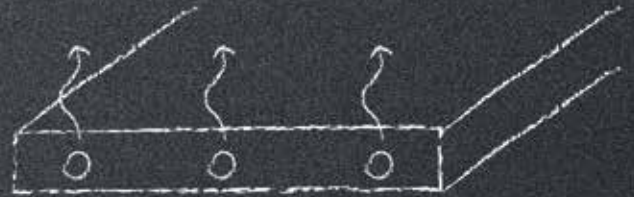


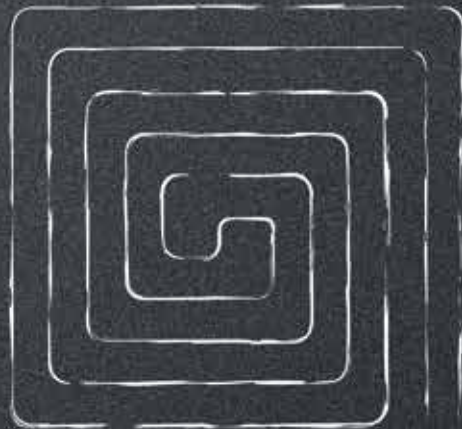
Energy Systems

Radiant heating and cooling systems

System solutions for all areas of application



The larger the heat-radiating surface, the more effective and economical the room heating will be. In comparison with conventional radiators, the ideal room temperature with a radiant heating system is 1 °C to 2 °C lower.





Heating and cooling systems for convenient all-round comfort

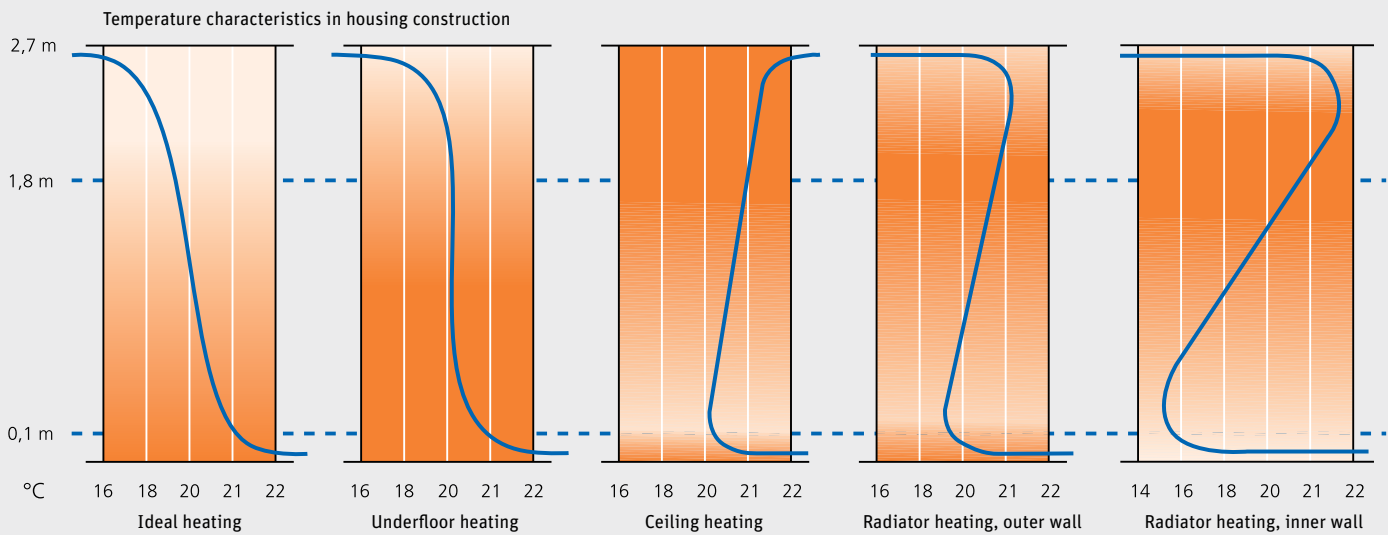
■ **The demand for high-quality living spaces in both existing and new buildings is increasing all the time, and with it the expectation of state-of-the-art temperature control.**

Whether it is for residential buildings, offices and commercial premises, industrial facilities, sports halls or open spaces – what was an exception to the rule yesterday has now become expected: usage-optimised heating and cooling systems that continually keep pace with individual requirements. It is therefore hardly surprising that the majority of planners and building owners looking for modern and advanced system solutions are now choosing radiant heating and cooling systems. The retrofitting of radiant heating and cooling systems is also gaining in popularity.

The many innovations introduced by Roth over the years have made a significant contribution to this development. In addition to user comfort and freedom of architectural design, the decisive criteria in the selection of a radiant heating and cooling system are energy savings, hygiene and environmental protection.

Roth radiant heating and cooling systems





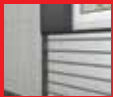


Innovation and performance for modern living spaces



■ An optimal room temperature profile with precisely adjustable dosing makes the performance capability of Roth radiant heating and cooling systems readily perceptible – day in, day out. Equally, negative impacts on room temperature (such as those caused by swirling air, draughts or heat accumulation) are a thing of the past. As a matter of fact, their temperature characteristics correspond almost precisely to ideal heating (see graph).

Experts know that the larger the heat-radiating surface, the more effective and economical the room heating will be. In comparison with conventional radiators, the ideal room temperature with a radiant heating system is 1 °C to 2 °C lower. The resulting energy savings of 6 to 12% speak for themselves, as do the lower system and inlet temperatures. These systems are also extremely well suited for use in conjunction with equipment that produces renewable energy, such as Roth heat pumps and solar collectors. There are additional plus points in terms of hygiene too: the dryness of the heat deprives bacteria and dust mites of the moisture they need for survival.

■ Guide to Roth radiant heating and cooling systems

	Building types						Areas of application			Installation surfaces			Load-distribution/covering layer		Insulation integrated in the system
	Residential and commercial buildings	Administrative buildings	Car dealerships/showrooms	Industrial/factory halls	Sports halls	Outdoor areas	New buildings	Existing buildings/renovation projects	Minimum installation height, minimum mass per unit area	Floor	Wall	Ceiling	Wet construction (screed/plaster)	Dry construction	
 Original Tacker System	X	X	X	●			X	●		X			X		X
 Knob System	X	X	X	X			X	●		X			X		X
 ClimaComfort TBS	X	X			X		●	X	X	X			●	X	X
 Pipe Fixing System	X	X	X	X	X	X	●			X	X	X	X		
 ClimaComfort Panel System	X	X	●		●		X	X	X	X	X	X		X	X
 ClimaComfort Compact System	X	X	●				●	X	X	X					
 Concrete core temperature control Isocore®	●	X		X			X	●		X	X	X	X		

● : Building-specific



Roth Heating and Cooling System

a feeling of comfort the whole year round



■ The basic concept behind the system

When designing an energy system for technical building installations, the fundamental aim must be to ensure that a comfortable temperature can be achieved within the building's rooms. The heating and cooling systems developed by Roth offer solutions tailored to seasonal and user-specific requirements. During colder seasons, low-temperature radiant heating achieves room temperatures which are warm and comfortable, whilst the Roth System Pipes integrated into the floor structure generate a pleasant cooling effect in the summertime.

■ Heating in winter

A pleasant, almost ideal room temperature profile for the user is achieved by the evenly-distributed dispersion of heat over a large surface. With its system-dependent low heating water temperatures, this system is all but predestined for use in combination with environmentally friendly and energy-saving heat generators, with low temperature and calorific value technology and with alternative energy sources.

■ Cooling in summer

Uniform room cooling without unpleasant draughts is achieved via radiant cooling by means of the Roth System Pipes integrated into the floor structure. From the point of view of control engineering, the Roth heating and cooling system is designed in such a way that, when cooling, both drops in floor surface temperature to below 19 °C (deemed the critical level in terms of comfort, according to DIN 1946), and vertical temperature shifts between two relevant measuring points (0,1 to 1,1 m) of two kelvins can be sensibly avoided. Dew point monitoring is integrated in order to effectively prevent condensation caused by weather-related, elevated room humidity. Cooling water can be generated by means of system pipes placed in the ground, heat pumps, chiller units or surface water, etc.

Roth System Pipes

always on the safe side with five-layer CoEx Technology

- > Quality through five layers ("S5")
- > System expertise
- > Service
- > Guarantee and warranty
- > Customer satisfaction



Advantage 1



Advantage 2

■ All good things come in ... fives. And piping, the arteries of a perfectly planned and optimally functioning radiant heating and cooling system

You can benefit five times over from a professional system. The new Roth pipe philosophy makes this possible. The five-layer construction of the Roth DUOPEX S5®, X-PERT S5®+ and ClimaComfort® S5 System Pipes equates to five real benefits for you. All pipes are manufactured using our unique, tried-and-tested five-layer CoEx Technology.

■ Quality through five layers ("S5")

In order to meet the high requirements they must fulfil on site and during transport, the Roth DUOPEX S5®, X-PERT S5®+ und ClimaComfort S5 System Pipes are constructed in five layers. These are inseparably bound together by means of the S5 CoEx Technology to create a sandwich material with a high level of robustness and a long service life.

■ System expertise – Roth system solutions for demanding applications

As the inventor of the Tacker system, Roth is among the leading suppliers of radiant heating and cooling systems. With millions of systems proving their worth out in the field, Roth comes equipped with years of experience and thus with the greatest amount of technological know-how. The Roth Original Tacker® System and the Roth Knob System fulfil the highest expectations in terms of quality and safety, in excess of technical standards.





