

Pipeline rehabilitation

WITH AGRULINE
AND AGRUSAFE





The Plastics Experts.

AGRU has successfully been producing polymer pipes for decades. As an innovative company AGRU is always interested in placing new products on the market that focus 100 % on the customers' benefit. With our product groups AGRULINE piping systems and CONCRETE PROTECTION we offer optimum overall solutions for relining as well as for lining of large pipelines. By offering technical consulting and project assistance we are able to support your rehabilitation project effectively.

The AGRU success story has been unfolding now for around seven decades. Founded back in 1948 by Alois Gruber senior, nowadays the company is one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners and lining systems made of engineering plastics. Our ability to supply everything from a single source sets us apart. We use only top-grade thermoplastic polymers as our raw materials. When it comes to application-technical consulting, we are your best partner in the field.



Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential parts. The AGRU quality assurance system is compliant with ISO 9001:2015 and its environmental management system fulfils ISO 14001:2015. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies standards.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specifications, providing safe operation within gas, water and waste-water infrastructures.



Economical pipeline rehabilitation

Wastewater pipelines and sewer channels might be exposed to very demanding and even aggressive media for a long service lifetime. What's more, numerous pipelines are older than 50 years and have to be renovated. Digging trenches, especially in urban areas, affects traffic, takes a long time and is expensive. In practice, trenchless installation and rehabilitation methods are well established and become more and more interesting as they are faster, easier and cheaper than conventional methods.

Corrosion protection

Maintains structural strength and stability of the piping system

Relining with plastic pipes & concrete protective liners from AGRU

- prevents (further) corrosion of sewage tunnels and concrete pipes
- preserves the old pipe as protective tube
- remains permanently resistant against different (even aggressive) media

Safe media transport

HDPE pipes and liners act as protective jackets inside the pipe

Non-corrosive and homogeniously welded AGRU systems

- are ideal for water & wastewater piping renovation
- prevent deposits & enhance the flow properties of the complete system
- prevent dangerous media from leaking into the groundwater

Long-term reliability

Thermoplastic products are durable

High-quality engineering polymers offer a longer service life due to

- abrasion and chemical resistance
- resistance to slow crack growth and seismic loads
- rodent-proof quality

Easy installation

Trenchless embedding saves time and hassles

AGRU's light and flexible products

- are lightweight and easy to handle
- offer good weldability
- comprise fittings for fast and easy installation



Renovation with Sureline pipes

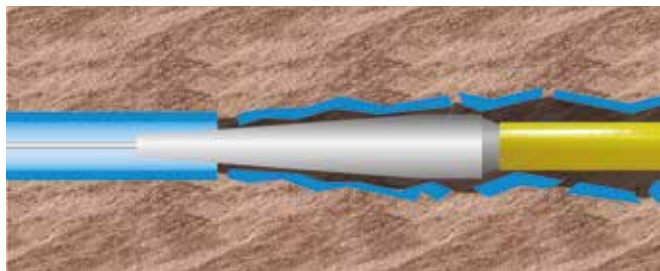
Sliplining with annular gap

Rehabilitation can be executed with standard PE pipes. In this case, the diameter of the new pipes must be inferior to the old pipe's diameter. Sliplining leads to a reduction of the cross-section due to the annular gap between new and old pipe. The reduced flow capacity can partially be compensated due to the smooth surface and thus perfect flow characteristics of PE. The renovation process itself can be done with coiled pipes in a standard length of 100 m and outside diameters of up to 90 mm. For larger diameters singular pipes can be welded incrementally in the construction pit and afterwards be inserted into the old pipe. The entire available dimension range of PE pipes (20 mm up to 3500 mm) can be used for sliplining.



Pipe bursting

With pipe bursting, the existing old pipe is cut and demolished by a cutting-widening-tool, creating space for the new pipe. The new pipe is fed right behind the tool's head in one working step.



Diameter extension up to 40 %

Usually pipe bursting is used for dimensions ranging from 90 mm up to 1400 mm. In comparison to other rehabilitation methods the diameter of the new pipe can be enlarged by up to 40 % or 3 nominal diameters.



