Plastic manifold with internal air chambers for

thermal insulation, pre-settable flow indicator (10-160 l/h) in the flow according to EN 1264-4, viewing glass can be cleaned, stop valve in the return - easy to convert to thermostat operation, variable distance between manifold beams, completely oxygen-tight.

Consisting of:

• Supply and return segments

 (without clamping screw fittings)

• 2 connection blocks

• 2 end plates (isolated)

• Name labels

• Bracket set including affixing material

• 2 thermometers

• 2 fill and drain cocks ½”, twistable

• 2 manual air vents with air vent key

• 2 blank plugs

• 2 3 way ball valves, 2x 1” female thread x 6/4” union nut, incl 1” blank plug

Manifold can be used on the left and right-hand side.

If required, all manifolds available as 1-beam manifolds

Depth: 96 mm or 83 mm with removed thermometers

Number of heating circuits (1-17): \_\_\_\_\_

***Part no.: VT101***

***to***

***Part no.: VT117***

**Pcs.**

Spacer for bracket set

for increasing the space between wall and manifold beam.

+10 mm with one spacer

+20 mm with two spacers

***Part no.: VT542***

***Pcs.***

***Pumped VarioManifold 5.0 PVS (excl. controller)***

- For installing surface heating systems (2–15 heating circuits) in high-temperature heating systems (2-pipe system) with existing circulation pump.

- The flow temperature of the boiler circuit must be at least 10 K higher than the set flow temperature of the surface heating circuit.

- Observe the required pipe diameter (capacity) to the Pumped VarioManifold. Primary pressure required!

Without clamping screw fittings, consisting of:

* VarioManifold 5.0
* 2 boiler-side ball valves
* Injector valve
* Regulating valve
* Flow indicator (60-170 l/h) in boiler circuit
* High-efficiency circulating pump WILO PARA 15/6 (EEI ≤ 0.20),

factory-wired to the temperature limiter 60 °C

* Flushing ball valve

Supply and return connection to boiler: 3/4" female thread

Depth: 96 mm

Controller (PVX42 or PVX44) to be ordered separately!

***Part no.: PVS02 to PVS15***

***Pcs.***

Pump Microstation PMS for 1-2 heating circuits (excl. controller)

- For installing surface heating systems (1–2 heating circuits) in high-temperature heating systems (2-pipe system) with existing circulation pump.

- The flow temperature of the boiler circuit must be at least 10 K higher than the set flow temperature of the surface heating circuit.

- Observe the required pipe diameter (capacity) to the Pump Microstation. Primary pressure required!

Without clamping screw fittings, consisting of:

* 2 boiler-side ball valves
* Injector valve
* Regulating valve
* 2 KFE valves
* Check valve
* High-efficiency circulating pump WILO PARA 15/6 (EEI ≤ 0.20)
* Manual air vent
* 2 thermometers
* 2 control valves with flow indicator (0–200 l/h) in the flow
* 2 return valves with covering cap for easy conversion to thermoelectric actuator
* 2 blind fittings 3/4"
* Flow indicator (60–170 l/h) in boiler circuit

Supply and return connection to boiler: 3/4" female thread

Supply and return connection to surface heating: 3/4" Eurocone

Depth: 105 mm

***Part no.: PMS02***

***Pcs.***

***Fixed value regulator***

for PVS/PMS, incl. remote sensor

Setting range: 20 - 70 °C

***Part no.: PVX42***

***Pcs.***

***WHR36 heating controller guided by atmospheric conditions***

for PVS/PMS, consisting of:

controller, thermoelectric actuator, external sensor and flow sensor, rotary button for parallel displacement of the heating curve (±10 K), magnet attachment, can be combined with room thermostat with clock (Part no.: RT43), 230 V AC

***Part no.: PVX44***

***Pcs.***

Fixing bars for wall fastening

for fastening the VarioManifold 5.0, Pumped VarioManifold 5.0 and Pump Microstation on the wall, incl. affixing material

***Part no.: VT545***

***Set***

Manifold cabinet UF in-wall VSU1

Built-in frame and cupboard housing made of hot-dip galvanised sheet steel, front door and front frame white, powder-coated (RAL 9016), front cover plate can be removed and adjusted to between 93 and 110 mm, with integrated slide-in door with locking bolt, max. installation depth: 110 mm

