

Storage systems for recycling rainwater and waste water

Using water wisely - good for the environment and your pocket



... living full of energy





Roth storage systems for recycling rainwater and waste water

Using water wisely - good for the environment and your pocket



■ The right solution, whatever the application

One of life's essentials, water is a valuable commodity which is becoming ever scarcer. Roth storage systems for rainwater and waste water support an energy-efficient and cost-conscious approach to using water.

Roth offers:

- Rainwater tanks for residential buildings
- Industrial storage systems for commercial use (e.g. nurseries or washing systems) and
- AquaServe® water recycling systems for processing waste water from showers, hand basins and baths.



Production methods

... cutting-edge technology for modern products



■ Decades of experience

Roth uses one of the world's largest blow moulding lines to manufacture its tanks. This makes it possible to produce single-piece tanks with a capacity of up to 10.000 litres.

Roth has been working with plastics and producing tanks for decades.

We use this expertise to tailor our products perfectly to customers' needs:

- We use the latest process technology available for controlling and monitoring machinery to ensure the best possible quality and optimal wall thickness distribution.
- All tanks are made from a single piece to avoid the weak spots created by joints involving welding, screws or clamps.

■ High-quality polyethylene

Roth only uses high-quality and high-density polyethylene (PE-HD) when making its tanks. This provides a number of advantages compared to concrete, GRP or other plastics:

- High resistance to impact
- Mechanical load-bearing capacity
- Physiologically harmless
- Completely smooth interiors
- Colouring throughout the material stops the build-up of algae and prevents colour washing out
- Easy installation without the need for heavy-duty technology
- Easy to clean
- 100 % watertight thanks to seamless manufacture
- As PE is weldable, it favours a fast response to customer requirements and makes it easy, for example, to produce additional components

■ The ultimate in quality

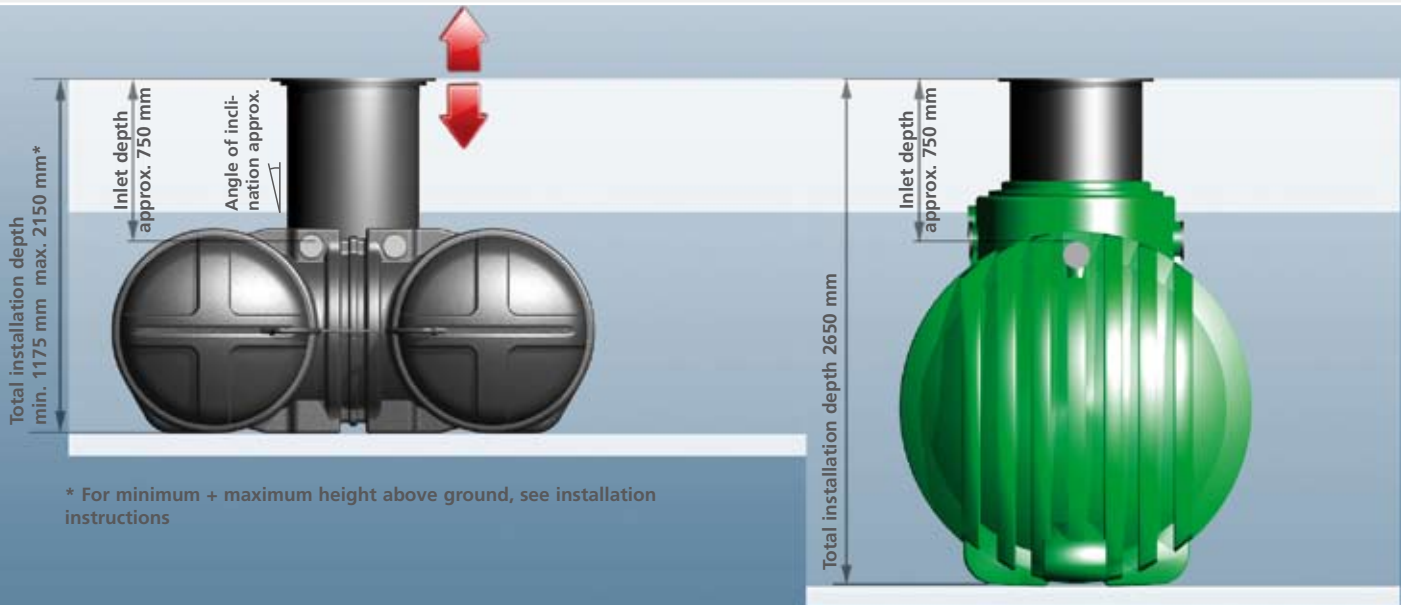
The manufacturing process for Roth tanks is subject to the highest quality specifications. All processes, from the selection and procurement of materials right through to delivery, undergo constant monitoring to ensure customers receive their products in perfect condition.

■ Ten out of ten for the double warranty

Roth Twinbloc® low-profile rainwater storage units are made from high molecular weight polyethylene, a high-density and highly rigid plastic. Each tank undergoes extensive checks at production stage. Tanks come with a 10-year warranty and we also provide 10 years' consequential damage cover for defects in materials or workmanship for which we are responsible. The warranty takes effect the first time the product is used, but no later than twelve months after the date of manufacture.

