SIMONA

SIMONA® Piping Systems

Cost-effective solutions for wastewater disposal

Put your trust in quality and expertise!

When it comes to pipeline construction, two factors are essential to success: premium-quality pipes and fittings that meet your application-specific requirements and a high-calibre partner who can assist you with everything from product selection to on-site project planning.

SIMONA offers you the best of both worlds – premium quality and unrivalled expertise.

Benefit from our passion and commitment – Welcome to SIMONA!

Behind each product associated with our company stands a dedicated team that has developed and manufactured it. SIMONA draws its inspiration from the unparalleled vision, dedication and passion of its employees – and a history spanning more than 150 years.

Today, we are recognised as one of the world's leading producers of semi-finished thermoplastics.

Products tailored to your needs

SIMONA is able to offer you the most extensive range of semi-finished thermoplastics worldwide. Our comprehensive portfolio of products encompasses pipes, fittings, valves, sheets, rods, profiles, welding rods and finished parts for a diverse range of applications. The materials offered within this area span everything from PE and PP to PVC, PVDF, E-CTFE and PETG. On request, we can even develop customised products tailored to your specific requirements.

Best-in-class quality

Our products and services are designed to deliver the very best quality imaginable. When implementing your projects, we always place the greatest possible emphasis on professionalism during every stage of the process. We are supported in our efforts by a first-class Quality Management system – for total peace of mind.

Global sales network

Boasting a global network of subsidiaries and distribution partners, SIMONA is renowned as a fast, flexible and reliable partner.

Exceptional service

As a customer, you always take centre stage: from project development to materials procurement and on-site planning, we are committed to delivering the very best consulting services. We will provide you with extensive technical product data as well as comprehensive information on how to process specific components. Our service portfolio also includes specialist training seminars and courses to hone your skills to perfection. Finally, we are able to offer expert advice on tendering procedures within the area of pipe installation and replacement.

SIMONA AG's Quality and Environmental Management system is certified in accordance with DIN EN ISO 9001 : 2000 and DIN EN ISO 14001 : 2005.

The Quality Management system of SIMONA AG in compliance with the Pressure Equipment Directive is certified to 97/23/EC Annex I, para. 4.3.

Efficient. Safe. Sustainable.
SIMONA® wastewater systems made of plastic

One of the central tasks of sewage systems is to collect and transfer wastewater. In order to be able to meet this challenge in a cost-effective and sustainable manner, utility operators require piping systems with an extended service life and low maintenance costs.

The volume of wastewater to be processed at sewage treatment plants has a significant impact on the operational efficiency of utility companies. Therefore, external water must be prevented from penetrating the sewage system. At the same time, the protection of the soil and ground against wastewater leakage, particularly in areas that are of importance to the supply of drinking water, is considered a key objective when it comes to maintaining a sustainable ecological balance and safeguarding the health of the population.

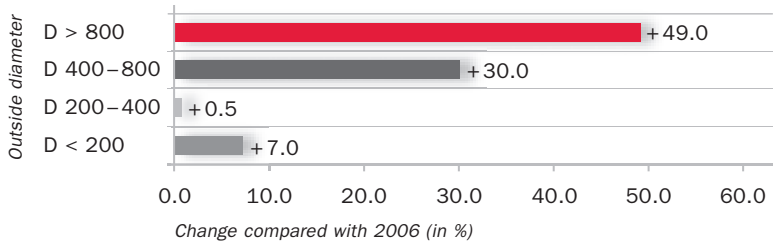
Against the backdrop of these challenges, the most important criteria to be met are as follows:

- Long service life of the piping system
- High corrosion resistance
- High resistance to fracture
- Availability of complete system solutions
- Leak-proof pipe joints

SIMONA plastic pipes fulfil all of these requirements. Delivering superior durability and efficiency, they have become a benchmark for best-in-class quality within the area of wastewater piping systems.

There is a growing trend towards the use of plastics in wastewater management, as reflected in the chart below:

More widespread use of plastic pipes in wastewater systems (2007)



Source: data from IKT market survey in 2007

Potential cost savings

Service life and maintenance costs have a major impact on the operational efficiency of sewage networks. On average, depreciation expense accounts for approx. 30 % of the total costs of a sewage system. Within this context, the extended useful life of a system comprising plastic components made by SIMONA can translate into a sizeable reduction in annual depreciation. This, in turn, has a tangible effect on overall costs.

Maintenance costs are dependent on the material used. Plastic piping systems offer a number of major benefits to network operators:

- Service life of more than 100 years, providing a basis for future planning
- Permanently integral, watertight and strong connection by welding
- No need for internal linings and protective coatings due to excellent corrosion resistance
- Resistant to all substances contained in the ground
- Reduction of cleaning and flushing due to low level of incrustation
- Favourable hydraulic conditions due to minimal wall roughness
- High abrasion resistance – no wall thickness allowance required even in the case of high solids content
- Lightweight design for simple handling, even in the case of long pipe sections
- No pipe breakage in the event of pressure surges or soil settlement due to superior flexibility of the material
- Good storage properties thanks to insusceptibility to weathering and UV rays

Superior operational reliability – low maintenance costs

Tests conducted on in-situ wastewater pipes made of PE 80 and PE 100 have shown that incrustation and material abrasion remain low even when the pipes are exposed to sewage containing a high level of solids. What is more, the time and effort required for maintenance and cleaning are minimal.

Conclusion

Transportation, installation, operation and servicing: disposal systems made of state-of-the-art plastics are a highly cost-effective solution. They also deliver peace of mind when it comes to project planning and budgeting. With an impressive service life of 100 years and more, even when exposed to extreme operating conditions, plastic pipes can help to achieve a tangible reduction in the imputed cost of sewage network operations. These savings can then be passed on to customers.

Material properties of polyethylene (PE) und polypropylene (PP)

100 years and more

In contrast to many other materials, PE boasts exceptional levels of durability. Thus, the above-average performance of polyethylene pipes is maintained over the entire useful life of the piping system. Key advantages of PE:

- Notch and crack resistance
- Creep strength
- Stability and flexibility (creep modulus)
- Abrasion resistance
- Corrosion resistance

Polypropylene

Polypropylene (PP) is an excellent option when the medium to be disposed of by the piping system has a high temperature or contains particularly aggressive substances, e.g. in the case of industrial wastewater. As in the case of polyethylene, pipes made of this material are sized and deployed in observance of the applicable specifications derived from internal pressure creep curves and creep modulus data.