Recommended AGRULINE pipes

The renewal by means of pipe bursting is very demanding for the outside surface of the pipe. Scratches and point loads cannot be avoided, and so the AGRU Sureline III pipe with protection layer is the choice! With its additional scratch-proof PP protective layer it ensures that after the installation is finished - even if the protective layer shows scratches - a virgin-like PE 100-RC pipe is installed into the ground.

Recommended for Slipling



AGRULINE SURELINE I PE 100-RC

Dimensions for water, wastewater

SDR 17 / SDR 11	OD 75 mm - 1200 mm
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Recommended for Slipling



AGRULINE SURELINE II PE 100-RC WITH SIGNAL LAYER

Dimensions for water, wastewater

SDR 17 / SDR 11	OD 75 mm - 1200 mm
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Dimensions for gas

SDR 17 / SDR 11	OD 75 mm - 400 mm
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Recommended for pipe bursting



AGRULINE SURELINE III PE 100-RC WITH PROTECTIVE LAYER

Dimensions for gas: orange protective layer

SDR 17 / SDR 11	OD 63 mm - 225 mm
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Dimensions for potable water: blue protective layer

SDR 17 / SDR 11	OD 63 mm - 1200 mm
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Dimensions for wastewater: brown protective layer

SDR 17 / SDR 11	OD 63 mm - 1200 mm
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Recommended for pipe bursting



AGRULINE SUREPEX PIPES

Dimensions for water, wastewater

SDR 17 / SDR 11	OD 25 mm - 110 mm
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Dimensions for gas

SDR 17 / SDR 11	OD 25 mm - 110 mm
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Relining with AGRU SureFIT pipes

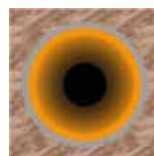


Close-fit-lining with memory technology

This rehabilitation method takes advantage of a very special characteristic of PE: the memory effect. During close-fit-relining without annular gap, a PE pipeline with reduced cross-section is inserted into the old pipe.



Once the pipe has been inserted into the existing old pipe, both ends are sealed. Then the pipe is heated up using steam and pressure. This activates the memory effect. The treatment is continued until the pipe regains its original round shape and fits closely to the old pipe.



Factory shaped AGRU SureFIT pipes

Pipes, made of PE 100 or PE 100-RC, with smaller diameters are factory-deformed in order to reduce the pipe's cross-section. In the range of factory-preformed pipes AGRU offers the AGRU SureFIT, a tailor-made solution for diameters ranging between OD 120 mm and OD 400 mm for the Close-fit method.



SUPPLY RANGE AGRU SUREFIT LINER PE 100

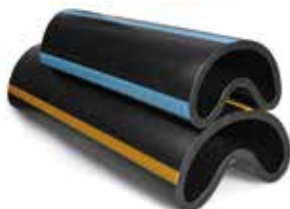
Dimensions for gas and potable water

SDR 17	OD 150 mm - 400 mm
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Dimensions for wastewater