Roth Twinbloc® low-profile storage unit

... innovative design



* For minimum + maximum height above ground, see installation instructions

■ Low-profile design means less excavation

Thanks to its excellent shape and extremely low-profile design, the Roth Twinbloc® low-profile storage unit offers considerable advantages in terms of installation. Compared to traditional rainwater tanks, the excavation work required for the pit can be reduced by up to 40 %.

The shallow installation depth even enables installation at sites with a very high groundwater level. The two parallel cylinders provide additional stability. Two tank chambers with smaller diameters are significantly more stable than a single chamber with a large diameter. As a result, the surface above can be utilised, e.g. by cars.

■ An entire system from a signal source

The Roth Twinbloc® is available in 3500 litre and 5000 litre versions. Taken in conjunction with the matching accessories, this means Roth is able to offer a complete system for professional rainwater applications. The PE tanks are stable in the ground and can be driven over by cars. A dome shaft is supplied with every tank. This is fully inserted into the tank on delivery and can be adapted in each case to the installation depth of the tank.

Two opposing empty conduit connecting pieces can be used to connect the supply lines. The perfectly matched components help make installation both quick and easy. A flexible approach can be adopted to suit individual requirements and different conditions on the ground, making it possible to offer the right solution for almost any application. All it takes to connect a number of Roth low-profile rainwater storage units together is a DN 100 connecting line.

■ Linking tanks

Tanks are linked together via a DN 100 ground channel pipe at the lower drilling surfaces. The Roth connection set includes the appropriate hole saw and two DN 100 special seals.



Roth Twinbloc® low-profile storage unit

... for ground installation with integrated dome shaft



■ Ground tank

The Roth Twinbloc® ground tank has an integrated dome-shaft system with a plastic cover which can be walked over, a DN 100 inlet connection and a DN 100 overflow siphon with a small-animal barrier. Please refer to the subsequent pages for details of the many accessories available as part of the Roth rainwater range.

■ Ground tank with filter cage

The Roth Twinbloc® ground tank with filter cage has a filter cage integrated into the dome shaft and an overflow siphon with a small-animal barrier.

■ Ground tank with inlet stabilisation

The Roth Twinbloc® ground tank with inlet stabilisation features an integrated dome-shaft system with a plastic cover which can be walked over, inlet stabilisation and an overflow siphon with a small-animal barrier.

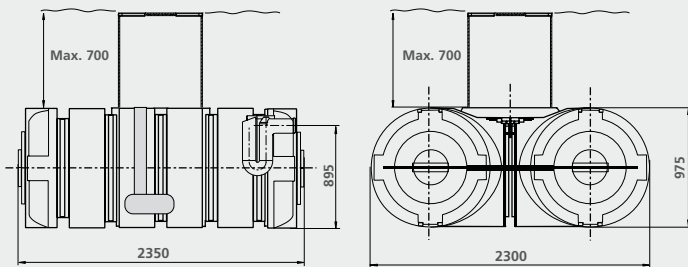
■ The right equipment, whatever the application

Tank	Tank dimensions (LxWxH)	Weight	Item number
3500 litre ground tank including shaft and cover	2350 x 2300 x 975	140 kg	1135005425
5000 litre ground tank including shaft and cover	2430 x 2300 x 1350	170 kg	1135005426
3500 litre ground tank with filter cage, including shaft and cover	2350 x 2300 x 975	150 kg	1135005423
5000 litre ground tank with filter cage, including shaft and cover	2430 x 2300 x 1350	180 kg	1135005424
3500 litre ground tank with inlet stabilisation, including shaft and cover	2350 x 2300 x 975	145 kg	1135005421
5000 litre ground tank with inlet stabilisation, including shaft and cover	2430 x 2300 x 1350	175 kg	1135005422