Advantage 3

Advantage 4

Advantage 5

■ **Service**

- > Extensive field network of qualified sales professionals
- > Hotline and project planning service
- > Factory training courses, planning and product seminars
- > 10-year spare parts provision and after-sales guarantee following discontinuation of the product range
- > Fast availability of all Roth brand product ranges throughout Europe

■ **Guarantee and warranty**

Quality for the safety of our customers: we consider this to be an obligation – from the creation of the product through manufacturing and storage, all the way to delivery. High-quality products and services form the basis for worldwide insurance protection, which also covers long-term damage in the event of possible defects. A continued liability agreement guarantees insurance protection even in the event that production is discontinued. The details are defined in a certificate of warranty. This confirms the existence of insurance coverage with a face value of up to 5 million euros for injury to persons and property damage for each individual incident; this cover applies to every Roth radiant heating and cooling system for a period of up to ten years after start-up.

■ **Customer satisfaction**

Building owners expect reliability and preservation of value from their property. Roth systems offer the customer the assurance of always having chosen the "best in class" as far as radiant heating and cooling systems are concerned. They create a lasting sense of well-being by distributing energy in a way that is pleasant for the building users and increase the value of the property in question too.



These services are further enhanced by our membership of the Handwerker Marke Craftsmen's Association.

Roth DUOPEX S5[®], X-PERT S5[®]+ and ClimaComfort S5 perfect for all requirements



■ Roth DUOPEX S5[®], X-PERT S5[®]+ and ClimaComfort S5 System Pipes – the right solution for every application

What constitutes the "right" pipe system will depend on the building in question and the needs of its owner. Roth offers system pipes that meet the most stringent of quality standards.

■ S5 CoEx Technology – high quality for every area of use

You will always find the perfect solution to your building's specific requirements for a radiant heating and cooling system, with pipes featuring the proven and unique S5 CoEx Technology. Thanks to quintuple co-extrusion in a single production process, the sandwich material of the Roth System Pipes guarantees optimal adhesion between the pipe layers.

5 layers – 5 levels of safety

Roth System Pipes offer maximum robustness thanks to their mechanical, thermal and chemical characteristics:

- > Protection of the EVOH oxygen barrier against mechanical damage and the harmful effects of external factors such as heat and damp
- > Highest level of resistance to deformation caused by concentrated mechanical loads
- > The workings of the radiant heating and cooling systems are optimally protected for subsequent craftsmen in accordance with the Verdingungsordnung für Bauleistungen (Contract Procedures for Building Works [VOB])
- > Long service life through the avoidance of oxygen exchange
- > Optimised linear extension within a narrow tolerance field through the five layers

Roth DUOPEX S5[®] and X-PERT S5[®]+ System Pipes

an excellent team



All five layers of the Roth DUOPEX S5[®] System Pipe are co-extruded and then subsequently cross-linked.

■ Roth DUOPEX S5[®] System Pipe – the solution where only the very best will do

The 5-layer Roth DUOPEX S5[®] System Pipe holds its own against extremely high levels of stress. This pipe meets the most stringent requirements, even those associated with concrete core temperature control and industrial construction. A continuous stress of 95 °C at an operating pressure of 6 bar and a short-term temperature increase to 110 °C is no problem for the Roth DUOPEX S5[®] System Pipe, which is interactively cross-linked throughout.

■ Interactive cross-linking using an innovative and patented manufacturing procedure

All five layers of the DUOPEX S5[®] System Pipe are co-extruded and then subsequently cross-linked throughout by means of a patented production process. This ensures connections at the molecular level, not only within the individual layers but also between them. As a result, the five-layered pipe is absolutely stable. Interactive cross-linking improves the mechanical, thermal and chemical characteristics of the DUOPEX S5[®] System Pipe and provides additional safety reserves.

■ Roth X-PERT S5[®]+ System Pipe – the solution for challenging applications in the low-temperature range

The average thermal stress during heating is falling, as a result of the Energiesparverordnung (Energy Savings Regulation [EnEV]).

The highly flexible five-layer Roth X-PERT S5[®]+ System Pipe, in combination with the Roth System Panels, is a system which has been optimised to meet the specific requirements of applications in the low-temperature range.

The "X" in X-PERT S5[®]+ represents the excellent finish of the material. It is designed with extra safety in mind, to withstand a continuous thermal stress of 70 °C and a short-term thermal stress of 100 °C.

The X-PERT S5[®]+ System Pipe is continuously pressure-resistant with multiple safety reserves up to 6 bar.

■ DUOPEX S5[®] and X-PERT S5[®]+ – even safer thanks to a high-performance surface

The surface layer means that the Roth DUOPEX S5[®] and X-PERT S5[®]+ System Pipes are now even stronger.

The yellow colour of these two system pipes indicates that they feature a robust surface. High resistance to wear and integrated UV stability provide additional protection, particularly for use in harsh site conditions.

■ System compatibility

Roth DUOPEX S5[®] and X-PERT S5[®]+ System Pipes can all be used with the Roth Original Tacker[®] System, the Roth Knob System and the Roth Pipe Fixing System for heating and cooling purposes.



Approval no. 3V203 PE-Xc
Approval no. 3V266 PE-RT
Approval no. 3V331 PE-RT

Roth Original Tacker® System

proven reliability time and again in new buildings

- › Perfectly coordinated system solution
- › Tried and tested time and again
- › Patented laying technique
- › Easy to install
- › Pipes positioned to the centimetre
- › Optimum heat distribution and cooling



Roth radiant heating and cooling system, Marburg station, Germany

■ Roth Original Tacker® System – for solutions that retain their value

This system solution features components designed to work together in perfect harmony, providing the basis for mastering sophisticated heating construction tasks. The Roth Original Tacker® System (which has proven its worth a million times over) used in conjunction with Roth DUOPEX S5® and X-PERT S5®+ System Pipes provides the ideal foundation for creating a heating supply system that will retain its value in the long term. The friction-free interlocking connection of pipe and patented pipe laying technique is therefore always the first choice for the entire array of sophisticated applications. Perfection in the result, whether it is for residential, office or industrial construction projects.

■ Three system steps to perfection

The high-quality ex-works prefabrication of all system components – pipe, composite panel and accessories – makes it possible: the complete Roth radiant heating and cooling system is laid in only three work steps using the patented Tacker technique. Of course, everything is in accordance with a precise computer calculation and taking into account all valid regulations.

■ Roth radiant heating and cooling – comfort can be so simple

Ease of assembly with a high degree of flexibility, paired with operational and building site safety and superior efficiency – this is what characterises Roth radiant heating and cooling systems, even when dealing with unusual floor plans.

The Roth Original Tacker® System makes assembly really simple and enables pipes to be positioned to the centimetre, with a view to achieving optimum heat distribution and cooling, even in the most difficult installation situations.

The underfloor constructions of Roth radiant heating and cooling systems conform to DIN EN 1264 ("Water based surface embedded heating and cooling systems"), taking into account DIN 18560 ("Floor screeds in building construction"), DIN 4109 ("Sound insulation in buildings") and the Energieeinsparverordnung (Energy Savings Regulation [EnEV]). The consistently high quality standards of the individual components and of the overall system are documented by a large number of marks of testing, monitoring and quality.



Unique, two-sided, self-adhesive overlap

Roth system composite panel



Roth composite roll



■ **System composite panels for radiant heating and cooling systems**

Simple, fast, in compliance with standards: system composite panels made of polystyrene particle foam. An excellent choice for heat and sound insulation. They provide a self-enclosed space at the blink of an eye during the pipe laying stage. This makes it possible to produce a unique, two-sided, self-adhesive overlap that is 30 mm wide. A secure closure against damp and screed (in accordance with DIN 18560) prevents sound and thermal bridges from forming. In addition, an imprinted grid makes it easier to put the system pipes exactly in place in accordance with precisely calculated installation distances.

■ **A strong solution for high levels of stress**

The Roth EPS DEO WLG 035 26 mm system composite panel comes into play wherever traffic loads are high (in car showrooms, for example). This composite panel can be utilised under an appropriately coordinated screed construction with maximum traffic loads of up to 35 kN/m². The Roth range of products also includes additional insulation panels made of EPS or PU, which may be needed depending on the thermal insulation requirements and traffic load of the application in question.

Roth radiant heating and cooling system,
Auto Velte KG car dealership, Biedenkopf, Germany

■ **Roth E^x system composite panel – highly effective insulation with a flat construction**

The new E^x system composite panel EPS DES 25-2 WLG 032 has the "X" factor when it comes to energy efficiency and reduces the construction height of the floor by up to 10 mm compared to standard insulation panels with impact sound insulation. The Neopor insulating material (thermal conductivity category WLG 032) makes it possible to reduce the insulation thickness while still absorbing the sound of impact. A 25 mm panel height is therefore sufficient to insulate floors and ceilings between living spaces in accordance with regulations.



Approval no. 7F083
Approval no. 7F087

Roth Original Tacker® E^x Clips

for extra efficiency, comfort and safety

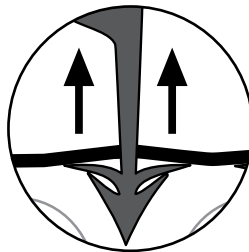
- > Pipe raising function
 - Pipes completely surrounded by screed
 - Optimum transfer and distribution of heat and cooling
- > Double barb
 - Maximum protection against pipes being ripped out
 - Exceptional holding power



■ Roth Original Tacker® E^x Clips for comprehensive energy transmission

Roth, the inventor of the Tacker system, has further improved its Roth Original Tacker® Clips. The new Roth Original Tacker® E^x Clips now come with a pipe raising function. This ensures better transfer and distribution of heat and cooling energy, as the pipe is always completely enclosed in screed, even if the screed is viscous. Combined with the new double barb, the clips offer the "X" factor when it comes to **energy performance**, in terms of **efficiency, comfort and safety**.