(suitable for VarioManifold 5.0 with 1–4 circuits and Pump Microstation)

***Part no.: VSU1***

***Pcs.***

Manifold cabinet UF in-wall VSU2

Built-in frame and cupboard housing made of hot-dip galvanised sheet steel, front door and front frame white, powder-coated (RAL 9016), front cover plate can be removed and adjusted to between 93 and 110 mm, with integrated slide-in door with locking bolt, max. installation depth: 110 mm

(suitable for VarioManifold 5.0 with 5–7 circuits and Pumped VarioManifold 5.0 with 2–4 circuits)

***Part no.: VSU2***

***Pcs.***

Manifold cabinet UF in-wall VSU3

Built-in frame and cupboard housing made of hot-dip galvanised sheet steel, front door and front frame white, powder-coated (RAL 9016), front cover plate can be removed and adjusted to between 93 and 110 mm, with integrated slide-in door with locking bolt, max. installation depth: 110 mm

(suitable for VarioManifold 5.0 with 8–13 circuits and Pumped VarioManifold 5.0 with 5–10 circuits)

***Part no.: VSU3***

***Pcs.***

Manifold cabinet UF in-wall VSU4

Built-in frame and cupboard housing made of hot-dip galvanised sheet steel, front door and front frame white, powder-coated (RAL 9016), front cover plate can be removed and adjusted to between 93 and 110 mm, with integrated slide-in door with locking bolt, max. installation depth: 110 mm

(suitable for VarioManifold 5.0 with 14–17 circuits and Pumped VarioManifold 5.0 with 11–15 circuits)

***Part no.: VSU4***

***Pcs.***

Manifold cabinet on-wall VSA1

Cupboard housing made of hot-dip galvanised sheet steel, white, powder-coated (RAL 9016), with integrated slide-in door with locking bolt, pipe diversion bar removable, with rear wall, height: 550 mm, depth: 125 mm,

max. installation depth: 120 mm

(suitable for VarioManifold 5.0 with 2–3 circuits and Pump Microstation)

***Part no.: VSA1***

***Pcs.***

Manifold cabinet on-wall VSA2

Cupboard housing made of hot-dip galvanised sheet steel, white, powder-coated (RAL 9016), with integrated slide-in door with locking bolt, pipe diversion bar removable, with rear wall, height: 550 mm, depth: 125 mm,

max. installation depth: 120 mm

(suitable for VarioManifold 5.0 with 1, 4–7 circuits and Pumped VarioManifold 5.0 with 2–6 circuits)

***Part no.: VSA2***

***Pcs.***

Manifold cabinet on-wall VSA3

Cupboard housing made of hot-dip galvanised sheet steel, white, powder-coated (RAL 9016), with integrated slide-in door with locking bolt, pipe diversion bar removable, with rear wall, height: 550 mm, depth: 125 mm,

max. installation depth: 120 mm

(suitable for VarioManifold 5.0 with 8–13 circuits and Pumped VarioManifold 5.0 with 7–12 circuits)

***Part no.: VSA3***

***Pcs.***

Manifold cabinet on-wall VSA4

Cupboard housing made of hot-dip galvanised sheet steel, white, powder-coated (RAL 9016), with integrated slide-in door with locking bolt, pipe diversion bar removable, with rear wall, height: 550 mm, depth: 125 mm,

max. installation depth: 120 mm

(suitable for VarioManifold 5.0 with 14–17 circuits and Pumped VarioManifold 5.0 with 13–15 circuits)

***Part no.: VSA4***

***Pcs.***

230 V thermoelectric actuator

Suitable for supply segment of the heating/cooling distribution manifold, modification without emptying the system, closed when power off, First-Open function, connection line: 2 x 0.75 mm², length: 1000 mm, plug-in clip function, function display, only 1 Watt rated input, 230 V, opening time: approx. 3 min., closing time: approx. 3 min., ambient temperature: max. + 60 °C

***Part no.: VT30***

***Pcs.***

24 V thermoelectric actuator

Suitable for supply segment of the heating/cooling distribution manifold, modification without emptying the system, closed when power off, First-Open function, connection line: 2 x 0.75 mm², length: 1000 mm, plug-in clip function, function display, only 1 Watt rated input, 24 V, opening time: approx. 3 min., closing time: approx. 3 min., ambient temperature: max. + 60 °C