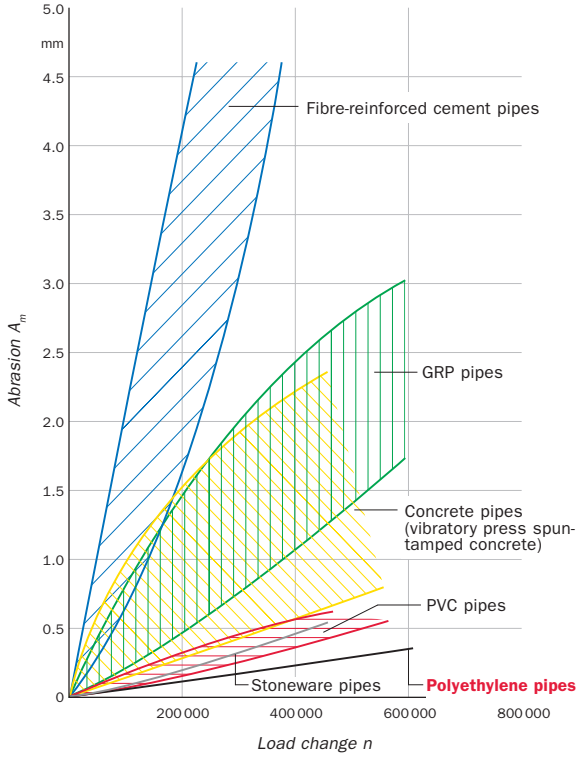
Abrasion resistance (test based on the Darmstadt method)

Wastewater directed through sewage systems often flows at high velocity. What is more, it frequently contains an extremely high level of solids. This leads to a considerable abrasive load in systems made of conventional materials, particularly at the bottom of the sewers. The result: an increased risk of pipe wear. Owing to their high abrasion resistance, PE pipes are particularly well suited to applications within this area, as highlighted by comparative tests conducted on the basis of the Darmstadt method.

Full Notch Creep Test (FNCT)

The FNCT examines creep by systematically initiating stress cracks in the test specimen with the aid of a wetting agent solution (e.g. 2% Arkopal N100), combined with mechanical loading and temperature elevation (80 °C). SIMONA pipes exhibit exceptionally high resistance to slow crack growth and concentrated loads.

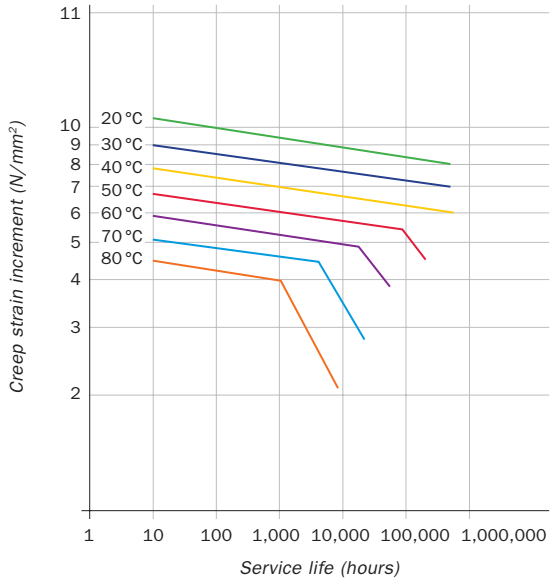
Abrasion figures, measured by Darmstadt method, for pipes made of various materials



Creep under internal pressure

One of the most important methods of verifying the service life of PE pipes is to determine creep under internal pressure, also referred to simply as “creep”. Even after 100 years of a continuous service temperature of 20 °C no thermooxidative processes will occur in PE 80 or PE 100 pipes (see chart). The tests conducted within this area provide comparative data used for the purpose of design/sizing pipes to be exposed to sustained loading (up to 100 years).

Internal pressure creep curves for PE 80 pipes

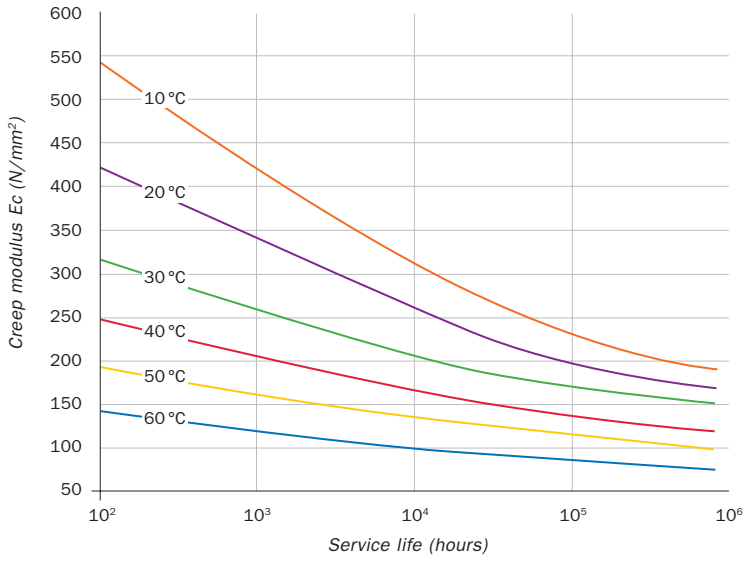


Time-dependent modulus of elasticity (creep modulus)

Data relating to the modulus of elasticity is essential when it comes to performing stability analyses, e.g. in the case of buried pipes exposed to soil loads, live loads or groundwater. In the case of pipes made of thermoplastic materials, the time-dependent modulus of elasticity is of particular importance. Scientific tests and practical experience have provided long-term dimensional parameters, ensuring that the design of the piping system is technically sound and suitable for sustained operation.

Strength figures for sizing thermoplastic pipes

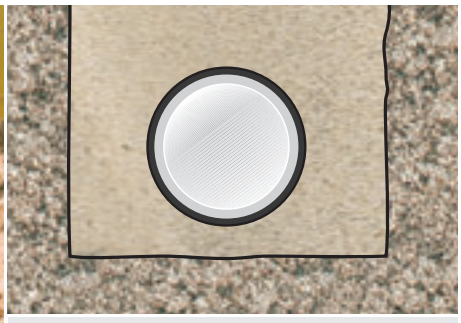
Creep modulus for PE 80 and PE 100



Solutions tailored to any application

The specific area of application and related technical factors play an important part when selecting a piping system that best suits your needs. SIMONA® piping systems are designed to meet every possible requirement within the area of pipe installation and replacement, as well as offering outstanding operational safety.