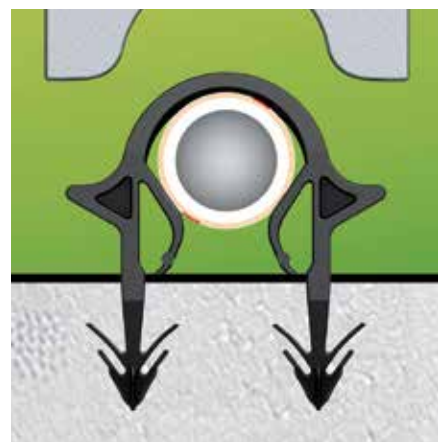
■ Double barbs with a new design for easier installation, maximum tear-out protection and unparalleled holding power



The lower barb in a Roth Original Tacker® E^x Clip is highly stable and equipped with a sharp cutting edge, while the barb on top of this is exceptionally flexible. This special technology makes it safe and easy to permeate the insulating film in the insulation, thus facilitating and speeding up the installation process. The stability of the lower barb provides the perfect support for the upper barb.

The double barb offers optimum protection against pipes being ripped out and maximum holding power, as well as ensuring that pipes are positioned securely and precisely in the Roth system composite panels and rolls, even in harsh site conditions.

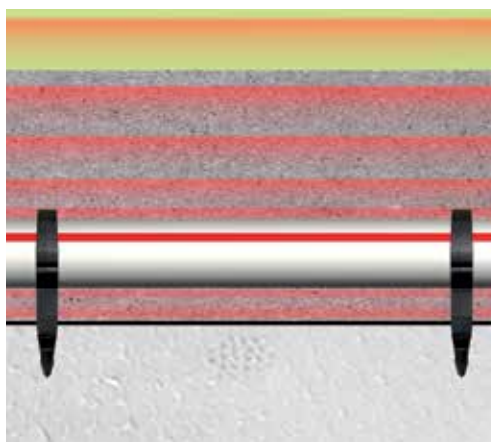
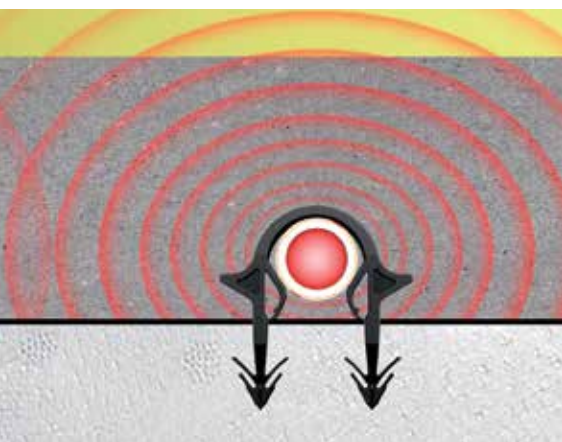
The Roth Original Tacker® E^x Clips with the new pipe raising function and double barbs make installation easier than ever, ensure efficient pipe fixing and provide optimum energy efficiency, comfort and safety.





■ **40 clips per magazine for efficient working**

Roth Original Tacker® E^x Clips are available for Roth System Pipes in sizes of 14, 16, 17 and 20 mm. With 40 clips grouped together to form a magazine, users benefit as they do not need to refill the Tacker over and over. Two strips of 40 clips each can be inlaid in the Tacker and handled with no extra effort. A weight ensures that, once a clip has been used, each subsequent clip slides into position easily. Roth Original Tacker® are height adjustable, so they can be used by any operator, be they short or tall. The new Roth Original Tacker® E^x Clips can be used with the existing Roth Original Tacker® models 16 to 20.



The pipe raising function allows the screed to flow underneath the pipe so that it surrounds it completely. This ensures optimum transfer and distribution of heat and cooling, thus creating extra efficiency and comfort too.



Approval no. 7F083
Approval no. 7F087



Roth Knob System

flexible, easy, perfect



Roth radiant heating system, Keramion ceramic museum, Frechen, Germany

■ An extremely flexible system

The Roth Knob System is characterised by a high degree of flexibility and straightforward assembly. The undercut and ideal shape of the knobs enable Roth DUOPEX S5® and X-PERT S5®+ System Pipes in sizes of 14 to 17 mm to be attached to Roth Knob Panels (which also come in sizes of 14 to 17 mm).

The pipes can be laid either orthogonally or – with the aid of an additional film – diagonally. Fixing strips mean that leftover pieces can easily be reused, enabling you to create environmentally friendly installations with very little waste. Filler knob panels are available too.

The Roth Knob System is suitable for laying in residential, office and commercial buildings.

Roth Knob System

installation-friendly laying

- › Flexible
- › Easy to install
- › Optimum knob shape
- › Orthogonal and diagonal laying
- › Environmentally friendly installation with very little waste



■ Roth Knob Panel 14 – 17 DEO 10

Roth offers a knob panel with high load-bearing capacity and low installation height for use in buildings with increased stress requirements:

- › the special geometry of the knob and its alignment on the entire Roth Knob Panel offers the perfect base for laying the Roth System Pipes – even with low outside temperatures.
 - › The Roth knobs interlock with one another in double rows by means of a two-sided film protrusion. The best conditions for using flow screed.
 - › Without the use of additional tools, the Roth system Pipe is pressed with the foot into the knobs, where it engages audibly and securely.
 - › Suitable for all Roth System Pipes of $\varnothing 14$ mm to $\varnothing 17$ mm.
 - › The two-layer polystyrene construction ensures the knobs can be walked on, whilst also providing thermal insulation.
- › The Roth manifold connection panel makes it easy to adjust the installation distances in the area of the manifold in accordance with distributor connections.
 - › The door area between two rooms can simply be bridged with the Roth alignment knob in connection with the Roth alignment knob film.
 - › The film of the Roth edge insulating strip is pressed into the Roth knob with the Roth PE profile. An ideal solution, even when using flow screed.
 - › When every millimetre of installation height counts: the Roth knob panel 14 – 17 DEO 10 can even be used when renovating residential buildings.

■ Thought through in detail

With the diagonal laying arrangement of the Roth System Pipes, even unusual floor plans do not pose a problem.



Roth radiant heating system, Niederösterreichisches Landesmuseum (Museum of Lower Austria), St. Pölten, Austria



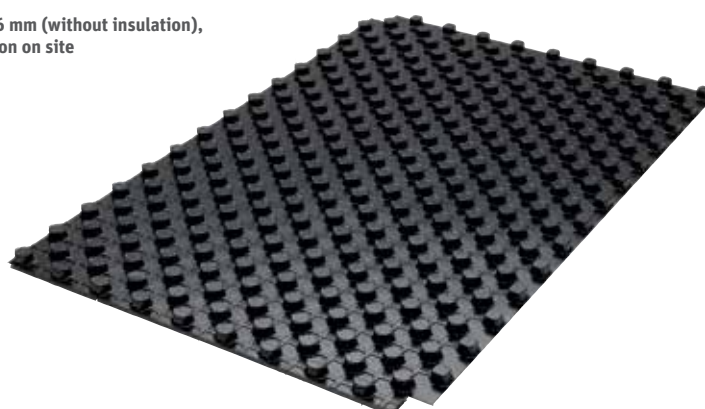
■ **Roth Knob Film 14-16 mm – innovative and high-quality**

The Roth Knob Film 14-16 mm is suitable for laying on insulation on site. This is ideal in renovation projects, for example, where insulation is already in place and there is only a low installation height available. The highly effective Roth Knob Film is designed to meet high load requirements up to 75 kN/m² – for industrial radiant heating applications, for example.

■ **The Roth Knob System at a glance**

- > Suitable for all Roth System Pipes of \varnothing 14 mm to \varnothing 17 mm
- > Available in two EPS qualities: EPS DES 30-2 (1450 x 950 x 50 mm) and EPS DEO 10 (1450 x 950 x 30 mm)
- > Support plate and cover film made of polystyrene, building material class B2
- > Knob grid of 50 mm: all installation distances and shapes possible within the 50 mm grid
- > Effective installation area/panel: 1,26 m²
- > Assembled into a single unit ex-works
- > Overlap on two sides so that elements can be interconnected
- > Improved impact sound insulation
- > The 4 mm undercut and the geometry of the individual knobs make it easy to install and secure pipes in place
- > The foam on the back of each individual knob creates an extremely stable installation area which is good to walk on
- > The diagonal fixing method makes it easier to lay Roth System Pipes in this way