***Part no.: VT31***

***Pcs.***

230 V thermoelectric actuator with limit switch

Suitable for supply segment of the heating/cooling distribution manifold, modification without emptying the system, closed when power off, First-Open function, connection line: 4 x 0.75 mm², length: 1000 mm, plug-in clip function, function display, only 1 Watt rated input, 230 V, limit switch current: max. 5 A (230 V AC), opening time: approx. 3 min., closing time: approx. 3 min., ambient temperature: max. + 60 °C

***Part no.: VT33***

***Pcs.***

24 V thermoelectric actuator with limit switch

Suitable for supply segment of the heating/cooling distribution manifold, modification without emptying the system, closed when power off, First-Open function, connection line: 4 x 0.75 mm², length: 1000 mm, plug-in clip function, function display, only 1 Watt rated input, 24 V, limit switch current: max. 3 A ohmic load, max. 1 A inductive load (24 V DC), opening time: approx. 3 min., closing time: approx. 3 min., ambient temperature: max. + 60 °C

***Part no.: VT35***

***Pcs.***

***RTLT valve***

Return temperature limiter with four connections 3/4" Eurocone, flow and return lockable, emptying taps for venting and flushing, control valve with flow display 0.5 - 2.5 l/min, thermostat head, inside in-wall box with quick-fit enclosure (W x H x D = 300 x 200 x 60 mm), plastic cover panel white (W x H = 340 x 235 mm), protection cover

***Part no.: RT45***

***Pcs.***

***RTL valve***

Return temperature limiter with four connections 3/4" Eurocone, flow and return lockable, emptying taps for venting and flushing, control valve with flow display 0.5 - 2.5 l/min, inside in-wall box with quick-fit enclosure (W x H x D = 300 x 200 x 60 mm), closed plastic cover panel white (W x H = 340 x 235 mm), protection cover

***Part no.: RT46***

***Pcs.***

TOUCH HC(D) electronic room thermostat

Operating mode: Heating, Cooling, Dew point monitoring (optional)

Operating voltage: 230 V AC, 50 Hz

Output: Triac output, non-floating (NO contact),

 0.8 A, 230 V AC (max. 8 actuators VT30/VT33 or 1 pce. PVS/PMS pump)

Temperature range: +5 to +35 °C

Switching difference: ±0.1 to ±1.0 K settable

Protection degree: IP 30

Features:

* LED digitaly display, dimmable
* 3 sensor buttons (touch)
* Change-over inlet for external switching heating/cooling
* Internal semiconducting sensor
* Push-in connections
* Sensor adjustment
* Settable type of control: 2-point or PWM
* Dew point monitoring: external dew point sensor DPS required

Status display: LED red (heating) and LED blue (cooling)

Protection class: II

Size (H × W × D): 81 × 81 × 16 (36\*) mm; \* incl. electronics

Attachment: to in-wall box

Colour: White

***Part no.: RT49***

***Pcs.***

Dew Point Sensor DPS

Optionally in combination with Touch HC(D). room thermostat

With thermal paste, 5 m cable length.

***Art.-Nr.: RT495***

***Pcs.***

3/4”EUROx20 clamping screw fitting

Especially developed for the VarioModular pipe 20x2 on a 3/4“ Eurocone, nickel-plated, single-piece, with metal clamping ring and galvanic separation, AF 30, tested according to EN 21003

***Part no.: Z1500***

***Pcs.***

3/4”EUROx16 clamping screw fitting

Especially developed for the Variotherm pipes 16x2 on a 3/4“ Eurocone, nickel-plated, single-piece, with metal clamping ring and galvanic separation, AF 30, tested according to EN 21003

***Part no.: Z1400***

***Pcs.***

3/4”EUROx11.6 clamping screw fitting

Especially developed for the Variotherm pipes 11.6x1.5 on a 3/4“ Eurocone, nickel-plated, single-piece, with metal clamping ring and galvanic separation, AF 30, tested according to EN 21003

***Part no.: Z1300***

***Pcs.***

3/4” EUROxCu18 clamping screw fitting

Nickel plated, with EPDM sealing element, for 18 mm copper pipes as per DIN EN 1057 and 18 mm stainless steel pipes as per DIN EN 10312