Safe and efficient –
Open-trench installation with SIMONA® pipes



Open-trench pipe laying with sand bed

Recommendation for non-pressure systems:

- *SIMONA® PE CoEx sewer pipes*
- *SIMONA® PE wastewater pipes*

Open-trench pipe laying with sand bed

The stability and service life of a pipeline is dependent to a large extent on the structural support created for the actual pipe. When laying plastic pipes in accordance with DIN EN 1610, the pipeline zone has to be filled with stone-free, compactible material (preferably 0/2 sand).

The soil has to be compacted in such a way that the pipe is protected against external influences (DIN EN 13244). Usually, this procedure involves replacing the excavated soil.

Classic SIMONA® PE 80 and PE 100 pipes can be laid in trenches with a sand bed or with other stone-free bedding materials, such as twice-crushed and screened chippings (e.g. equivalent to 2/5 grade up to a maximum of 11 mm). Pipes installed in this manner will meet the relevant operational requirements.

Open-trench pipe laying without sand bed

Recommendation for non-pressure systems:

- *SIMONA® PE 100 RC-Line wastewater pipes*
- *SIMONA® PE SPC wastewater pipes*

(dependent on soil material)

Open-trench pipe laying without sand bed

Applying the open-trench method, SIMONA plastic pipes with RC properties can be laid in trenches containing prepared, compactible excavated material with a grain size of up to 63 mm or with crushed stone equivalent to the 32/63 grade. As there is no sand-bedding in the supporting fill or in the pipe zone, pipe laying can be performed faster and in a more cost-effective manner.

PE 100 RC is an advanced material that is particularly suited to piping system applications in which there is a high risk of crack formation or concentrated loading. RC ("high resistance to crack") boasts a high level of resistance to slow crack growth and concentrated loading, thus delivering superior protection during pipe installation as well as during operation, particularly when the system is exposed to loads that are difficult to predict in advance.

For further details about piping systems for trenchless installation, please refer to the product brochure "SIMONA® Piping Systems – Superior reliability for trenchless pipe installation".

SIMONA® PE CoEx sewer pipe systems – Perfect for camera inspection

Alongside black PE pipes, SIMONA offers a complete range of wastewater solutions featuring coextruded PE solid-wall pipes. The light grey interior of SIMONA® PE CoEx sewer pipes has been designed to allow optimum illumination during camera inspection – without any reflections.

The black external layer of the pipe provides protection against weathering and UV irradiation. The wall roughness of PE CoEx sewer pipes is particularly low, which contributes to the pipes' favourable hydraulic properties.

Even after many years of operation these pipes display hardly any signs of incrustation. As a result, cleaning and flushing cycles can be reduced. Owing to the high abrasion resistance of SIMONA® PE CoEx sewer pipes, there is no need to factor in additional wall thickness for wastewater with a high content of solids.

Standards

Based on DIN 8074/8075, TÜV Süddeutschland certified

Recommended areas of use

Non-pressure systems requiring camera inspection.

- Open-trench pipe laying with sand bed
- Trenchless sewer rehabilitation (relining)

PE 80 coextruded short-pipe modules for insertion using relining method

Benefits

- Can be welded to PE 80/PE 100 pipes and fittings
- Weatherproof and UV-stable outer layer
- Service life of more than 100 years (as per DIN 8074)
- High abrasion resistance
- No incrustation
- No corrosion
- Excellent flexibility
- Low weight
- Excellent chemical resistance

Owing to their state-of-the-art design and superior functionality, SIMONA® PE CoEx sewer pipes deliver tangible advantages in terms of operation and maintenance.

SIMONA® PE SPC sewer pipe systems – Maximum reliability guaranteed

The SIMONA® PE SPC protective jacket pipe is a multilayer solution manufactured by means of the coextrusion method. It consists of a standardised inner pipe and an extremely abrasion-resistant protective jacket made of modified polypropylene (SIMONA PP Protect).

The surface of the SIMONA® PE SPC sewer pipe protects the inner pipe against dangerous notches or cracks and prevents slow crack growth by ensuring that fissures in the protective jacket are not transferred to the inner pipe. The inner pipe can be made of PE 80 or PE 100.

Benefits

- PP protective jacket provides the inner pipe with reliable protection against external damage
- High resistance to crack propagation
- Superior abrasion resistance
- No incrustation
- No sealing of welding seams
- Light grey interior facilitates camera inspection
- Permanent protection against extreme loads during installation and operation
- No danger of cracks or breakage

Standards

DIN 8074/8075, DIN EN 12201, DIN EN 13244, TÜV Süddeutschland certified

Recommended areas of use

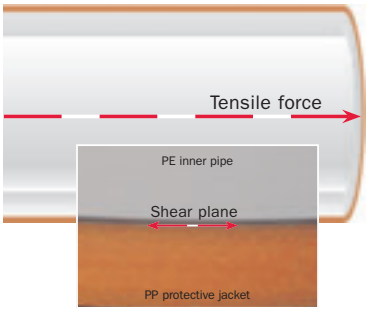
Non-pressure pipelines exposed to extreme material loads during installation.

- Open-trench pipe laying without preparation of excavated soil
- Trenchless sewer rehabilitation (burstlining)

Installation in all soil types and classes permitted for construction purposes

The innovative coextrusion manufacturing process ensures maximum adhesion between the protective pipe and the inner pipe. As a result, the protective jacket is prevented from "sliding off" (fig.: microtome section in the transitional zone between the protective jacket and the inner pipe).

SIMONA PP Protect:
On request, SIMONA® PE SPC pipes can also be supplied with pre-machined ends ready for heated-tool butt welding



SIMONA® ovoid pipe systems – High flow velocity and back-water capacity

SIMONA® PE 80 ovoid pipes are PE 80 wastewater pipes with an ovoid, i.e. egg-shaped, geometry.

When the pipe is partially filled (dry-weather drainage), a high velocity of flow is achieved at the bottom, i.e. the invert, of the pipe. As a result, ovoid pipes display very good hydraulic properties with a flushing and self-cleaning effect. When precipitation levels are high, the ovoid shape of the pipe facilitates rapid drainage.