Roth Knob Film 14-16 mm (without insulation), for laying on insulation on site

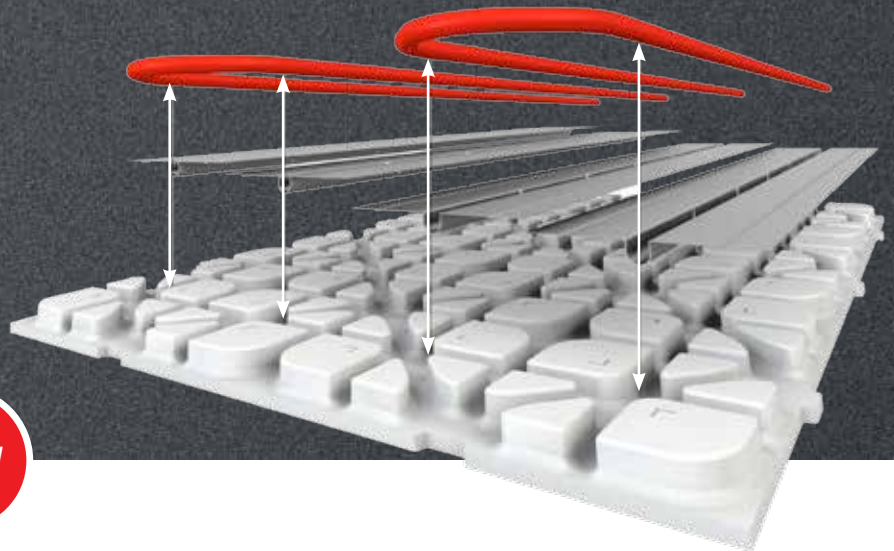


Roth ClimaComfort® dry construction system

flexible installation with a low installation height

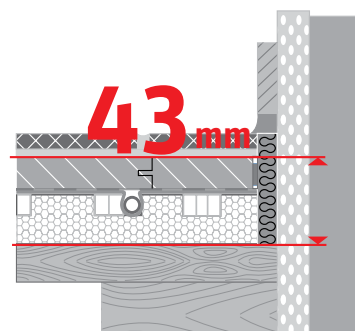
- > Perfect for renovation
- > Simple and flexible installation
- > Low weight per unit of area
- > Heat-conducting lamellas made from high-performance aluminium
- > Flexible pipe installation
- > Flexible direction of installation

NEW



■ Universal components for flexible solutions

As a leading manufacturer of radiant heating and cooling systems, Roth has developed a new dry construction system that is ideally suited to the installation requirements involved in renovation work. The new Roth ClimaComfort® dry construction system features a low installation height of just 43 millimetres including covering. The structure of the insulation panel permits flexibility in the choice of direction of installation – it can even be laid diagonally.



■ One size fits all

For easy installation, only one type of system panel is used. This ensures that installation is straightforward, secure and quick and allows for flexibility in its application. The Roth ClimaComfort® TBS System Panels can be combined in all directions on the 30 cm grid and can be cut to size depending upon the geometry of the room. Thanks to a special groove/notch system, precise positioning and alignment of the system panels is guaranteed. This prevents the panels from slipping on the subsurface.

The panel structure permits the heat-conducting lamellas to be affixed simply and securely in various directions. The Roth Alu-Laserflex 14 millimetre system pipes can thus be laid horizontally, vertically and diagonally. This makes the system particularly suitable for renovation projects and permits a wide range of architectural design freedom, even if the room in question poses difficulties.

■ Heat-conducting plates made of high-performance aluminium for optimum heat output

To improve heat output, the leading manufacturer of radiant heating and cooling systems has developed heat-conducting plates made from high-performance aluminium. The material guarantees particularly good heat transfer. The heat-conducting lamellas have predetermined breaking points so that they can be separated into the desired lengths. The smallest possible installation spacing for the Roth Alu-Laserflex System Pipe is 15 centimetres.



■ **Roth Alu-Laserflex System Pipe – diffusion-proof and dimensionally stable**

The five-layer Roth Alu-Laserflex System Pipe is precisely matched to the complete system and is flexible to install with minimal waste. It can be bent with the bending spring and remains dimensionally stable after being bent within its bending radius and during operation. The integrated aluminium layer serves as an oxygen barrier. The Alu-Laserflex System Pipe is pressure- and temperature-resistant with minimum linear expansion and therefore reduces impact sound. The DIN CERTCO approval and regular monitoring of the manufacturing process as well as the properties of the pipe guarantee quality and safety for installers and users.

■ **Lightweight with a low installation height – the ideal combination**

The Roth ClimaComfort® dry construction system with its low installation height and lightweight design is suitable for numerous applications in renovation and new-build projects. It can be installed on existing flat flooring that has a sufficient load-bearing capacity or on a timber beam construction. The perfectly matched components guarantee an ideal complete system from Roth.



Roth Alu-Laserflex

At a glance

- > 25 mm high Roth ClimaComfort® TBS System Panel – ideal for renovation
- > simple, time-saving and flexible installation
- > low weight per unit of area
- > heat-conducting lamellas made from high-performance aluminium for optimum heat output
- > panels interlock by means of a groove/notch system
- > heat-conducting lamellas are held securely on the ClimaComfort TBS System Panel
- > heat-conducting lamellas with predetermined breaking points so that they can be separated into the desired lengths
- > simple and flexible pipe installation with an installation spacing of 15 cm
- > direction of installation either horizontal, vertical or diagonal
- > suited to both wet and dry construction
- > decades of manufacturing expertise

Roth ClimaComfort® Panel System

all-round comfort guaranteed

- › EPS decoupling layer
- › Highly efficient heat-conducting elements
- › Locking mechanism for holding pipes in place
- › EPP end piece for redirecting pipes
- › Optional additional insulation



■ Unrestricted pipe installation and surface lining – the perfect fit for every application

The ClimaComfort panel's design makes for optimum pipe installation. The X-PERT S5®+ System Pipe is simply snapped on to floors, walls or ceilings. To change the direction of the pipe, Roth offers an end piece that is inserted into the system panel. This makes wall and ceiling installations much easier to manage, since the components are held in the correct positions.

The ClimaComfort panel consists of an EPS support plate, which is permanently bonded to an aluminium heat-conducting plate. The panel ensures that heating or cooling energy is transferred evenly and quickly.

The dry construction method keeps assembly times short (no drying phases) and the perfectly coordinated system components ensure that the ClimaComfort Panel System responds extremely quickly.

The ClimaComfort panel is suitable for laying floor surfaces according to individual room layouts, even on slopes. The panel dimensions correspond to the dry construction standard size (625 x 1200 mm); the panels can be cut to meet the requirements of any room,

irrespective of its size. The system meets the structural requirements associated with renovation projects in existing buildings and can be retrofitted as part of ad hoc minor refurbishment work.

■ "Room by room renovation"

The ClimaComfort panels can be easily mounted on conventional timber-framed structures for installations in walls or on ceilings. On external walls, the structure can then be easily back-filled with suitable insulating material. Unlike external insulation, this renovation method enables the process to be performed gradually, room by room.

Roth has designed the system for use with the Roth X-PERT S5®+ pipe in dimensions of 14 mm and 16 mm.

Roth also offers the ClimaComfort Panel System in a 16 mm version for floor installation, together with the Roth Alu-Laserflex System Pipe.

■ Roth ClimaComfort® Panel System – for direct flooring installation

Floor installations involving the Roth ClimaComfort® Panel System can be covered directly with tiles or parquet flooring using innovative adhesives. The subsurface must be clean, even and capable of bearing loads.

Parquet flooring can also be applied directly on to the Roth ClimaComfort® Panel System. Wooden floors must be approved for use with underfloor heating by the manufacturer.



■ **Experience all-round comfort in existing and new buildings**

The Roth Climacomfort® Panel System transforms floors, walls and ceilings into highly efficient and responsive surfaces that distribute energy in order to heat and cool rooms. Roth has developed one type of panel that can be used for all applications. Storage and installation require minimum effort and offer maximum convenience.

Unlike conventional wall-mounted radiators, the Roth Climacomfort® Panel System provides an even amount of radiant heat from all sides, resulting in a pleasant room temperature with no circulation of air. Practically the entire surface area of a room's walls, floor and ceilings can be used for heating/cooling purposes. For example, in winter a room can be heated via the floor and/or walls, whilst in summer it can be cooled via the ceiling and/or walls. The Climacomfort Panel System can be retrofitted as part of minor refurbishment work and, at long last, it is enabling people to experience that wonderful feeling of "all-round comfort".

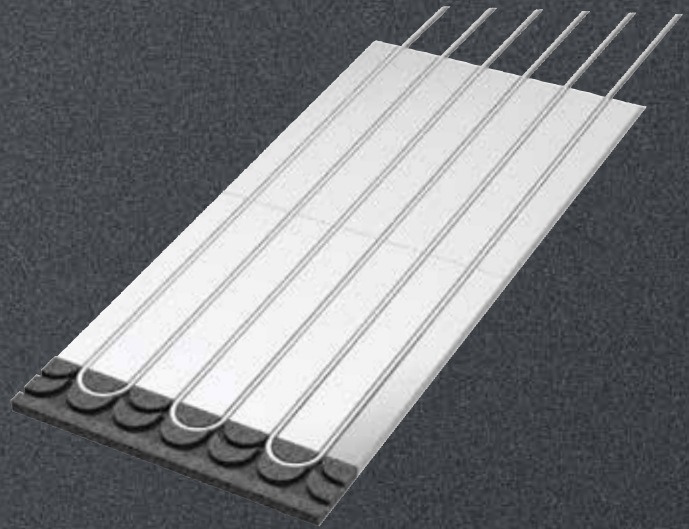
■ **Economical use of energy and the perfect partner for Roth heat pumps**

The system's special energy-saving mode of operation when heating up to an inlet temperature of 35 °C has been optimised for use in conjunction with the Roth heat pump, a producer of renewable energy. The materials and the process and product technology chosen for the system enable energy requirements (for heating and cooling) to be reduced dramatically, thus facilitating the integration of regenerative heaters (even in existing buildings). Combined with intelligent control technologies, this creates enormous potential for saving energy. Roth's heat pumps complete a range of products which represent a uniform energy concept specifically designed for renovation projects and new buildings. The system offers huge advantages from both an ecological and an economical point of view.