SDR 26	OD 150 mm - 400 mm
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SDR 32	OD 350 mm - 400 mm
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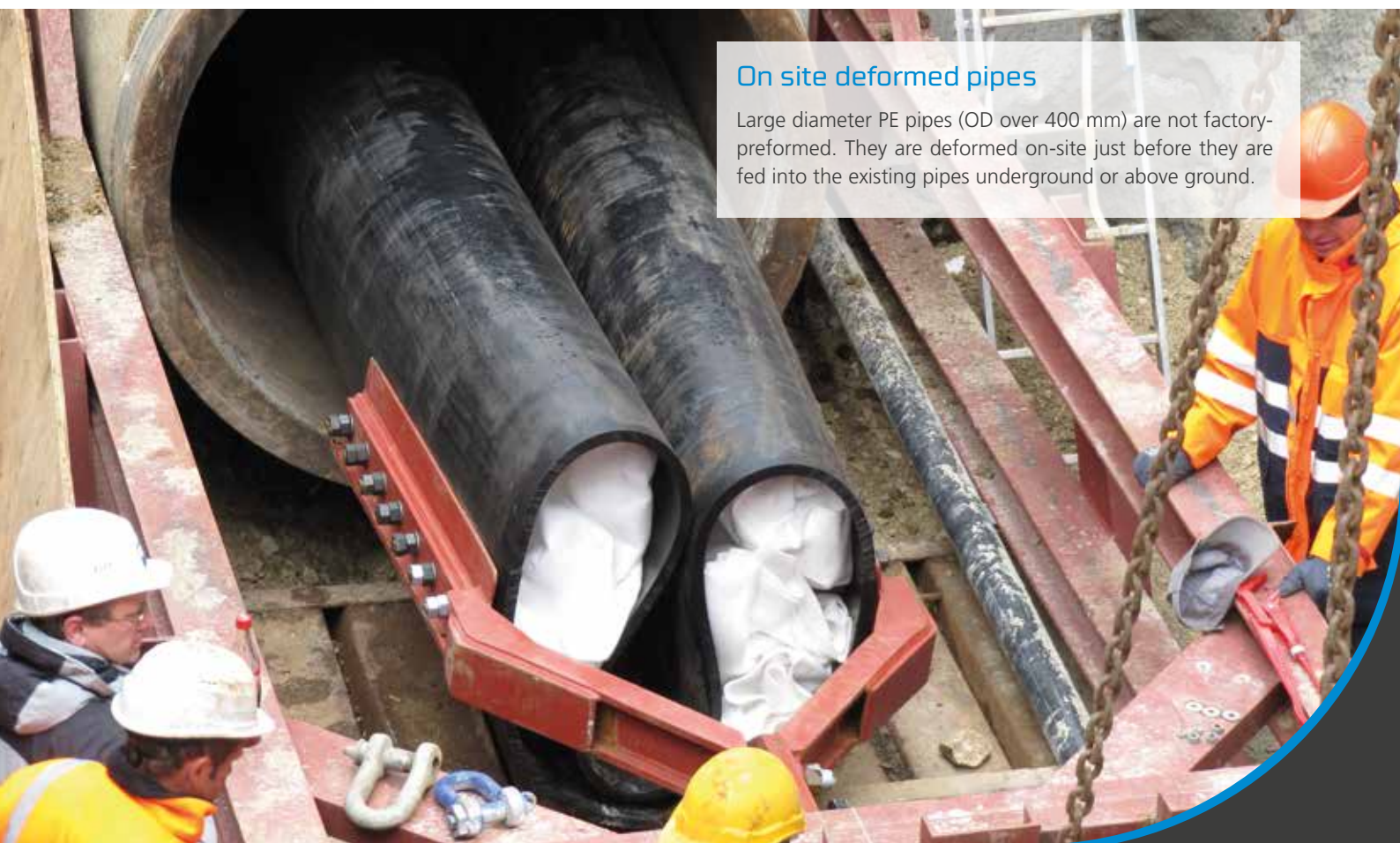
Ready-to-use coils

The AGRU SureFIT liner is delivered in coils to site. This way, the flexible liner is introduced into openings like manholes or sewers without any digging work at site.



On site deformed pipes

Large diameter PE pipes (OD over 400 mm) are not factory-preformed. They are deformed on-site just before they are fed into the existing pipes underground or above ground.