Standards

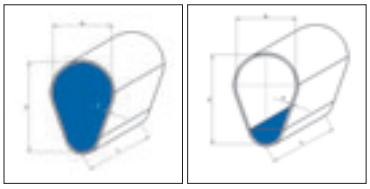
- Material produced to DIN 8075, DIN EN 12666
- Structural design according to ATV-DVWK A-127 and M-127

Recommended areas of use

- Rehabilitation of brickwork and concrete sewers with an ovoid shape
- Wastewater pipes with highly fluctuating volumes of water and many dry-weather days

Benefits

- Very high component stability
- Excellent hydraulic properties even with low water volume
- Excellent chemical resistance
- High abrasion resistance



Superior flushing and self-cleaning effect due to high drainage capacity and high flow velocity.

SIMONA® double-containment piping systems – The ultimate in protection

SIMONA has developed a number of specially designed protection systems featuring double-walled wastewater pipes and tailor-made connectors for the protection of drinking-water against hazardous substances.

Whilst double-containment pipes made of PE 80 and PE 100 are used for municipal systems, projects involving industrial wastewater call for the use of PP-H AlphaPlus, the reason being that service temperature requirements are more demanding within this area.

Standards

DIN 8074/75, DIN EN 12201, DIN EN 13244

Recommended areas of use

Piping systems requiring the highest level of protection.

- Water-endangering effluent in drinking-water zones
- Industrial wastewater with high levels of chemical pollutants

Benefits

- Double protection against wastewater leakage
- High abrasion resistance
- Low incrustation
- Excellent chemical resistance

For further details about sewer systems for industrial wastewater, please refer to our flyer "SIMONA® PP-H Sewer Pipe Systems".

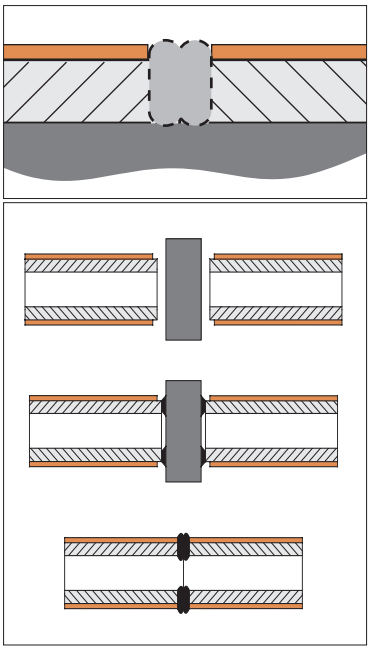
Conventional joining methods

Heated-tool butt welding

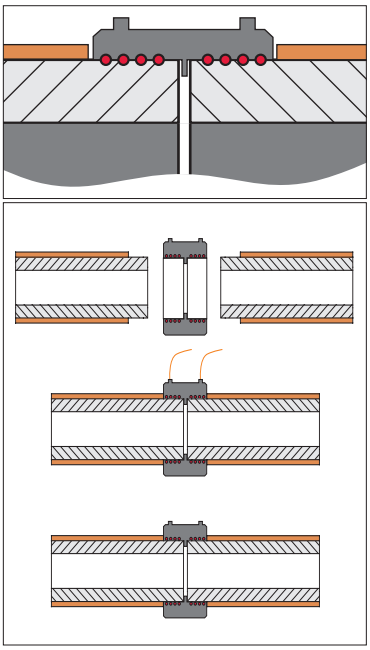
When applying the method of heated-tool butt welding in accordance with DVS Guideline 2207-1, the end of the pipes – following appropriate machining and plane-parallel alignment – are held against the heated tool at a predefined pressure and subsequently heated to the requisite welding temperature, having reduced the pressure. After removing the heated tool, the pipe ends are joined together at a predefined pressure.

Electrofusion socket welding

In the case of electrofusion welding using electrofusion sockets, performed in accordance with DVS Guideline 2207-1, the overlapping surfaces of the pipe are joined together with the help of a heating spiral integrated into the socket. For this purpose, the filament is heated to the requisite welding temperature by means of electrical energy. In the case of SPC pipes, the protective jacket is peeled off at the two pipe ends according to the socket insertion depth.



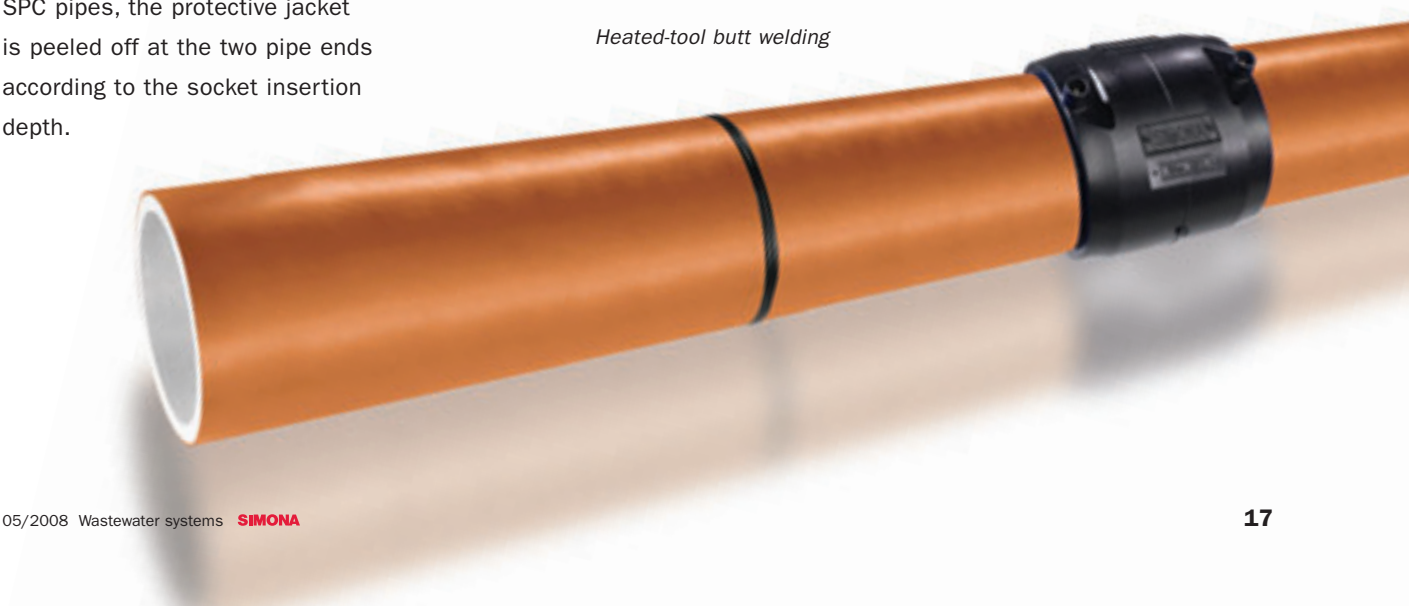
Heated-tool butt welding (illustration)



Electrofusion socket welding (illustration)

Heated-tool butt welding

Electrofusion socket welding



SIMOFUSE® – Intelligent joining with integral electrofusion spiral

SIMOFUSE® is a pioneering solution for the efficient joining of plastic pipes.