Roth ClimaComfort® Panel System

the perfect solution for external walls

- > One panel type for heating and cooling via floors, walls and ceilings in old and new buildings
- > Energy-efficient, environmentally friendly and highly responsive surface temperature control
- > In wall applications, the system offers proven comfort verified by the Fraunhofer Institute for Building Physics
- > Reduced energy consumption
- > Optimum temperature equalisation
- > Quick assembly times
- > Low mass per unit area
- > System pipes easily lock into place
- > Unrestricted pipe installation and surface lining



■ The Fraunhofer Institute agrees that the ClimaComfort Panel System offers excellent comfort, particularly when external walls are lined

The positive effects of lining external walls to begin with can be seen in the results of a "comfort study" carried out by the Fraunhofer Institute for Building Physics (IBP). The study is based on DIN EN ISO 7730. It also reveals that the temperature control skirting eliminates the thermal bridges that can interfere with heating performance. If heating or cooling requirements are particularly high, the internal walls can be lined too.

■ The ceiling as a surface for distributing energy, especially for cooling purposes

If a room's floor and walls do not cover the energy requirements in question, the ceiling can be brought into play. It makes good sense to line the ceiling, especially if you are converting an attic. The use of the ClimaComfort Panel System on the ceiling is particularly recommended for cooling purposes.

■ Optimisation thanks to highly efficient ClimaComfort heat conduction film

In old buildings, draughts can be felt and mould can form on external walls, on window reveals, in areas where ceilings meet walls and in corners where external walls meet internal ones. This is down to thermal bridges, which reduce the surface temperature of the wall in a localised area. With Roth's high-performance temperature control skirting, even these parts of a building can be made cosy and comfortable by increasing the surface temperature. The heat conduction film consists of a high-performance heat-conducting composite film (with a thermal conductivity of around 350 W/mK) and a flexible, high-performance insulating layer (thermal conductivity 0,013) that is 5 mm thick.

ClimaComfort high-performance temperature control skirting with heat-conducting film and flexible, high-performance insulation



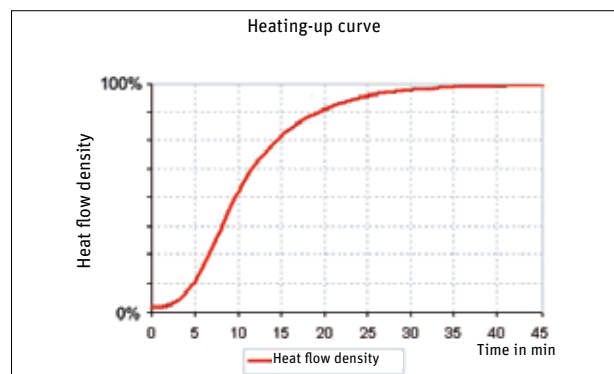
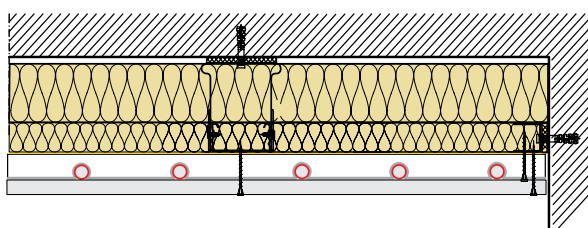


■ **Unique performance profile:
Comfort, energy efficiency, fast
responsiveness**

The ClimaComfort panel and its high-performance temperature control skirting prevent the walls, ceiling and floor of a room cooling down from inside. So, by observing the IBP guidelines and making careful plans, even old buildings can have cosy living spaces. This way of lining external walls is particularly well suited to buildings with listed facades.

Thermal measurements taken in accordance with EN 1264 clearly demonstrate what the system is capable of. Its most impressive feature is its fast reaction time. Furthermore, with an inlet temperature of 35 °C, the system can achieve a thermal output at the wall of up to 88 W/m². When used in conjunction with Rigips Climafit plasterboard, which offers a high thermal conductivity, the system can achieve heating and cooling outputs that would have been simply unimaginable with the conventional linings used in surface-embedded temperature control systems.

Roth ClimaComfort® Panel, wall installation



Approval no. 7F309-F/D/W

Roth ClimaComfort® Compact System

Renovation made easy

- > Minimum installation height
- > Quick reaction
- > High stability
- > Flexibility
- > Safety monitoring for backfilling
- > Installation on existing screeds
- > Quick, easy and universal assembly



■ Heating and cooling for renovation projects and new buildings

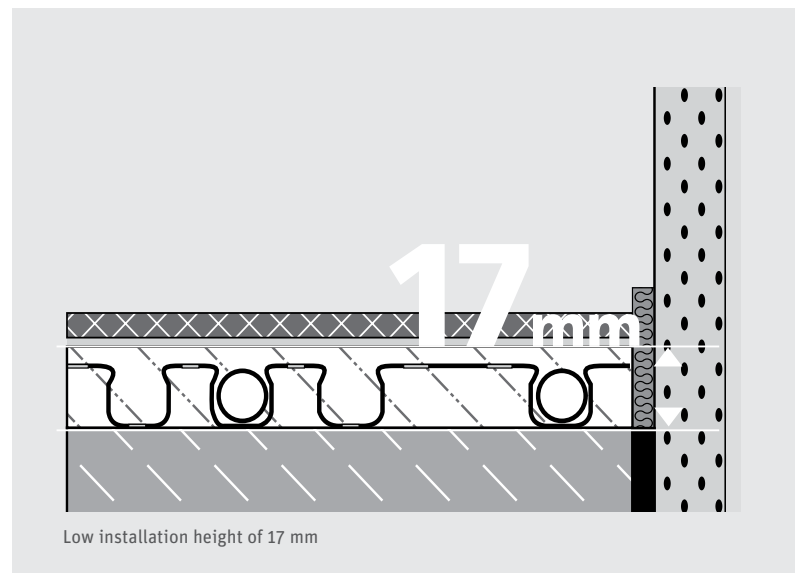
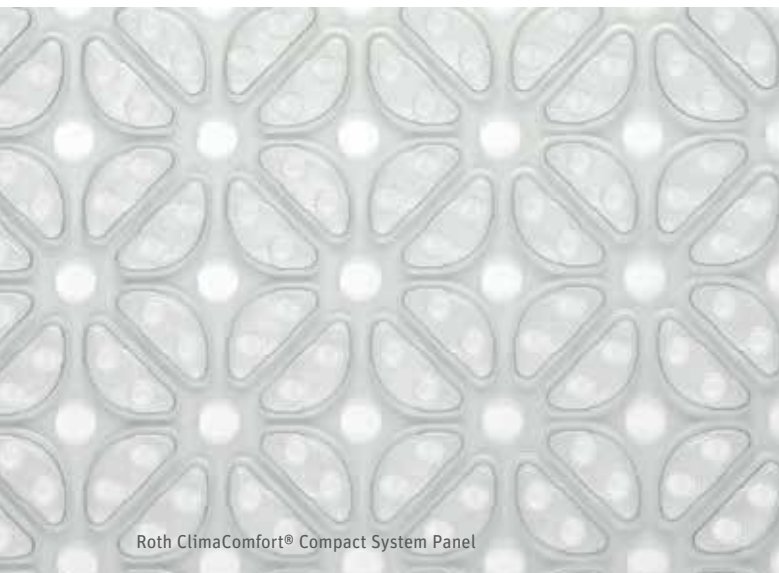
The Roth ClimaComfort® Compact System is a heating and cooling system which is particularly well suited to renovation projects. The extremely low, flat installation set-up and the resulting high system reaction speed open up new opportunities for planning and installation. This makes things easier and more convenient for the building contractor.

The 14 mm high ClimaComfort Compact system panel is made of a partially crystalline material. The new material and the unique panel structure are responsible for the great stability and toughness

combined with flexibility. This ensures a high degree of resistance to impact, even though it is easy to install. The system panel can be cut to fit easily and precisely, without cracks forming. The self-adhesive system panel is mounted on the existing subsurface. The special panel structure with undercutting makes reliable installation of the system pipe possible in a spiralling or meandering form in a 75 mm grid. A diagonal arrangement at intervals of 105 mm is also possible.

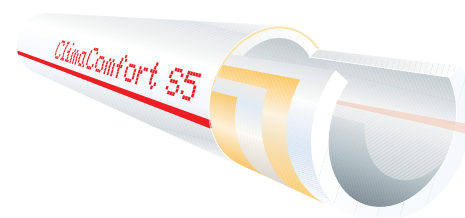
Basic building blocks of the Roth ClimaComfort Compact System

- > Roth ClimaComfort® S5 System Pipe
(material composition and processing method as for the tried-and-tested X-PERT S5®+ CoEx Technology)
- > Roth ClimaComfort® Compact System Panel
(transparent, vacuum-formed synthetic panel)



For installation on the floor, the installation set-up consisting of system panels and a system pipe is filled with a quick-setting filling and sealing compound with high performance capacity. It is easy to introduce this completely through the filling and ventilation openings. The system panel, system pipe and subsurface together make up a solid, load-bearing composite. The transparency of the system panel means that you can check that the compound has been filled to the maximum level. This is a decisive factor in ensuring the safety of the entire floor structure. The installation height of the Climacomfort Compact System amounts to only 17 mm.

Roth Climacomfort® S5 System Pipe



Approval no. 7F221-F

Roth ClimaComfort® Compact System

minimum installation height, maximum convenience



Award for
"Plastic Recycling Product of the Year"



■ Fraunhofer Umsicht Institute for Environmental, Safety and Energy Technology honours the Roth ClimaComfort® Compact System Panel

The Fraunhofer Umsicht Institute of Oberhausen, Germany, awards Roth's ClimaComfort® Compact System Panel a prize for innovative environmental protection in the field of plastics processing. The panel is made of 100% recycled PET. The plastic is primarily obtained from transparent drinks bottles.