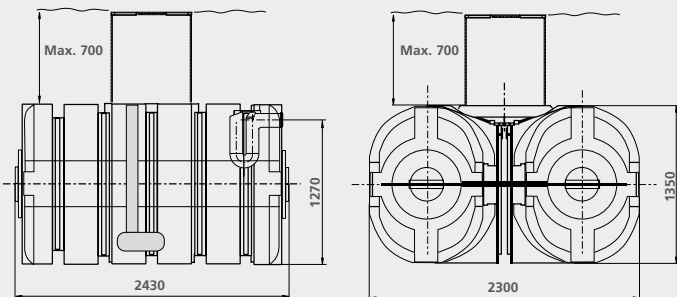
Dimensions in mm



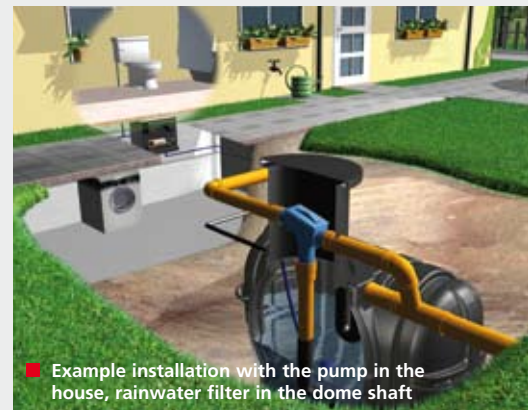
Roth 3.500 l low-profile storage unit



Roth 5000 l low-profile storage unit

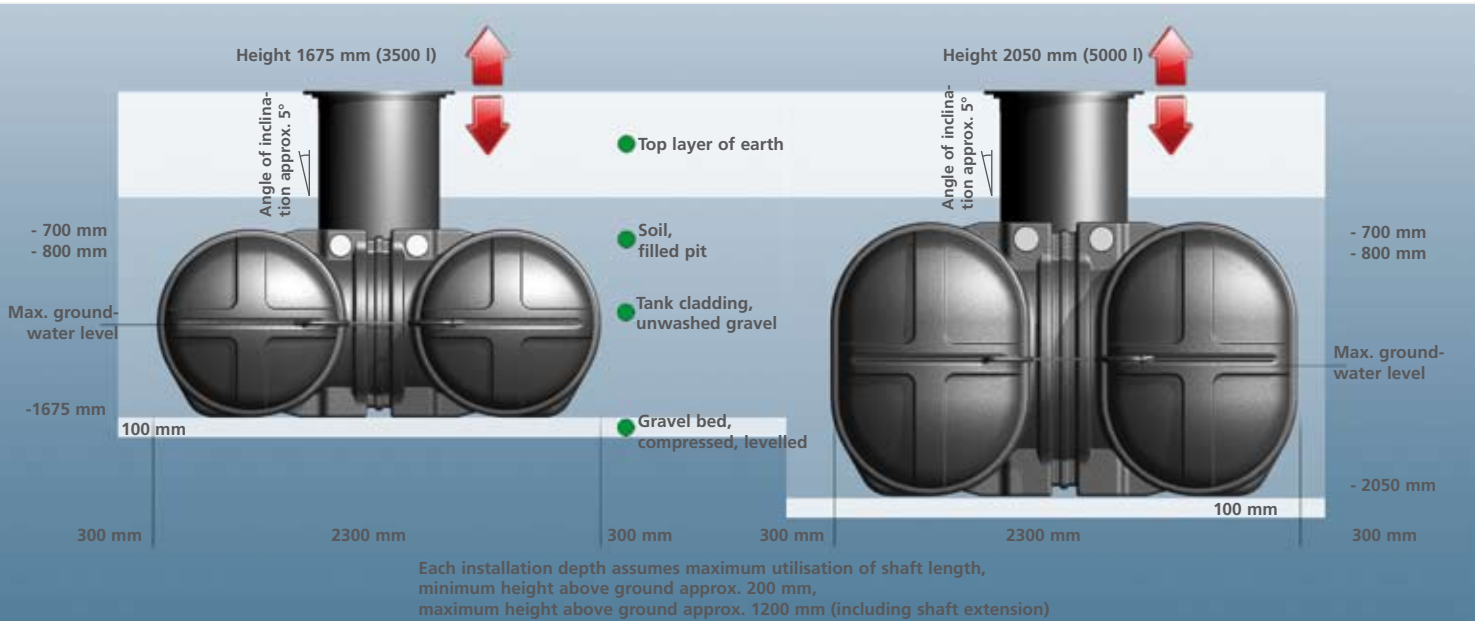


Note: 500 mm dome-shaft extension available as an accessory



Roth Twinbloc® low-profile storage unit

... from planning to installation



■ Planning

Before installing the Roth low-profile storage system, please take the following into account:

- The suitability of the ground for the construction (as per DIN 18196)
- The maximum groundwater level at the site and the subsurface drainage properties
- The types of loads at the site, e.g. traffic

These factors should inform the choice of installation site for the Roth Twinbloc® low-profile storage unit.

■ Safety

The relevant accident prevention regulations under BGV C22 (German regulations relating to construction work) should be observed when any work is performed.

All applicable regulations and standards must also be observed during installation, assembly, maintenance and repairs.

The system and individual components may only be installed by qualified specialist personnel or specialist companies. Whenever work is carried out on the system or individual components, the entire system must always be shut down and measures taken to prevent its being switched back on again without permission. The tank's cover must be kept securely closed at all times, unless work is being carried out inside it, to prevent accidents. Only original Roth accessories may be used. Roth offers a comprehensive range of accessories,

which are fully intercomptable and can be used to create entire systems. If other accessories are used, the system's function may be adversely affected and liability for any resulting damage shall cease to apply.

■ Installation instructions

The pit will depend on the size of the tank, how many tanks are used and the inlet depth. The slopes and width of the pit must comply with DIN 4124. With firm ground, a gravel (or concrete) bed must be installed, compressed and levelled off to the required height. Checks must be carried out to ensure the wall of the tank is fully intact. Suitable devices must be used to move the tank into the pit. If a number of tanks are being installed side by side, there must be a minimum 600 mm clearance between them. The pit must be filled in an appropriate manner. Gravel (0 - 8 mm) must be used for filling purposes. A 300 mm thick layer of gravel must be placed around the tank as cladding and carefully compressed, layer by layer, ensuring there are no gaps. If a number of tanks are being installed, the spaces in between must also be properly compressed. The pipe connections must be set up as per the accompanying drawings/installation instructions. The pit must then be filled in level with the dome shaft.