Renovation with thermoplastic lining

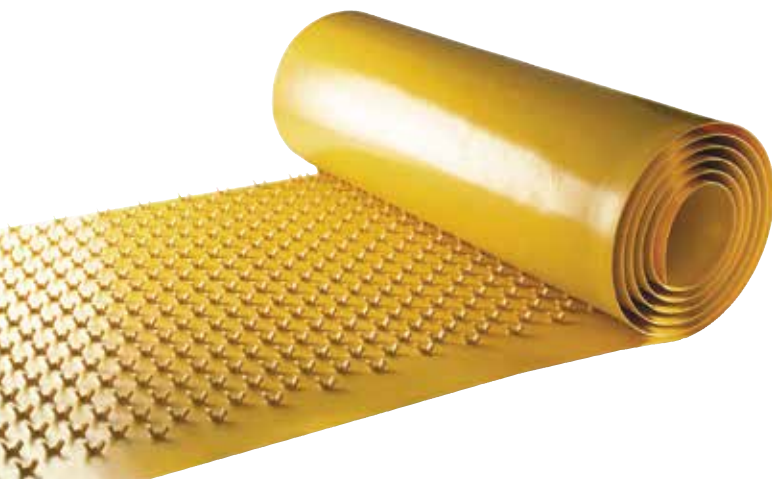


The right solution for large diameters

Concrete protective liners are generally used for rehabilitations as well as new installations of tunnel systems with diameters larger than one metre. Concrete protective liners are used for lining concrete pipes and steel pipes, which take up the mechanical loads. The lining of such pipes combines the good mechanical properties of concrete and steel with those of the thermoplastic material (PE, PP, PVDF and ECTFE). In the end a permanently leak-proof, non-corroding composite pipe with excellent abrasion and chemical resistance is created. With concrete protective liners various pipe cross-section shapes can be lined without difficulty.

The Ultra Grip principle

The unique and patented form of the V-shaped anchor studs, which are directly formed onto the liner during the extrusion process, allows safe mechanical anchoring of the concrete protective liner to the concrete. This design guarantees optimal anchoring to the concrete or injector, even though plastic and concrete do have different thermal expansion coefficients. Depending on the project requirements, different materials and liner thicknesses can be used.



Hose relining

The liners, customised for each and every dimension, are drawn from manhole to manhole. The liner is sealed with balloons and water pressure is added applied as an internal support for the grouting process. Afterwards special mortar is injected.



Special colours upon customer request

Depending on the order quantity, Ultra Grip concrete protective liners can also be manufactured in custom colours. This way, large sewer channels can be divided into uniquely coloured sections for easy CTV inspection and damage detection.



ULTRA GRIP PRODUCT RANGE

Material	thicknesses*
PE black/white	2.0 mm – 12.0 mm
PE yellow	2.0 mm – 12.0 mm
PE black	2.0 mm – 12.0 mm

*Wall thickness depends on the liner width.



Segment relining

Short pre-fabricated liner sections are fixed to a formwork system and inserted into the channel. Similar to hose relining, the annular space between the liner and the old pipe is filled with highly flowable injection mortar. Finally the joints gaps are welded together by means of extrusion welding.

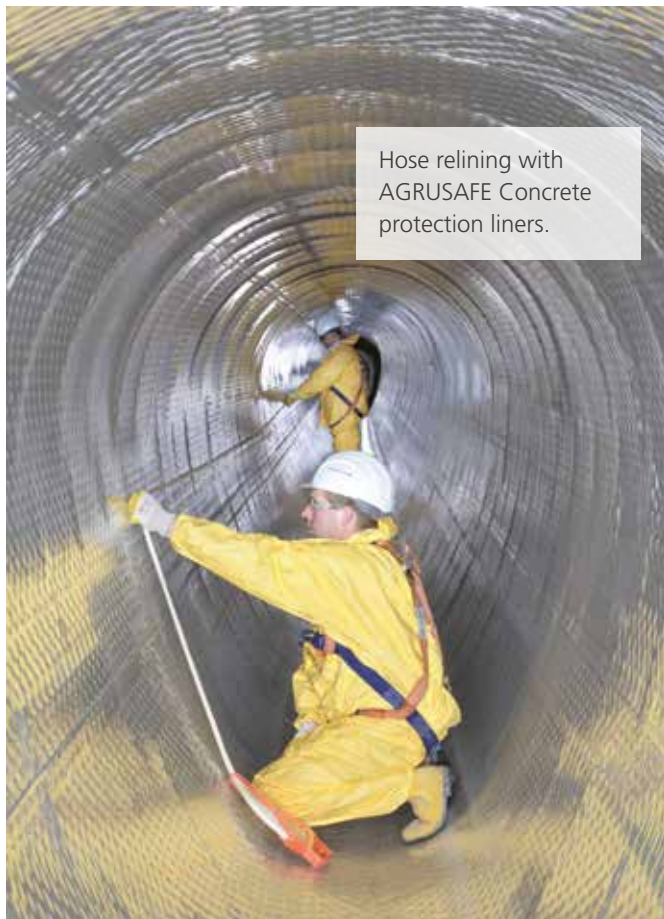


Close-fit lining with on site deformed AGRU XXL HDPE pipe.