■ Renovating bathrooms with the Roth ClimaComfort® Compact System

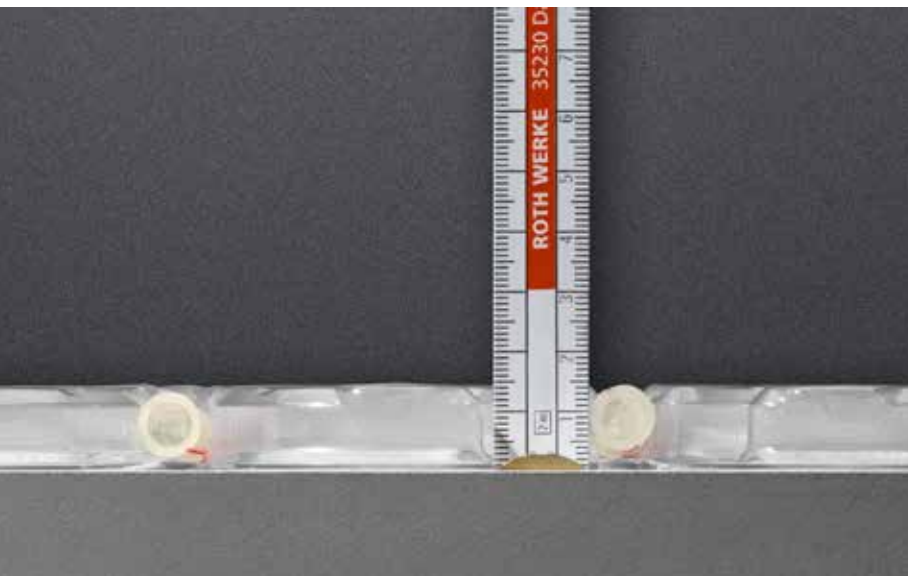
Having a radiant heating and cooling system for your own four walls is no longer a privilege which can only be enjoyed by those who are building their own homes from scratch.

Homeowners often want to retrofit underfloor heating into their houses or flats when renovating existing rooms such as bathrooms, where people will sometimes walk around barefoot. Depending on the location and conditions of the room in question, this can be achieved using the Roth ClimaComfort® Compact System, without the need to create a step up into the bathroom to accommodate a raised floor. The system is retrofitted without having to prise up the floor (a time-intensive procedure that generates a lot of dirt).

When renovating a bathroom by integrating the ClimaComfort Compact System into an existing heating system with radiators, you can make use of the heat in the return pipes; this is an environmentally friendly method of heating, as the energy is used twice.

With its extremely low installation height of just 17 mm, the Roth ClimaComfort® Compact System for heating and cooling is perfectly suited for use in bathroom renovation work. As a specialist in radiant heating and cooling systems, Roth has developed this renovation solution for installation on existing screeds.

A one-stop supplier of energy and sanitary systems for modern building technology, Roth also offers high-quality genuine glass showers and pipe installation systems for connecting up drinking and domestic water when carrying out bathroom renovation projects.



■ Roth ClimaComfort® Compact System at a glance

- > Minimum installation height of just 17 mm
- > Rapid reaction when heating and cooling (ideal when used in conjunction with Roth E^x heat pumps)
- > ClimaComfort S5 11 mm System Pipe in tried-and-tested X-PERT S5⁺ quality
- > ClimaComfort Compact system panel offers great stability combined with flexibility for easy handling
- > Safety monitoring for backfilling by means of transparency of the system panel
- > Installation on existing screeds (ideal for renovating kitchens and bathrooms, for example)
- > Low heating water temperatures lead to energy savings
- > Quick, simple and universal assembly, even in unusually shaped rooms that present difficulties
- > Compatible module in the Roth radiant heating and cooling systems product line

Roth large-scale applications

flexible, resilient and efficient

- > Flexible pipe laying
- > High-performance floor structure
- > Low inlet temperatures help save energy
- > Optimal room temperature profile



■ Roth large-scale applications – high-performance heating and cooling systems

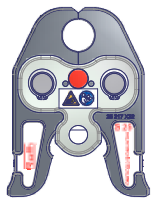
Roth offers special large-scale solutions for surface temperature control in buildings with unusual load requirements or constructions. This is where Roth Pipe Fixing Systems come into play, for example, in industrial premises and open spaces. In addition to the Pipe Fixing System, the Roth ClimaComfort® Dry Construction System is also available for sport floors. To make use of the storage capacity offered by massive concrete ceilings and wall modules, Roth offers Isocore® concrete core temperature control.

■ Roth Pipe Fixing System – a match for any challenge

Demanding structural and static requirements, such as those associated with industrial and open spaces, as well as with sport floors, call for Roth radiant heating and cooling systems based on our Pipe Fixing System. When laying pipes with dimensions of 20 to 25 mm, the system also offers flexibility in terms of installation arrangements and distances.

In addition, it is ideally suited to heating and cooling via walls and ceilings. Thanks to its flexibility, it makes installation easy in any floor, wall or ceiling constructions adapted to meet individual building requirements on site.

The Roth Pipe Fixing System can be used wherever there are any building-specific requirements with regard to installing pipes for radiant heating and cooling systems. Aside from housing construction, the system can also be applied to industrial premises, commercial and office spaces, exhibition rooms, museums, universities, schools, church, sports and multifunctional halls, open spaces and underfloor heating, and stadium construction.



Roth press jaws, "S25 Heating & Cooling"



Roth 25 x 20 x 25 mm T-piece, "Heating & Cooling"



Roth 1 1/2" Industrial Manifolds



Industrial premises, Bawinkel, Germany



Roth industrial radiant heating, SMA Solar Technology, Niestetal, Germany

■ **Roth industrial radiant heating – to withstand even high static requirements**

For high load requirements in large halls where, for example, heavy machinery, forklift trucks or lorries are used, aircraft are stored or high-bay warehouses and logistics centres are run, high-performance floor structures are essential. Roth industrial radiant heating also saves energy thanks to the low inlet temperatures of the heating water, while low transmission and ventilation heat losses have a favourable effect in the upper ceiling area. Pleasant temperatures in those parts of a room where people spend time then drop towards the ceiling to make for an optimal room temperature profile.

Cycle heat and waste heat from production can easily be used to heat Roth industrial radiant heating units, thus minimising operating costs and enabling investment costs to be paid off quickly. Roth industrial radiant heating can be integrated into all static ceiling and floor constructions and is suited for all types

of concrete used for these applications (reinforced concrete, steel fibre concrete, rolled concrete). In accordance with the building's specific requirements, the pipes for the heating and cooling system are integrated into the concrete construction and connected hydraulically to the energy source.

■ **Roth outdoor area heating**

Roth outdoor area heating is designed to keep car parks, access ramps, car wash facilities or open spaces in pedestrian zones clear of snow and ice. It offers installation options which can be varied to suit the specific construction requirements of each building, such as system solutions based on the Roth Pipe Fixing System and high-performance solutions for high structural and static requirements.



Harley Davidson office and sales building, West Michigan, USA

Roth sport floors

for all types of use

- > Flexible, building-specific construction
- > Optimum comfort
- > Ideal surface temperatures
- > Pipe fixing support elements for sprung floors
- > Roth ClimaComfort® TBS solution for sport floors
- > Quick implementation
- > Easy to install and maintain
- > Highly durable Roth System Pipes
- > Energy-efficient system solution



■ Roth sport floor heating – for all sport floor constructions



Approval no. 7F374-F

Roth offers a specially developed Pipe Fixing System solution for flexible-surface sprung floors. The support elements for incorporating and securely fixing the system pipes at the measured installation distances consist of a prefabricated plastic profile with integrated pipe holders. Using coordinated fixing brackets, the support elements in the Roth Pipe Fixing System can be optimally integrated into any sprung floor construction, no matter what type of insulation layer is used. Direct installation on top of the insulation layer or the existing substructure is also possible. This system is modularly constructed and consists of only a few system components with a high degree of prefabrication. It can also be used in conjunction with sprung floor constructions from different sport floor manufacturers. Architects, planners and structural engineers will have all the flexibility they need to transform all kinds of usage possibilities into reality.



Pipe fixing element and retaining bracket for fixing and guiding pipes between the sprung floor supports

The heating circuit for the Roth ClimaComfort® TBS radiant heating system in the Hinterlandhalle in Dautphetal is connected using a Tichelmann distribution network



Roth underfloor heating, multifunctional hall, Dautphetal, Germany

■ **Roth ClimaComfort® TBS for sport flooring**

In addition to traditional sprung floor heating systems, Roth also provides system solutions for surface temperature control in all other sport floor constructions. Flexible-surface sport floors with an elastic layer (sandwich construction) are produced using the Roth ClimaComfort® Dry Construction System TBS or the Roth ClimaComfort® Panel System.

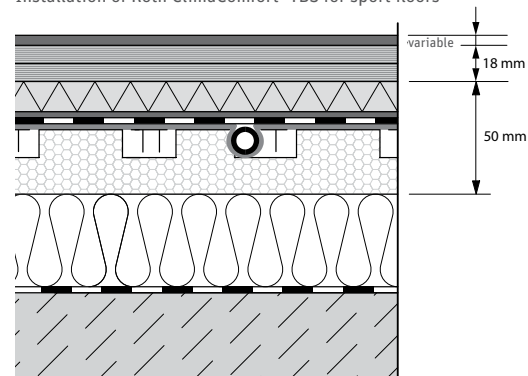
The Roth Dry Construction System for underfloor heating using hot water is the perfect match for flexible-surface sport floors conforming to DIN 18032. We recommend that the entire Roth Dry

Construction System is covered with a zinc-plated covering sheet. The flexible-surface layer made of polyurethane composite foam is then arranged on top of this sheet.