■ Car-proof

As standard, Roth Twinbloc® low-profile storage units come with a shaft cover which can be walked over. If tanks need to be installed under a surface driven over by vehicles, the "car-proof" shaft cover will also have to be ordered as an accessory. The cover can tolerate a maximum wheel load of 600 kg. When the tank is being installed, a concrete bearing surface must be created around the dome shaft on site to prevent the shaft from sinking. The installation instructions must be referred to without exception if the surface is to be driven over by cars.

■ Dome-shaft extension

To cater for greater installation depths, Roth offers a 500 mm long shaft extension as an optional accessory for the Roth Twinbloc® low-profile storage unit. The upper shaft-top supporting ring on the original dome shaft must be released for installation purposes. The extension should be connected to the existing shaft and adjusted in line with the required installation depth. The shaft extension can be shortened as appropriate. The shaft-top supporting ring must then be fitted back on the extension and bolted to the shaft rim.

Each tank comes with detailed installation instructions. Drawings, installation instructions and technical documentation can also be downloaded from www.roth-umwelttechnik.com.



Roth rainwater tanks

... for indoor installation above ground



■ Roth domestic storage units

Roth domestic storage units store rainwater for domestic use. Basic domestic storage units have a DN 50 inlet with inlet stabilisation and a DN 100 outlet with an integrated overflow siphon and small-animal barrier. Domestic storage units can be linked together via T-connector or elbow universal flange connections, or using Roth connection accessories.

Tank	Dimensions (LxWxH)	Inspection opening	Weight	Item number
750 litre basic domestic storage unit	730 x 730 x 1660	Ø 150	25 kg	1115000293
750 litre extended domestic storage unit	730 x 730 x 1660	Ø 150	25 kg	1115000294
1100 litre basic domestic storage unit	1450 x 720 x 1375	Ø 400	53 kg	1115000295
1100 litre extended domestic storage unit	1450 x 720 x 1375	Ø 400	53 kg	1115000296
1500 litre basic domestic storage unit	1520 x 720 x 1605	Ø 400	80 kg	1115000297
1500 litre extended domestic storage unit	1520 x 720 x 1605	Ø 400	80 kg	1115000298
2000 litre basic domestic storage unit	2050 x 720 x 1640	Ø 400	120 kg	1115000299
2000 litre extended domestic storage unit	2050 x 720 x 1640	Ø 400	120 kg	1115000300

Dimensions in mm



- 1 Tank
- 2 Connection accessories for basic domestic storage unit
- 3 Connection accessories for extended domestic storage unit
- 4 Fill-level timer



■ **Roth industrial storage units**

Roth industrial storage units are primarily intended for commercial use. They enable washing systems, nurseries and industrial-scale operations to store large quantities of water in an efficient manner. Large storage units can also be installed in domestic applications to enable the use of rainwater. Tanks can be fitted with additional pipe connections on request. Specialised accessories make it easier to use the equipment in a professional setting.

Basic industrial storage units have a DN 100 inlet with inlet stabilisation and an overflow siphon with an integrated small-animal barrier and two lower flange connections. Extended industrial storage units are only equipped with two lower flange connections, but have no additional connections.

Tank	Dimensions (LxWxH)	Inspection opening	Weight	Item number
2000 litre basic industrial storage unit	2020 x 880 x 1650	Oval 500 x 400	92 kg	1135001200
2000 litre extended industrial storage unit	2020 x 880 x 1650	Oval 500 x 400	92 kg	1135001201
3000 litre basic industrial storage unit	2630 x 880 x 1650	Oval 500 x 400	122 kg	1135001202
3000 litre extended industrial storage unit	2630 x 880 x 1650	Oval 500 x 400	122 kg	1135001203

Dimensions in mm



- 1 Tank
- 2 Elbow universal flange connection
- 3 T-connector universal flange connection

Roth storage systems

... with tailored accessories



Floating bleeder for low-profile storage units

For Roth Twinbloc® low-profile storage units. Consisting of PE floating ball, suction filter with integrated brass return valve, compression fitting for 1" PE water pipe.

Item no. 1135005437



Shaft extension for Roth Twinbloc® low-profile storage units

500 mm long shaft extension for connection to the integrated shaft system. For installation of tanks with a height above ground of between 700 and 1200 mm. The shaft extension can be shortened.

Item no. 1135005436



Car-proof shaft cover (600 kg wheel load)

Can be used in place of the shaft cover supplied as standard. Able to withstand a wheel load of 600 kg.

Item no. 1135005438



Connection set

For connecting Roth Twinbloc® low-profile storage units to a DN 100 ground channel, consisting of a hole saw and two DN 100 special seals.

Item no. 1135002725



Special seal

For creating additional connections to Roth rainwater storage units.

DN 50 special seal

Requires 54 mm bore hole.

Item no. 1135005454

DN 100 special seal

Requires 118 mm bore hole.

Item no. 1135005455



Screw connection for DN 50 inlet

Suitable for 750 to 3000 litre garden storage/large storage units.

Item no. 1135005452



Screw connection for immersion pump

For upper screw connections
- Coupling with 1" hose connector and compression fitting for 1" PE water pipe
- Suitable for garden storage/large storage units

Item no. 1135005453



2" connecting line

For connecting basic and extended underground storage units at lower flange connections,
2 x 2" flange,
2 x 63 mm x 2" compression fitting, 63 mm PE water pipe, 1000 mm long (can be shortened).