The electrofusion spiral integrated within the polyethylene ensures a high-strength, homogeneous joint (electrofusion joint) in compliance with DVS welding guidelines. A single-material pipe system – with completely tight joints.

Benefits

- "Ready to install" – no on-site welding preparations required
- Greater efficiency during pipe installation due to optimised joining cycles with reduced weld and cooling times
- High weld quality thanks to large welding zones and high joining pressure
- Absolutely watertight, with full protection against root penetration

Pipe modules SIMOFUSE®

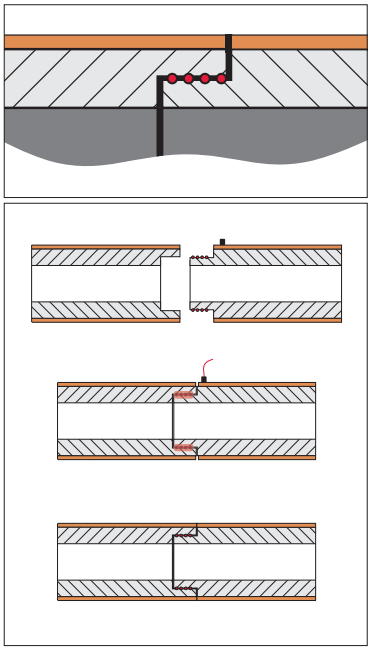
Saving time and money

SIMONA has applied its innovative SIMOFUSE® joining technology to a range of sewer pipes (SIMONA® PE CoEx) with light-coloured interior surfaces. With the help of SIMOFUSE®, pipe modules can be joined together with an absolutely watertight fit – and without the need for electrofusion sockets attached to the exterior of the pipe. Using this method, the pipe end is simply inserted into the pipe socket. The connecting surfaces are then heated to the requisite temperature by the integrated electrofusion spiral and welded together. This creates a permanent, impermeable bond.

The SIMOFUSE® technology integrated within the pipe modules can be operated with standard electrofusion welding machines.

Benefits

- Faster installation without time-consuming preparations, such as peeling of pipe ends
- Perfect for relining in sewage systems, with no need to increase outer pipeline circumference (as in the case of external electrofusion sockets)
- No weld bead, either on the inside or on the exterior (as in the case of heated-tool butt welding)
- Small footprint, particularly suitable for construction sites with limited space
- No deposits thanks to lack of gaps between pipe modules
- No hollow or cavity required in sand bed as in the case of electrofusion socket welding
- No post-compaction
- Tension-proof joints
- Integral, permanently tight connection eliminates risk of root penetration
- High weld quality thanks to large welding zones and high joining pressure



SIMOFUSE® technology (illustration)

External saddle SIMOFUSE®

The SIMONA external saddle is the perfect solution when it comes to the efficient and homogeneous connection of service pipes to PE sewer pipes – whether as part of new installation projects or sewer rehabilitation. The connection work is performed by using an open-trench method. Welding to the main sewer and the service pipe is conducted by means of integral electrofusion joints in accordance with DVS guidelines.

The service pipe end, in the form of a socket or a smooth connector, has been designed as a ready-to-use electrofusion socket, allowing direct connection without any offset. The external saddle is designed such that standard and large-format pipes as well as specialist solutions such as ovoid pipes can be connected fast and efficiently. First, a precise connection hole is made with the help of special tools. The external saddle is then mounted to the pipe and welded in place.

Benefits

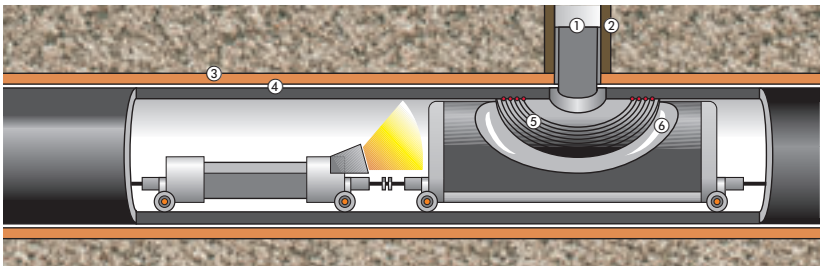
- Excellent versatility thanks to adjustable design (connection to standard, large-format and ovoid pipes)
- Fast and simple connection to main sewer and service pipe
- Absolutely tight, integral connection by means of electrofusion in accordance with DVS guideline
- Socket connection system for standardised transitions to pipes made of classic materials

On-site photo: External saddle for service pipe connection

SIMONA® external saddle welded to PE wastewater pipe

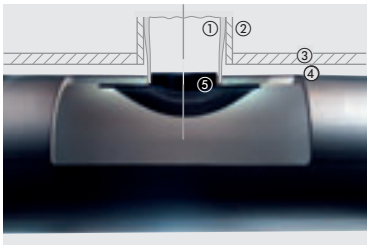
Terminals of the electrofusion spiral for integral connection to the main sewer by means of electrofusion

Internal saddle SIMOFUSE®



The SIMONA® internal saddle is designed for problem-free connection of service pipes to the main sewer using robots in trenchless repair

① *New transition to the existing service pipe*
② *Existing service pipe*
③ *Old pipe*
④ *Annular space*
⑤ *Internal saddle for service pipe connection*
⑥ *Balloon packer*



Cross-section: Internal saddle connection, feed pipe and SIMONA® PE 80 CoEx sewer pipe (main sewer)

SIMONA's internal saddle is designed for the fast and efficient connection of service pipes to PE sewer systems. Here, too, pioneering SIMOFUSE® technology is deployed to achieve a homogeneous connection by means of integral electrofusion joints.

With the help of this product, service connections can be repaired and renovated using trenchless methods – without inconveniencing residents or obstructing traffic. This ensures fast and cost-effective installation, while avoiding the need for time-consuming and expensive open-trench construction work. Connection to the service pipe is performed using the layer of felt which is thermally integrated into the connection collar and serves as an adhesion promoter for a strong connection to glueable service pipes.

This connection method is suitable for the full range of materials traditionally used within the industry (concrete, PVC or stoneware).