The sport and multi-purpose linoleum coating is applied on site to a layer made of plywood panels.

Even mixed elastic sport floors of construction type A and B according to DIN V 18032-2 can be implemented practically and in line with standards using the various Roth system solutions for radiant heating and cooling systems.

Installation of Roth ClimaComfort® TBS for sport floors



Roth Isocore® concrete core temperature control

forward-looking system technology

- > Individual advice
- > Building-specific system solutions
- > Variable installation techniques
- > Comprehensive service



■ Exploiting the storage potential of concrete with Roth concrete core temperature control

Roth Isocore® concrete core temperature control enables a building's temperature to be heated and cooled through the integration of the water bearing pipe system in solid concrete ceilings and wall modules, making use of their capacity for storing energy. Roth Isocore® is ideally suited for use in the construction of new office and administrative buildings with a high thermal mass. Thanks to the low

system temperatures when heating and the relatively high system temperatures during cooling, the Roth Isocore® can be combined with renewable energy sources, such as solar and heat pump systems, to excellent effect. The Roth Isocore® is an energy-efficient, environmentally friendly and forward-looking system designed for all-year-round building temperature control with ecological concerns very much in mind.

Roth concrete core temperature control in the Skygarden, Munich:

- 16.500 m² active surface area with Roth Isocore®
- 116.500 m DUOPEX S5® - 20 mm System Pipe

Kleines Festspielhaus theatre in Salzburg, Austria





Büro Campus Deutz, Cologne, Germany

■ **Roth Isocore® concrete core temperature control at a glance**

- › Individual building-specific system solutions adapted to suit on-site construction specifications for solid ceiling and wall modules
- › System components that work in harmony with one another
- › Installation techniques can be varied to suit the specific requirements of each building
- › Variable strategies for integrating the hydraulics into a building's overall engineering system
- › Validated system performance data that conforms to all relevant standards
- › Comprehensive Roth planning and advice service
- › Construction site guidance and building-specific system acceptance
- › Support from experts with many years' experience in project development

Central bus station, Munich, Germany
 Photo: HOCHTIEF Projektentwicklung GmbH

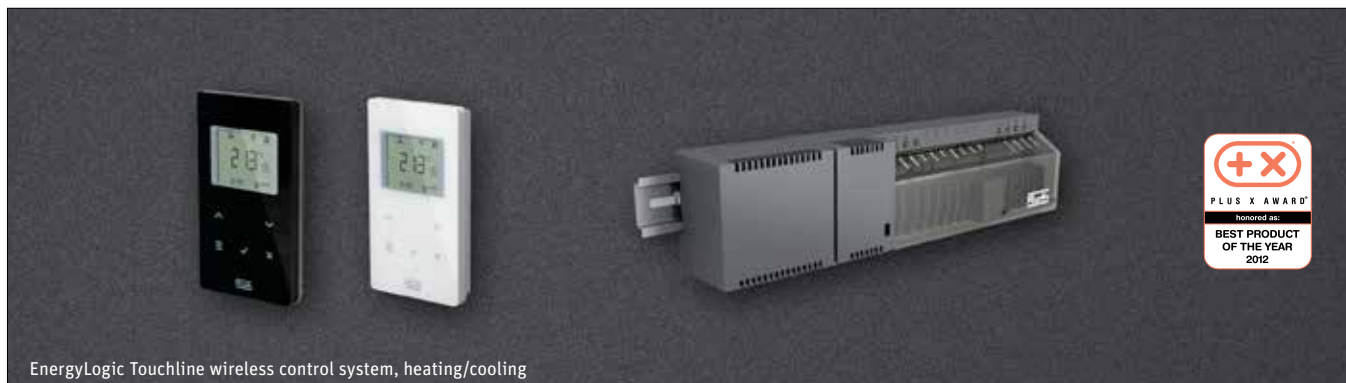


Roth concrete core temperature control in Munich central bus station
 - 7.000 m² active surface area with Roth Isocore®
 - 47.000 m DUOPEX S5® - 20 mm System Pipe



Roth Control Technology

for comfort and convenience



EnergyLogic Touchline wireless control system, heating/cooling



Wired controls for individual rooms, heating



Wired controls for individual rooms, heating/cooling

■ Control technology

Radiant heating and cooling systems should guarantee an operational mode which is optimally suited to atmospheric conditions as well as to user requirements, while at the same time offering the highest degree of economic efficiency and the best possible energy utilisation. The mandatory requirements contained in the EnEV (Energieeinsparverordnung) include provisions for devices for controlling and

regulating radiant heating and cooling systems in relation to such things as outside temperature and time, in addition to temperature regulation in individual rooms. Roth control technology components meet these requirements and are perfectly matched to the mode of operation employed by Roth radiant heating and cooling systems.

Roth controls for individual rooms are specially adapted to the needs of the application in question (heating/heating and cooling)

and are characterised by their extremely straightforward method of operation. Due to the reduced amount of wiring work required, wireless control is suitable for new buildings and particularly for renovation projects.

Naturally, the Roth control technology components are also covered, like the other system components of the Roth radiant heating and cooling systems, by the extensive guarantee service provisions listed in the Roth warranty certificate.

Roth EnergyLogic Touchline

maximum comfort at minimum cost

- > Efficient and saves energy
- > Offers comfort and convenience
- > Modern and always up to date



■ **Roth EnergyLogic Touchline – state-of-the-art wireless control system for optimum living comfort**

The Roth EnergyLogic Touchline wireless control system enables the temperature in every room to be monitored precisely to determine heating requirements. This data is collected and continuously analysed by the control distributor to ensure that the associated heating circuit or actuators are optimally controlled. Each room is thus provided with the right amount of energy at the right time, preventing any overheating and enabling the temperature to be controlled quickly and precisely. This can save up to 20 percent of heating costs. The Roth EnergyLogic Touchline controls

heating and cooling conveniently and efficiently. The LAN connection and other communication interfaces make it possible to extend the system and integrate heat generators quickly.

■ **The future starts now**

The Touchline room control unit forms part of the overall system. All Touchline room control units feature a high-gloss surface with an easily readable display and five sensor buttons. The innovative sensor buttons are highly responsive and resistant to dirt and wear. With a PC or laptop, it is possible to set up a direct connection to the Roth wireless control system via the integrated LAN interface. This means, for

example, that system values such as room temperatures can be read out easily and setpoint values can be changed. System parameters can also be monitored easily and conveniently via a PC, especially in large residential buildings. In future, the LAN interface on the control unit will enable connections to the Internet or to a WLAN network, so communication with smartphones will be possible. An integrated SD memory card with boot loader software makes it easy to upgrade the system without replacing the control unit.



19,5 mm

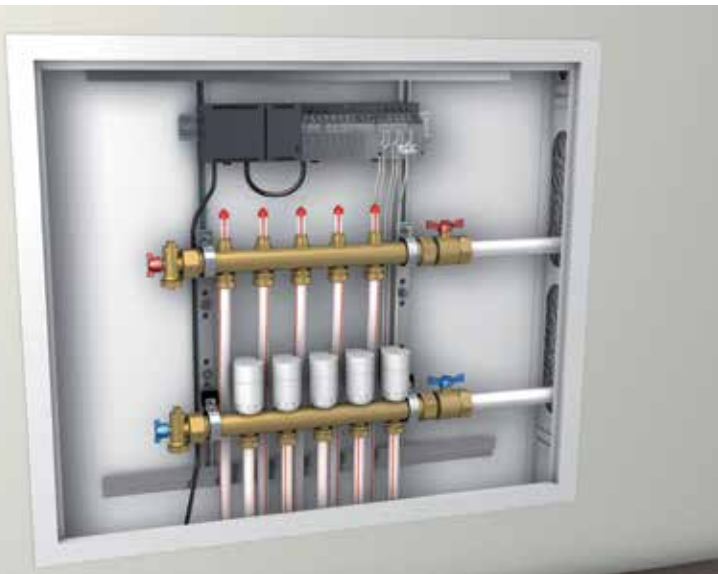
Extremely flat design



The Touchline connection module with 4, 8 or 12 channels provides the link for a perfect, accurate exchange of information between the Touchline room control units and the actuators.

The Roth heating circuit manifold with Touchline connection module distributes heat evenly and maintains room temperatures at a constant level, thus keeping the building's inhabitants cosy and comfortable

Infrared measurement of the surface temperature establishes the optimum temperature to keep feet comfortable



■ **Roth EnergyLogic Touchline – convenient and efficient heating and cooling**

> **Energy savings**

extremely precise and intelligent control system, saving up to 20% in heating costs

> **Communication**

future operation via an iPhone App

> **Comfort and convenience**

simple commissioning and operation (easy to use, easy to control)

> **Up-to-date**

always state-of-the-art thanks to update functionality via integrated SD card

> **Effectiveness**

latest-generation control system with optimal use of energy and hydraulics – for perfect comfort at home

> **Extra visual appeal**

modern, timeless design with innovative sensor buttons, winner of the Plus X award

> **Cutting-edge comfort**

additional infrared measurement of the underfloor heating surface temperature helps generate a comfortable, well-balanced room temperature, as well as protecting floor coverings.