Item no. 1115003471



Connection accessories for basic domestic storage unit

Consisting of elbow flange connection, stop valve with flange, hose connector, seal and screws.
Item no. 1115001287



Connection accessories for extended domestic storage unit

T-connector flange connection, seal and screws incl. 2" AG air vent.
Item no. 1115001288



Flange with ball valve

Suitable for 750 to 3000 litre garden storage/large storage units.
Item no. 1135005456



1" T-connector universal flange connection

Item no. 1135001293

2" T-connector universal flange connection

Item no. 1135001440



1" elbow universal flange connection

Item no. 1115001292

2" elbow universal flange connection

Item no. 1115001439



1 1/2" flange

Roth 1" PP flange

Item no. 1135000156

Roth 2" PP flange

Item no. 1135000157



Mechanical fill-level display

Can be used with 750 l, 1500 l, 2000 l, 3000 l domestic/industrial storage units.
Item no. 1135000165



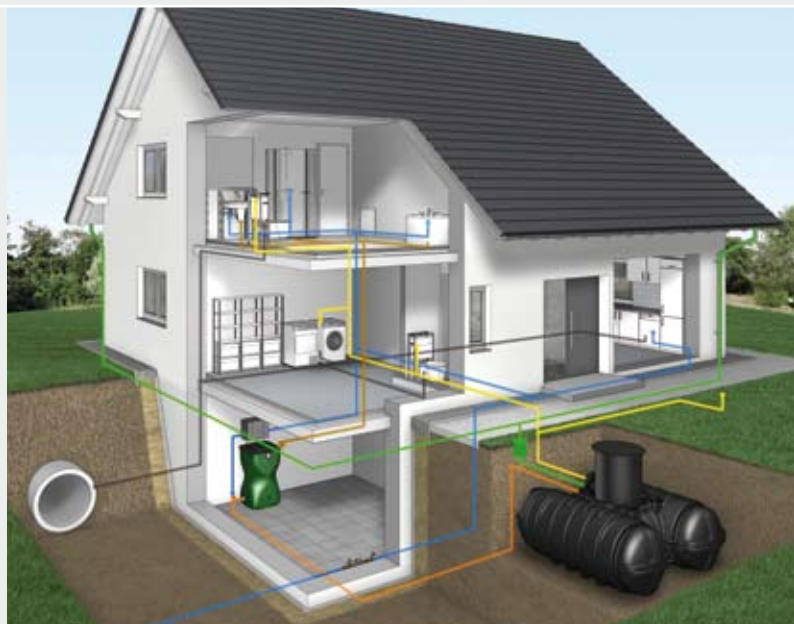
Floating bleeder for industrial storage units

Suitable for Roth 2000/3000 litre industrial rainwater storage units.
Item no. 1135005451



Roth AquaServe® systems

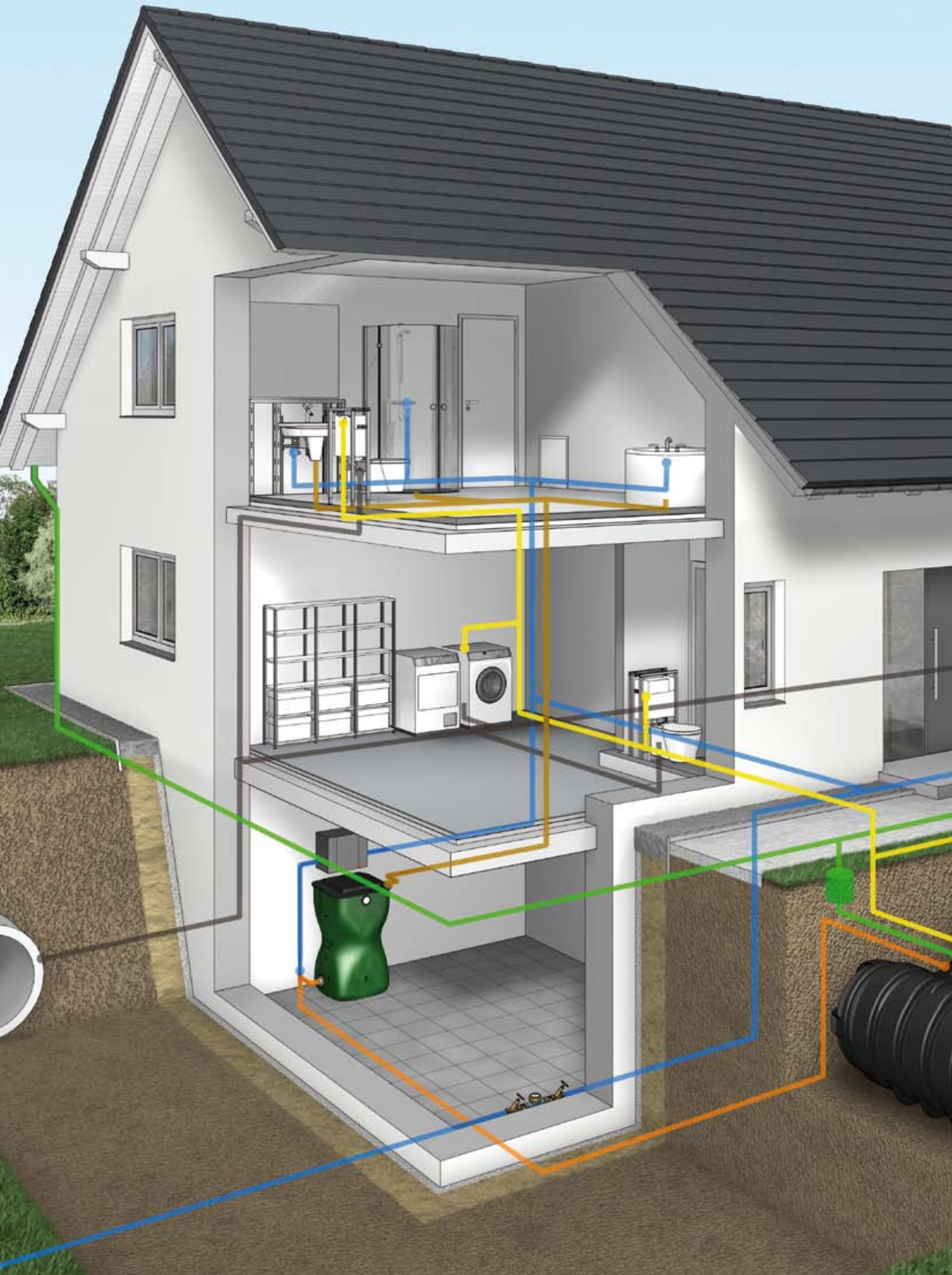
... making valuable water go further with water recycling