Benefits

- Integral repair of service pipes with an absolutely tight, leak-proof fit
- Geared towards faster, more cost-effective trenchless repair
- Connection of the feed pipe to conventional materials such as PVC, stoneware or concrete by using fabric/resin components
- Electrofusion joining based on DVS guidelines

On-site photo:
Welded internal saddle

The encased electrofusion spiral integrated into the saddle facilitates tight, integral welding.

Shaft connection SIMOFUSE®

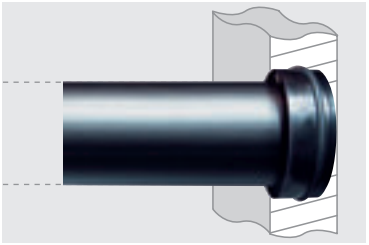
The shaft connection for electrofusion welding has been specially developed to create the best possible transition between non-pressure systems and concrete shafts or brickwork.

Grooves positioned around the full circumference of the connection sleeve ensure that it remains firmly in place in the concrete. The electrofusion spiral integrated into the interior of the connector has been designed to generate the best possible heat conduction for the purpose of welding the shaft connection to the sewer pipe. Owing to the absolutely tight connection created by means of the SIMOFUSE® joining method, penetration by roots can be completely ruled out.

Benefits

- Strong connection of PE pipes to precast concrete shafts or brickwork
- Integration into the shaft wall
- Simple welding using end connection method at the outer face of the socket with standard automatic welders and barcode input
- No root penetration thanks for welded joint
- Tested pressurised water-tight connection to shafts up to 10.0 m H_2O (in accordance with DIN V 4034-1)
- Polyethylene provides corrosion protection
- Secure shaft connection thanks to 5° adjustability of positioning angle

The shaft connection is equipped with integral electrofusion spirals, thus ensuring the best possible transition from non-pressure systems to concrete shafts or brickwork.



Connection of PE 80/PE 100 wastewater pipe and precast-concrete shaft wall

Shaft connection test

Plastic shafts

Take advantage of the tangible benefits that plastic can offer within a homogenous wastewater system. We are able to design and manufacture customised wastewater shafts made of PE or PP. By using state-of-the-art plastics, you can significantly reduce system maintenance and servicing. The smooth surface delivers outstanding hydraulic properties and minimizes deposition or incrustation. What is more, thermoplastic pipes have a service life of 100 years, allowing you to plan well into the future and scale back operating expenses.

Product range – Wastewater pipes

Whether you need special fittings or state-of-the-art double-containment piping systems, SIMONA has the perfect solution to match your requirements.

PE CoEx sewer pipes

Material
PE 80
PE 100 on request

Colour
Light grey with black
UV protective layer

Dimensions
Standard lengths: 6 m, 12 m

Note
Other lengths on request
SDR 26, SDR 11 also available

Application
Suitable for open-trench installation with sand bed and trenchless replacement (relining); light-coloured pipe interior facilitates camera inspection

Standards and guidelines
DIN 8074/8075
DIN EN 12666
DIN EN 13244

Sewer pipe		SDR 17.6
DN	d mm	e mm
150	160	9.1[1]
150	180	10.2
200	225	12.8
250	280	15.9
300	315	17.9[1]
300	355	20.1
350	400	22.7[1]
400	450	25.5
500	560	31.7
600	630	35.7

[1] based on DIN EN 12666

Independent Testing
TÜV Süddeutschland

PE SPC sewer pipes

Material
PE 80
PE 100 on request
Protective jacket made of PP Protect

Colour
Inner pipe: light grey
Protective jacket: brown

Dimensions
Standard lengths: 6 m, 12 m
Other lengths on request

Application
Open-trench installation without sand bed

Note
On request, our SPC pipes can also be supplied with pre-machined ends ready for heated-tool butt welding.

Standards and guidelines
Based on
DIN 8074/8075
DIN EN 12666

Inner pipe	SDR 17.6
d mm	e mm
160	9.1
180	10.2
200	11.4
225	12.8
250	14.2
280	15.9
315	17.9
355	20.1
400	22.7
450	25.5
500	28.4
560	31.7
630	35.7

Independent Testing
TÜV Süddeutschland

PE 80/PE 100 waste-water pressure pipes

Material
PE 80/PE 100

Colour
Black

Dimensions
Standard lengths: 6 m, 12 m

Note
Other lengths on request

Application
Industry
Disposal systems

Standards and guidelines
DIN 8074/8075
DIN EN 13244
DIN EN 15013
DIBt approval Z-40.23.311
for liquids hazardous to water
TÜV Süddeutschland certified

Pressure pipe	SDR 17.6	SDR 17	SDR 11
d mm	e mm	e mm	e mm
90	5.1	5.4	8.2
110	6.3	6.6	10.0
125	7.1	7.4	11.4
140	8.0	8.3	12.7
160	9.1	9.5	14.6
180	10.2	10.7	16.4
200	11.4	11.9	18.2
225	12.8	13.4	20.5
250	14.2	14.8	22.7
280	15.9	16.6	25.4
315	17.9	18.7	28.6
355	20.1	21.1	32.2
400	22.7	23.7	36.3
450	25.5	26.7	40.9
500	28.4	29.7	45.4
560	31.7	33.2	50.8
630	35.7	37.4	57.2
710	40.2	42.1	64.5
800	45.3	47.4	
900	51.0	53.3	
1000	56.7	59.3	
1200	68.0	70.6	

Independent Testing
TÜV Süddeutschland

DIBt
approved

PE 80/PE 100 pipe modules SIMOFUSE®

Material
PE 80, PE 100

Joining
Integral electrofusion joints

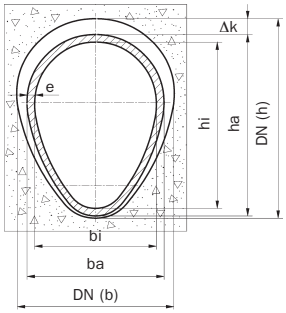
Note
Available as
PE CoEx sewer pipes,
PE RC-Line wastewater pipes,
PE SPC sewer pipes,
PE double-containment pipes

Application
Suitable for non-pressure systems (welded joint can be exposed to pressures of up to 0.5 bar)