***Part no.: Z136***

***Pcs.***

3/4” EUROxCu15 clamping screw fitting

Nickel plated, with EPDM sealing element, for 15 mm copper pipes as per DIN EN 1057 and 15 mm stainless steel pipes as per DIN EN 10312

***Part no.: Z139***

***Pcs.***

Insulating grommet

For Variotherm clamping screw fittings 3/4"EURO, fits all Variotherm pipe diameters, can prevent condensation on the clamping screw fittings during cooling

***Part no.: VT68***

***Pcs.***

Pipe locator

for finding the pipes for wall heating/cooling systems and ceiling cooling/heating systems, incl. calibration tool and battery

***Part no.: Z97***

***Pcs.***

Thermofoil 25–30 °C

For finding the pipes for wall heating systems, ceiling heating systems and floor heating systems.

Can only be used during the heating phase.

Dimensions: 300 x 49 mm

***Part no.: Z100***

***Pcs.***

Cold shrink tape

for optimum corrosion resistance of press-fit coupling connections as per ÖN H5155.

Roll: 50 mm x 15 m, 1 roll is sufficient for approx. 35 press-fit coupling connections (with a 50 % overlap)

***Part no.: Z1699***

***Pcs.***

Pipe cutting pliers

For trimming VarioProFile pipes and VarioModular pipes

***Part no.: W037***

***Pcs.***

***Calibration and chamfering tool***

For VarioProFile pipe 16x2 and 11.6x1.5, pre-

insulated VarioModular pipe 16x2, VarioModular pipe 20x2 and 11.6x1.5

***Part no.: W042***

***Pcs.***

Pre-insulated 16x2 VarioModular pipe (6 mm insulation thickness)

• Aluminium multi-layer composite pipe 16x2

• No oxygen diffusion whatsoever

• 95 °C, 10 bar

• Insulation: Polyethylene soft foam, fire resistance as per EN 13501: CL-s1,d0

***Part no.: V1226***

***m***

Pre-insulated 16x2 VarioModular pipe (9 mm insulation thickness)

• Aluminium multi-layer composite pipe 16x2

• No oxygen diffusion whatsoever

• 95 °C, 10 bar

• Insulation: Polyethylene soft foam, fire resistance as per EN 13501: CL-s1,d0

***Part no.: V1227***

***m***

***Retaining clamp ø35***

for affixing the pre-insulated VarioModular pipes.

***Part no.: V2802 (single variant)***

***Part no.: V2803 (double variant)***

***Pcs.***

Insulation hose 4 mm

for insulating the supply pipes of the distribution manifold to the respective heating surfaces, fire resistance as per EN 13501: EL,d0

***Part no.: Z24***

***m***

***Pipe uncoiler for single-person installation***

For twist-free unrolling of Variotherm pipes, steel pipe galvanised, can be dismantled

• With upper roller bracket

• Fixable adjusting feet

• Ball bearing

• For rolls 100, 300, 500 and 800 m

***Part no.: W002***

***Pcs.***

***Internal bending spring ø11.6***

Bending spring for easy bending of Variotherm pipes at the pipe ends

***Part no.: W016***

***Pcs.***

***Internal bending spring ø16***

Bending spring for easy bending of Variotherm pipes at the pipe ends

***Part no.: W018***

***Pcs.***

***External bending spring ø11.6***

Bending spring for easily bending Variotherm pipes ø11.6 over the entire length for pushing it further

***Part no.: W054***

***Pcs.***

***External bending spring ø16***

Bending spring for easily bending Variotherm pipes ø16 over the entire length for pushing it further

***Part no.: W055***

***Pcs.***

***External bending spring ø20***

Bending spring for easily bending Variotherm pipes ø20 over the entire length for pushing it further

***Part no.: W056***

***Pcs.***



Variotherm has been developing, producing and selling innovative, ecological and economical heating and cooling surfaces since 1979.

Systems like

* System wall heating/cooling for plastered construction
* Modular wall heating/cooling for drywall construction
* Modular ceiling cooling/heating
* EasyFlex wall heating/cooling
* EasyFlex ceiling cooling/heating
* Floor heating systems
* Skirting heating
* Trench heating

|  |
| --- |
| Your Variotherm Partner |

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