■ Roth Twinbloc® – a tank for recycling water and rainwater

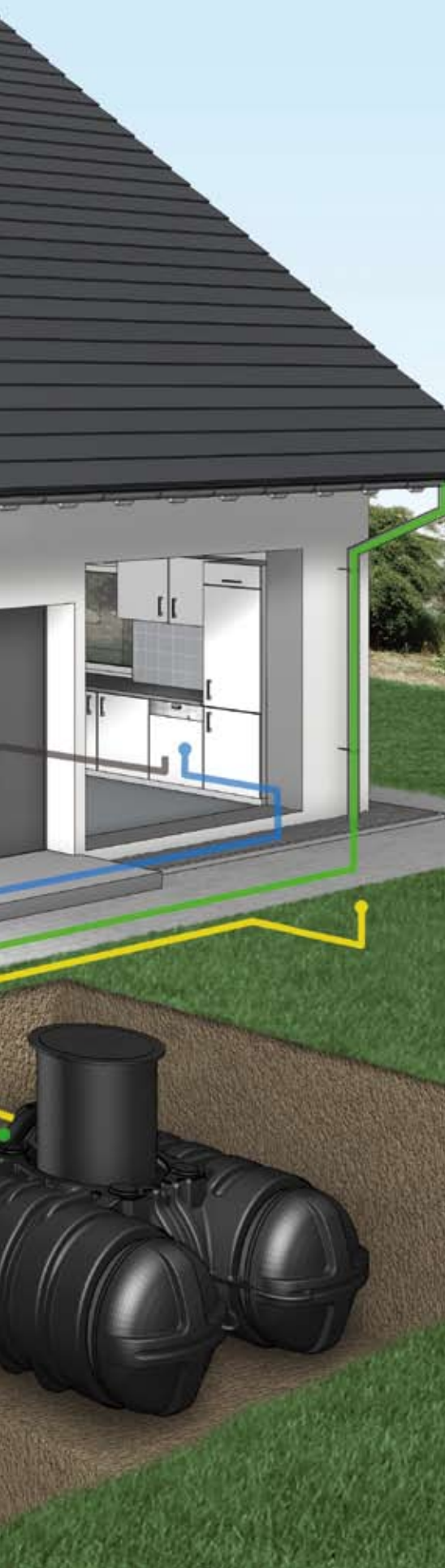
Roth can offer the new AquaServe® water recycling system in combination with rainwater systems. This can be used to treat and condition water from hand basins, showers and baths so it can be used again. Thanks to Roth's safe and innovative technology, more than 50 % of drinking water and waste water can be saved. Apart from the significant cost savings involved, this approach also provides an effective way of relieving pressure on the environment. Instead of being discharged as waste water after being used only once, the water is recycled in the Roth recycling station before being diverted to a storage tank such as the Roth Twinbloc®. It is stored there along with any diverted rainwater and can be reused in lavatories and washing machines and for cleaning the house or watering the garden.

Once the water reaches the Roth recycling station after being used for the first time, fine-bubble aeration ensures excellent water quality from a biological perspective, removes pollutants and provides an efficient method of cleaning the polymer membranes within the system. These filter the water, retaining solid matter and germs. They have a permeability level of 50 nanometres. The odourless water is then routed to the Roth Twinbloc®. The purified water complies with the hygiene guide values in the European Bathing Water Directive 76/160/EEC and, as such, meets the highest quality standards. As the system uses no additives whatsoever, it is particularly friendly to the environment. The Roth recycling station is easy to install and uses very little energy in operation.