	SDR 26	SDR 17.6	SDR 17	SDR 11
da mm	e mm	e mm	e mm	e mm
280		15.9	16.6	25.4
315		17.9	18.7	28.6
355		20.1	21.1	32.2
400		22.7	23.7	36.3
450		25.5	26.7	40.9
500	19.1	28.4	29.7	45.4
560	21.4	31.7	33.2	50.8
630	24.1	35.7	37.4	57.2
710	27.2	40.2	42.1	
800	30.6	45.3	47.7	

Module lengths L: L=700 mm to L=6000 mm. Other lengths on request

PE 80 ovoid pipes



Material
PE 80/PE 100

Colour
Black

Dimensions
Standard length: 0.7–2.5 m
For standardised cross sections (DIN 4263)

Note
Other lengths on request

Application
Suitable for sewer repair and rehabilitation in ovoid brickwork or concrete systems

Standards and guidelines
Tolerances based on DIN 8074/8075

Standard profiles for ovoid ducts[1] (in mm)

Standard profile[2] DIN 4263 b/h	Outer diameter[3] ba/ha	Wall thickness[4] e	Inside diameter bi/hi	Annular space[5] Δk
500/750	458/692	17	423/657	58
	466/700	21	423/657	50
	487/721	31	423/657	29
600/900	558/841	17	523/806	58
	567/850	21	523/806	50
	577/860	27	523/806	40
700/1050	657/990	19	618/951	59
	667/1000	24	618/951	50
	679/1012	30	618/951	38
800/1200	724/1125	22	698/1081	74
	753/1136	27	698/1081	63
	767/1150	34	698/1081	50
900/1350	854/1288	24	805/1239	62
	867/1300	30	805/1239	50
	882/1315	38	805/1239	35
1000/1500		on request		

① All values specified in the table are based on theoretical calculations. When planning a specific project, please be advised that delivery times will depend on the actual dimensions (height, width, length and wall thickness) and the joining method used (connectors or welding); delivery may take between 4 and 8 weeks after once an order has been processed. The actual ovoid modules or geometries to be deployed will depend on the condition of the existing pipe as well as structural calculations.

② The dimensions listed above are deployable in the standard profiles according to DIN 4263. Use in connection with other sectional shapes, including brickwork sewer systems, is possible.

③ The ovoid pipes are manufactured on the basis of DIN 8074 within the admissible dimensional limits of the mean outside diameters ba/ha.

④ The ovoid pipes are manufactured on the basis of DIN 8074 within the admissible dimensional limits of the wall thicknesses.

⑤ The size of the annular space varies depending on the specified tolerances and the actual wall thickness.

PE CoEx double-containment pipes

Material
Internal pipe: PE CoEx according to DIN 8074/8075
External pipe: PE 80/PE 100 according to DIN 8074/8075

Colour
PE CoEx: light grey with black UV protective layer
PE 100: black

Welding method
Internal pipe: SDR 17.6
External pipe: SDR 26
simultaneous welding

Internal pipe: SDR 17.6
External pipe: SDR 17
cascade welding

Note
Dimensions and lengths on request

Subject to technical and dimensional modifications

Application
Disposal in drinking-water protection areas

Internal pipe PE CoEx		External pipe PE 80/PE 100		
	SDR 17.6		SDR 26	SDR 17
d mm	e mm	d mm	e mm	e mm
160	9.1	250	9.6	14.8
180	10.2	280	10.7	16.6
200	11.4	315	12.1	18.7
225	12.8	315	12.1	18.7
280	15.9	400	15.3	23.7
315	17.9	400	15.3	
315	17.9	450		26.7
355	20.1	450	17.2	
355	20.1	500		29.7
400	22.7	500	19.1	
400	22.7	560		33.2
450	25.5	560	21.4	
450	25.5	630		37.4
560	31.7	710		42.1
630	35.7	800		47.4

PP-H AlphaPlus pressure pipes

Material
PP-H AlphaPlus

Colour
Grey

Dimensions
Standard length: 5 m

Note
Other lengths on request

Application
Industry
Disposal systems

Standards and guidelines
DIN 8077/8078
DIN EN ISO 15494

For further details about piping systems made of PP-H AlphaPlus, please refer to our flyer "SIMONA® PP-H AlphaPlus – The new generation of polypropylene for industrial piping systems".

Pressure pipe	SDR 41	SDR 33	SDR 26	SDR 17.6	SDR 11
d mm	e mm	e mm	e mm	e mm	e mm
90	2.2	2.8	3.5	5.1	8.2
110	2.7	3.4	4.2	6.3	10.0
125	3.1	3.9	4.8	7.1	11.4
140	3.5	4.3	5.4	8.0	12.7
160	4.0	4.9	6.2	9.1	14.6
180	4.4	5.5	6.9	10.2	16.4
200	4.9	6.2	7.7	11.4	18.2
225	5.5	6.9	8.6	12.8	20.5
250	6.2	7.7	9.6	14.2	22.7
280	6.9	8.6	10.7	15.9	25.4
315	7.7	9.7	12.1	17.9	28.6
355	8.7	10.9	13.6	20.1	32.2
400	9.8	12.3	15.3	22.7	36.3
450	11.0	13.8	17.2	25.5	40.9
500	12.3	15.3	19.1	28.4	45.4
560	13.7	17.2	21.4	31.7	
630	15.4	19.3	24.1	35.7	
710	17.4	21.8	27.2	40.2	
800	19.6	24.5	30.6	45.3	
900	22.0	27.6	34.4		
1000	24.5	30.6	38.2		

PE 80/PE 100 pipe modules SIMOFUSE®

Material
PE 80, PE 100

Joining
Integral electrofusion joints

Note
Available as
PE CoEx sewer pipes,
PE RC-Line wastewater pipes,
PE SPC sewer pipes,
PE double-containment pipes

Application
Suitable for non-pressure systems (welded joint can be exposed to pressures of up to 0.5 bar)

	SDR 26	SDR 17.6	SDR 17	SDR 11
da mm	e mm	e mm	e mm	e mm
280		15.9	16.6	25.4
315		17.9	18.7	28.6
355		20.1	21.1	32.2
400		22.7	23.7	36.3
450		25.5	26.7	40.9
500	19.1	28.4	29.7	45.4
560	21.4	31.7	33.2	50.8
630	24.1	35.7	37.4	57.2
710	27.2	40.2	42.1	
800	30.6	45.3	47.7	