References



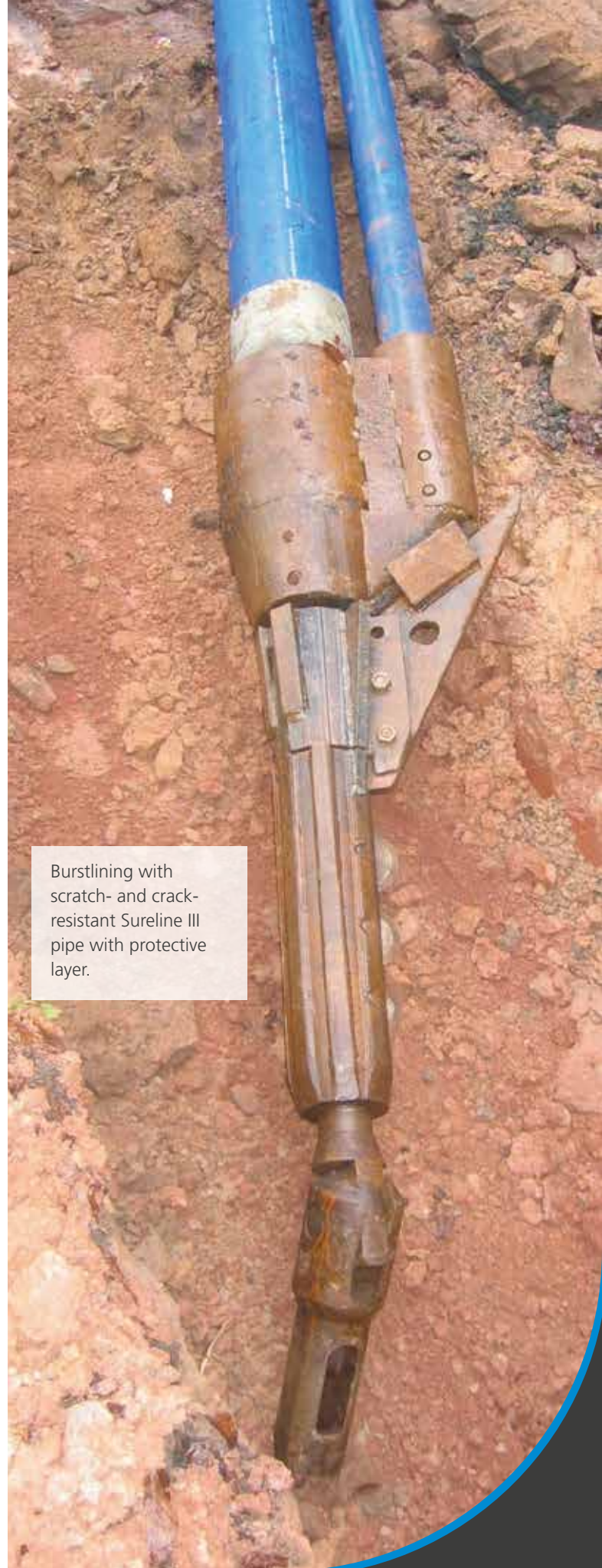
Swagelining using AGRU XXL HDPE pipes.



Hose relining with AGRUSAFE Concrete protection liners.



Relining with memory effect. The AGRU SureFIT liner is delivered preformed as 100 m coils to the job site.



Burstlining with scratch- and crack-resistant Sureline III pipe with protective layer.



The Plastics Experts.

Your distributor

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