Roth AquaServe® systems

... environmentally friendly and efficient



■ It pays to recycle

If you consider that, as a daily average, some 50 litres of recycling water are generated by each person living in a property, it pays to recycle. Depending on the size of residence, Roth can offer the AquaServe® water recycling system for purification of 200, 400, 1000 or 2000 litres of water a day.

Thanks to the special method for conditioning grey water before reuse and the addition of rainwater, users can make savings in two areas:

- Lower drinking water costs
- Lower waste water costs

■ Excellent control

The Roth water regulation module ensures the various components work in perfect harmony. As well as the control element, this compact unit also contains the aeration compressor, the drinking water backfeed and, if required, the vacuum pump. With an emphasis on achieving excellent recycling results, the Roth water regulation module is programmed to ensure the system as a whole demonstrates extraordinary energy efficiency when in operation. All components are mounted on a console. Where space allows, this can be mounted in the vicinity of the Roth recycling station.

■ All Roth water storage units, both above and below ground, can be used to store recycled water

When combined with the Roth recycling station, the Roth Twinbloc® low-profile storage unit can be used for this purpose, as can all the other Roth water storage units (whether above or below ground). Combining water recycling systems with rainwater storage is a particularly efficient approach. Recycling water accumulates regularly in small volumes, whereas rainwater is more unpredictable and involves high volumes. Thus, the solution capitalises on this in two ways: 1) it provides water for the garden and for flushing the lavatory during the dry summer months, 2) it utilizes rainwater to help compensate for varying patterns of use. Both systems complement each other extremely well, with drinking water backfeed reduced to an absolute minimum. If users do not wish to incorporate rainwater, Roth AquaServe® water recycling systems can be used with Roth storage tanks only.

Roth can offer the AquaServe® system for buildings where recycling water is generated by up to 40 people. Please see the table below for details of the complete package you require:

Number of persons	Secondary water accumulation	Number of membrane units	Recycling station volume	Anticipator buffering volume	Vacuum pump	Item number (complete package)
4	200	1	600	-	-	1135005427
8	400	1	600	-	1	1135005428
20	1000	1	1500	1500	1	1135005429
40	2000	2	1500	2000	1	1135005430

Further values available on request.

Roth AquaServe® systems

... spare resources and save costs



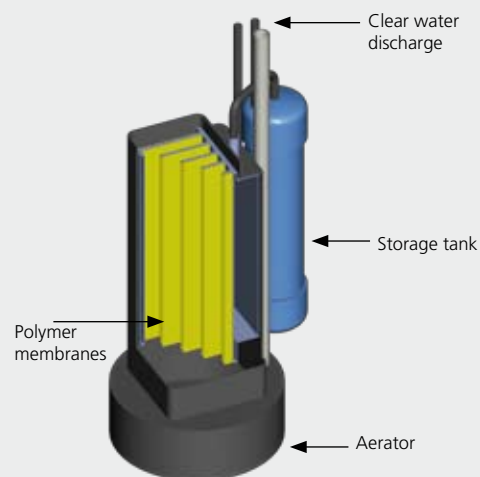
■ Excellent water quality with the Roth AquaServe® water recycling system

The particular advantage offered by the Roth AquaServe® system, apart from the ingenious recycling process, is the way recycling water and rainwater are stored together in the Roth Twinbloc® low-profile storage unit.

Recycling water accumulates throughout all the seasons, which means it is always available, particularly in summer. One of the key benefits of the system is its ability to make up for the lack of rainwater during the dry summer months. Conversely, the addition of rainwater improves the quality of the recycling water. The storage conditions also play a role in this respect, as the Roth Twinbloc® is surrounded by soil, which is characterised by its constant temperature. This means the growth of bacteria is restricted.