> **More than just a room thermostat**

each Touchline room control unit not only controls room temperatures, but also offers complete access to all the functions and settings of the overall system

> **Operational safety and environmental benefits**

room control device with an optional 230 V power connection guarantees a constant power supply – with no need for batteries



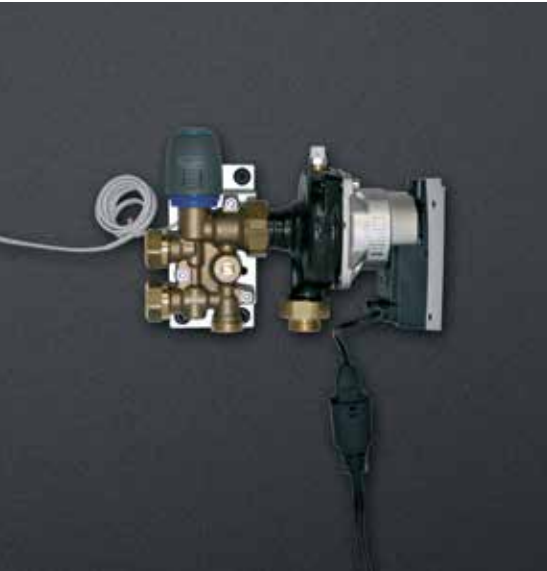
■ **NEW from 2013:**

all Touchline room control units also available in black with a high-gloss finish



Roth control stations

categorised in energy efficiency class A



■ Roth small-area control station – tried-and-tested connections

The small-area control station is used for connecting radiant heating systems to existing radiator heating systems.

Two underfloor heating circuits can be connected with the dual coupling. The room temperature is controlled via a Roth room thermostat and the integrated actuator (fixed-value temperature control).

■ Roth fixed-value control set with high-efficiency pump

A compact control station for constant inlet temperature control in radiant heating systems (fixed-value temperature control) with a thermal output of up to 14 KW. The control set is designed for use in manifold cabinets and is installed directly on the heating circuit manifold. The state-of-the-art high-efficiency pump used is continuously adjustable and only uses the amount of energy required for operation.

■ Roth weather compensation control station with high-efficiency pump

Compact weather compensation control station for radiant heating and cooling systems (weather-compensated temperature control) with a thermal output of 14 KW. The control station is fitted ex-works with a CC-HC climate controller and outside temperature sensor. It is designed to be integrated into the manifold cabinet and connected directly to the heating circuit manifold.

The benefits of Roth control stations

- > The Roth control stations are categorised in energy efficiency class A and comply with the ERP Directive for 2013 and 2015
- > Suitable for renovations and new buildings
- > Quick and simple commissioning
- > Easy to operate
- > Ideal for renovations and retrofitting





Technical data for Roth control stations				
Type	Small-area control station	Fixed-value control set with high-efficiency pump	Weather compensation control station with high-efficiency pump	Control station RKR 3 H/K
Functional principle	Fixed-value temperature control		Weather-compensated temperature control	
Mixing valve	2-way injection valve	3-way mixing valve		3-way mixer
Controller	Actuator and thermostat valve	Thermostatic head with temperature sensor in inlet	Electronic controller with inlet, return and outside temperature sensors	
Setting range	10 - 45 °C	20 - 50 °C	10 - 45 °C (individually adjustable)	
Area of application	Underfloor heating e.g. in renovation projects	Radiant heating systems in flats/floors of a building, installation in manifold cabinet		As a central control station
Energy efficiency class	Energy efficiency class A, compliant with the ERP Directive for 2013 and 2015			
Thermometer	–	1 unit		2 units
Ball valves	–	2 units (inlet and return)		
Thermal output	max. 2 KW	max. 14 KW (take planning parameters into account)		max. 18 KW
Other	Unit supplied ready for connection, completely preassembled and wired			
Dimensions [mm] L x H x D	215 x 175 x 97	276 x 360 x 110	256 x 360 x 110	300 x 370 x 240

■ Roth control station RKR 3 H/K

A control station including an integrated CC-HC climate controller for central, weather-dependent inlet temperature control (weather-compensated temperature control) for radiant heating and optional radiant cooling. The compact, preassembled unit is completely enclosed in EPP housing with fully insulated hydraulics in accordance with the EnEV. The Roth control station RKR 3 H/K is designed with an enhanced thermal output of up to 18 KW for detached or semi-detached homes.

■ Roth CC-HC climate controller

The CC-HC climate controller is a modern, fully electronic controlling device. It forms part of Roth's weather compensation control stations and the control station RKR 3 H/K. The climate controller is easy to operate, with two configurable heating programmes and ten different weekly programmes. It features a large display that constantly shows the inlet temperature and outside temperature, as well as the status of the mixer, circulation pump and operating mode. It also offers the possibility of activating additional components such as heat generators or switching valves.



Roth Control Technology

excellence all round



Roth radiant heating and cooling system, Marburg station, Germany

■ Roth heating circuit manifolds keep you cosy and comfortable

The heating circuit manifold distributes heat evenly and maintains room temperatures at a constant level, thus keeping the building's inhabitants cosy and comfortable. Used in conjunction with the room thermostat, the manifold ensures that flow volumes can be precisely controlled.

The flow distributor and return flow collector, made from brass circular profiles, can be connected from the left or right via the 1" flat-sealing external thread. There is no misalignment at the ends of the pipes, so no compensating pieces are required and there are fewer seal contact areas. The flow and return pipes are staggered,

which makes assembly easier. The heating circuits are connected with a 3/4" Euro cone. The manifold is pre-mounted on insulated consoles.

The valve cores are suitable for Roth actuators, making the heating circuit manifold an integral part of the system solutions offered by Roth.

The heating circuit manifold is available with between 2 and 12 connections and with or without a flow volume indicator. It can be used for all Roth system pipes in sizes of 11 to 20 mm.



Expertise in radiant heating and cooling systems

Quality in every respect

- > Comprehensive Roth system range
- > High degree of prefabrication ex-works
- > Universal utilisation possibilities



■ From manufacture through project planning, all the way on to assembly – and, of course, beyond!

Those who want to enjoy all the advantages of radiant heating and cooling know they can put their trust in the comprehensive Roth system range, since Roth not only offers the perfect solution for any requirement, but also promises customers a high standard of quality and service on which they can rely.

A high degree of prefabrication ex-works, universal utilisation possibilities, system components that are designed to work optimally with one another, long service life and stable value – these are the benefits offered by the Roth System. They bring together all of the advantages of radiant heating and cooling to their fullest extent. Why be satisfied with less?

■ Roth radiant heating and cooling systems are always the perfect fit

All Roth radiant heating and cooling systems are very well suited for use in combination with one another.

Depending on requirements for quality of living, Roth offers individualised temperature equalisation via floors, walls and ceilings for new buildings and renovations.



Roth outdoor panel heating



Roth Original Tacker® System



Roth Knob System



Roth industrial radiant heating



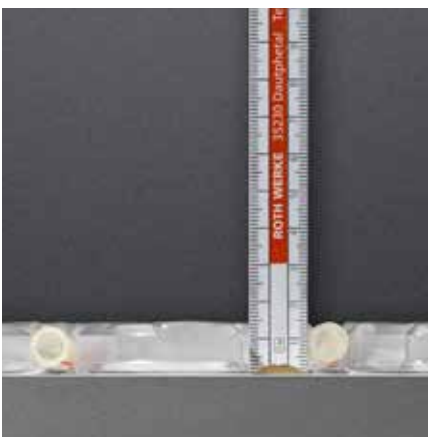
Roth ClimaComfort® TBS



Roth ClimaComfort® Panel System



Roth sport floor heating



Roth ClimaComfort® Compact System



Roth wall heating



Roth Isocore®

References

actual examples that speak for themselves



1 **Roth underfloor heating**
Hotel Loisium, Langenlois, Austria

2 **Roth Pipe Fixing System**
Kulturkirche St. Jakobi cultural centre, Stralsund, Germany

3 **Roth Original Tacker® System**
Cineplex and arts centre, Marburg, Germany





4 **Roth ClimaComfort® TBS**
Frauenkirche church, Dresden, Germany

5 **Roth industrial radiant heating**
Kleiner commercial premises, Kempten, Germany

6 **Roth Original Tacker® System and
Roth AuraCompact® E⁺ 12 kW E heat pump**
Office facility and training centre, Arnsdorf,
Germany



References

actual examples that speak for themselves



- 1 **Roth Original Tacker® System**
Spa, Linsberg, Austria
- 2 **Roth underfloor heating**
Town hall, Sulzbach-Rosenberg, Germany
- 3 **Roth Isocore®**
Media Tower, Düsseldorf, Germany



- 4 **Roth KlimaComfort® Compact System**
Luggesmühle housing complex,
Bottrop, Germany
- 5 **Roth Original Tacker® System**
Luxury apartments on Goethegasse,
Vienna, Austria
- 6 **Roth Isocore®**
Rheinisches Landesmuseum (Rhineland regional
museum), Bonn, Germany



Our strengths

Your benefits

Innovation

- > Early identification of market requirements
- > In-house materials research and development
- > In-house engineering

Service

- > Extensive field network of qualified sales professionals
- > Hotline and project planning service
- > Factory training courses, planning and product seminars
- > Fast availability of all Roth brand product ranges throughout Europe
- > Comprehensive warranty and extended liability agreements

Products

- > Complete range of easy-to-install product systems
- > Manufacturing expertise for the complete product range within the Roth Industries group of companies
- > All products and product systems are certified in accordance with DIN EN ISO 9001:2008



Roth



Roth Energy and Sanitary Systems

Generation

- > Solar systems
- > Heat pump systems
- > Solar heat pump systems

Storage

- Storage systems for
- > Domestic and heating water
 - > Combustibles and biofuels
 - > Rainwater and waste water

Application

- > Radiant heating and cooling systems
- > Pipe installation systems
- > Shower systems



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