Module lengths L: L=700 mm to L=6000 mm. Other lengths on request

PE 80 external saddle for service pipe connection SIMOFUSE®

Material
PE 80

Colour
Black

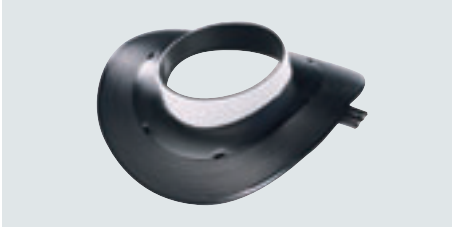
Joining
Integral electrofusion joints

Execution
Socket (DN)
Connecting pipe (da)
up to d 560 with articulated connection socket

Note
Suitable for electrofusion connection of service pipes to PE sewer pipes using open-trench installation methods

Pipe diameter	Feed pipe connection
d mm	DN/da mm
225	150/160
250	150/160
280	150/160
315	150/160
355	150/160
400	150/160
450	150/160
500	150/160
560	150/160
630	150/160
710	150/160
800	150/160
900	150/160
1000	150/160
1100	150/160
1200	150/160

Saddle for ovoid pipes on request



PE 80 internal saddle for service pipe connection SIMOFUSE®

Material
PE 80

Colour
Black

Joining
Integral electrofusion joints

Note
Suitable for repair/rehabilitation of service pipe connections using trenchless installation methods

Pipe diameter	Feed pipe connection
d mm	DN –
280	150
315	150
355	150

Other dimensions and materials on request.
Product design: With covered heating spirals integrally welded into the saddle. Connection collar with thermally integrated layer of felt serving as an adhesion promoter for a strong connection to glueable service pipe connections using resin-impregnated, needle-felt tubes.

PE 80 shaft connection SIMOFUSE®

Material
PE 80

Colour
Black

Joining
Integral electrofusion joints

Note
Suitable for joining PE sewer pipes in SDR classes 26 and 17.6 to ready-mixed concrete shafts

Pipe connection	Outside diameter	Overall length
d mm	D mm	l mm
160	210	135
180	235	135
200	260	135
225	285	135
250	320	135
280	360	135
315	407	135
355	457	135
400	492	135
450	562	135
500	602	135
560	682	135
630	737	135

Other overall lengths on request

PE electrofusion sockets – Sewer

Material
PE 100

Colour
Black

Execution
SDR 26/SDR 17

Pipe diameter	
d mm	d mm
110	280
125	315
140	355
160	400
180	450
200	500
225	560
250	630

Services

As a customer, you always take centre stage: from project development to materials procurement and on-site planning, we are committed to providing the very best consulting services.

Our long-standing experience is your gain.

SIMONA services

Advisory service

We have channelled considerable resources into technical consulting and would be delighted to share our know-how with you. We offer global consulting services, headed by highly qualified staff at our Technical Sales Support unit and within our field sales organisation – from project planning and product selection to on-site assistance tailored to your applications.

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pipingsystems@simona.de

Our consulting service covers the following areas:

Project planning

We advise project planners and contractors on the selection of suitable materials and products as well as on the most efficient methods of installation. It would be a great pleasure for us to assist you in addressing all technical issues related to your specific project, e.g. pipe-laying methods, structural calculations or joining technology.

On-site consulting

We are happy to provide active support at all stages of your project. Our qualified engineers will assist you on site throughout your construction project and also advise you on technical matters subsequent to completion.

Training

We also offer a range of training courses and seminars for customer personnel – organised at your premises or at our Technology Centre in Kirn.

Structural analysis

We perform structural calculations in the following areas:

- Underground pipe installation
- Drainage pipes for landfill sites and traffic routes
- Shafts
- Rectangular and cylindrical tanks/vessels
- Ventilation piping systems

Customised pipes and fittings

Alongside our standard product range, we offer a premium-class package of specialist solutions:

- Pipes in various lengths for a range of joining methods.
- Special pipe sizes adapted to the standard nominal diameters of other materials.
- Pipes with non-standard properties such as electrical conductivity or low flammability.
- Customised fittings as system components for your application.

Standard tendering documents

To view standard tendering documents for our products, please refer to our SIMONA® SIMCAT CD-ROM or visit our website at www.simona.de.

Equipment and accessories

We are able to supply you with specialist equipment and accessories required for professional welding and processing, such as welding machines for electrofusion or heated-element butt welding as well as tensioning devices and other processing machinery. Specialist equipment can be either purchased or hired.

Information service

For further details about SIMONA piping systems, please refer to the following publications:

- Gross Price List
- SIMONA® Components for Piping Systems
- SIMONA® Piping Systems – Superior reliability for trenchless pipe installation
- SIMONA® PE 80/PE 100 Pressure Pipe Systems for Municipal Sewage
- SIMONA® PE CoEx Sewer Pipe Systems for municipal waste water
- SIMONA® PP-H AlphaPlus – industrial piping systems
- SIMONA® PP-H Sewer Pipe Systems
- SIMONA® SIMODRAIN®
- Project Reports and Case Studies
- CD-ROM SIMCAT

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Our full product range for pipes, fittings and valves is listed in our Gross Price List (print version) and on the Internet at www.simona.de

SIMONA accessories

SIMONA offers a comprehensive range of equipment and accessories for professional processing and welding of piping systems.

Drawing on many years of experience and first-class technical expertise, our highly qualified team looks forward to advising you. The joining technology on offer within this area is available for hire or sale.

Rental welding machines

- Workshop machines
- Socket welding machines
- Butt welding machines (depending on size also available with CNC technology)

Accessories (heated-tool butt welding)

- Logging unit to record welding data
- Internal pipe debeader 90–500 mm

Equipment for electrofusion welding

Various types of lightweight single-handed units:

- with logging and barcode input
- with additional manual input
- with barcode input, manual input and GEO data collection

Accessories (electrofusion welding)

- Rotary peeling devices (d 32–d 500 mm)
- Manual pipe scraper

Integral electrofusion joints (SIMOFUSE®)

- Clamping equipment
- Hydraulic devices

Stripping tools for SPC pipes

SIMONA stripping tools have been specially developed for use on construction sites. Using the stripping tools, the protective jacket is easily removed from the welding area ready for subsequent processing. Thus, the pipes can be welded in accordance with the relevant DVS welding guidelines.

Special service

As a matter of principle you receive SIMONA® SPC pipes with machined ends ready for heated-tool butt welding.

Silicone heating mats

To facilitate detachment of the protective jacket from the inner pipe, we recommend using silicone heating mats at low processing temperatures (< 15 °C).

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Upon publication of this document all previous editions shall become void. For relevant changes within this edition, please refer to our company website at www.simona.de.

All information furnished herein reflects our scope of knowledge at the point of publication (errors and omissions excepted).

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