■ Using water twice

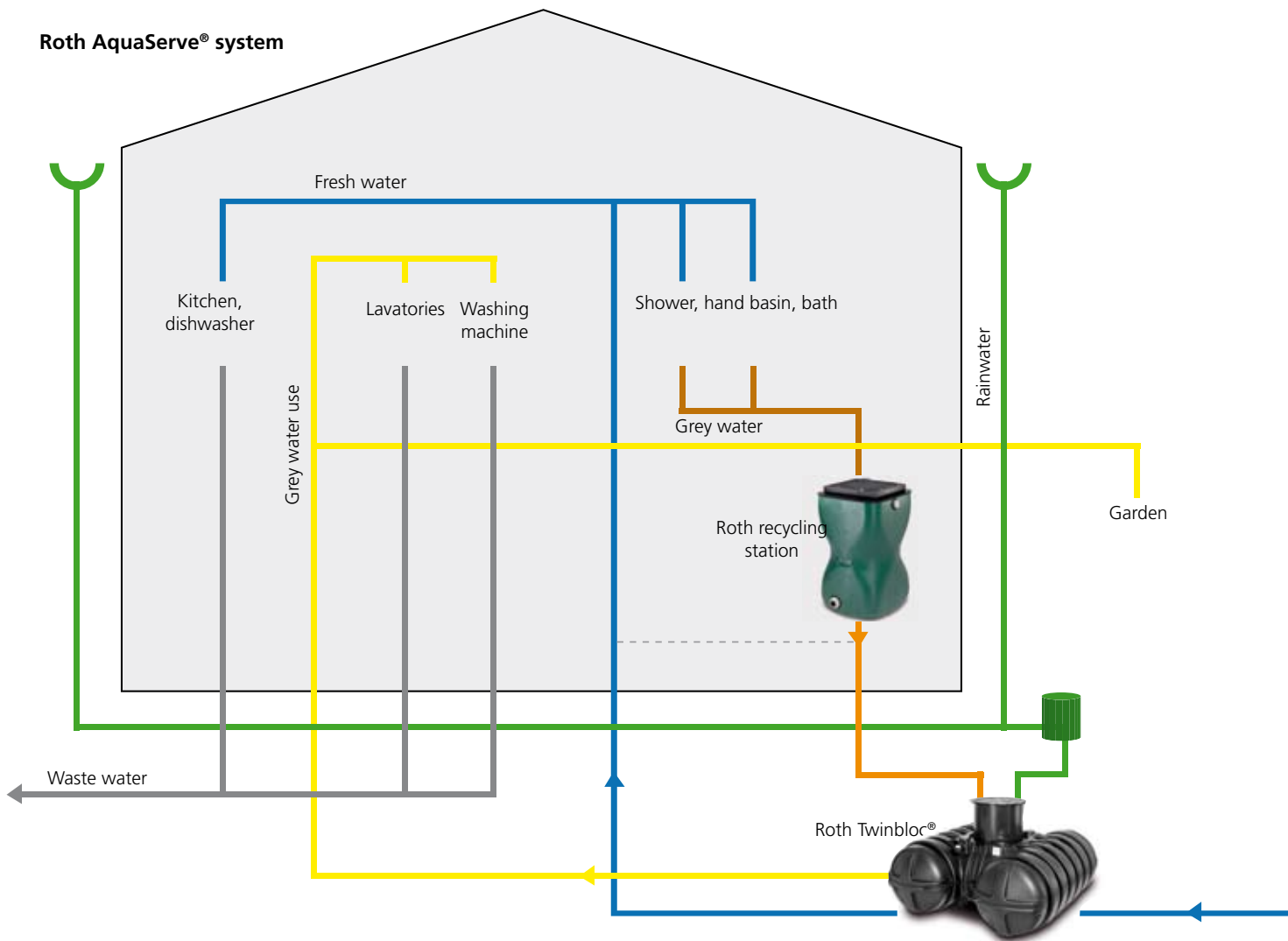
The Roth recycling system removes germs and odours from the water diverted from showers, hand basins and baths. It is then stored, together with rainwater, in the Roth Twinbloc® ready to be used again in the lavatory, washing machine or garden.



Roth AquaServe® system wall console with control unit, aerator, drinking water backfeed



Roth AquaServe® system



■ Roth AquaServe® system with Roth Twinbloc® and Roth recycling station at a glance

- One tank to store rainwater and recycling water
- Roth recycling station with polymer membranes and aeration system for germ-free and odourless purification of water from showers, baths and hand basins
- Underground storage at constant temperature retards bacterial growth
- Ideal system enhancement, recycling water is available even in dry weather
- Environmentally friendly, helps conserve valuable water resources
- Reduce your water and waste water bills
- Works without chemicals
- Complies with European Bathing Water Directive 76/160/EEC
- Completely pre-assembled system components, minimal installation work on site
- Uses very little energy in operation

Roth Building and Plastics Technology

... international



Ideen und Leistungen mit Mehrwert für den Kunden

Roth Werke, Dautphetal, Deutschland

Belgien, Bertem • China, Shanghai • Dänemark, Frederikssund • Finnland, Parainen • Frankreich, Lagny sur Marne • Griechenland, Athen • Großbritannien, Taunton • Italien, Castelverde
Kanada, Beloeil, QC • Lettland, Riga • Niederlande, Delft • Norwegen, Baerum • Österreich, Krems • Nord-Irland, Carrickmore • Polen, Zielona Góra • Rumänien, Timisoara • Russland, Moskau
Schweden, Malmö • Schweiz, Kreuzlingen, Stansstad • Serbien, Beograd • Slowakei, Kosice • Spanien, Tudela • Slowenien, Ljubljana • Tschechische Republik, Brno • Türkei, Istanbul
Ukraine, Kiew • Ungarn, Budapest • USA, Syracuse und Watertown, NY

■ Innovation:

- Early recognition of market requirements for the formulation of new product, system and service concepts
- In-house materials research and development with the goal of making high-quality, technically perfected products available on the market
- In-house engineering for the development of product and materials processing methods
- Systematic further development of existing product ranges in close cooperation with our customers

■ Products:

- Complete and easy-to-assemble product system offering
- Manufacturing competence for the complete product range within the corporate group of Roth Industries
- All products and product systems are manufactured and tested in accordance with DIN EN ISO 9001:2000 and comply with the relevant standards and approval tests

■ Services:

- Comprehensive, qualified field service for flexible, fast on-site consultation on technical and commercial matters
- Hotline and planning service
- Training courses, planning and product seminars held on an ongoing basis
- Fast availability of all Roth brand product ranges throughout Europe
- Comprehensive guarantees and liability agreements for all products and product systems

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