

RELINEEUROPE[®]

Alphaliner ::

- GFRP pipe liners
- UV curing technology
- TQM - Total Quality Management



ALPHALINER –

The system makes the difference
Glass-fibre reinforced CIPP liners from RELINEEUROPE for the most stringent demands

RELINEEUROPE®

INSTALLING THE ALPHALINER –

Clean, safe, quick and durable

The trenchless rehabilitation with seamless glass-fibre reinforced CIPP liners and innovative light curing has proved itself to be a secure and economic process in practice. With the Alphaliner technology RELINEEUROPE is offering a complete rehabilitation system with optimally co-ordinated components. Sewer sections rehabilitated with Alphaliner can expect a service life of at least 50 years, allowing for a lengthy depreciation period.

Alphaliner-technology

RELINEEUROPE's modern Alphaliner technology is not only characterised by its extremely fast curing times but is also fast and particularly economic to handle on site. With Alphaliner we are offering the latest generation of CIPP liners with a clearly defined wear-resistant layer that has particular benefits in terms of design and material composition compared with conventional liner technologies. Alphaliner's application range encompasses drainage pipes in nominal widths of between DN150 and DN1300. Special products can also be supplied in all dimensions.

UV curing technology

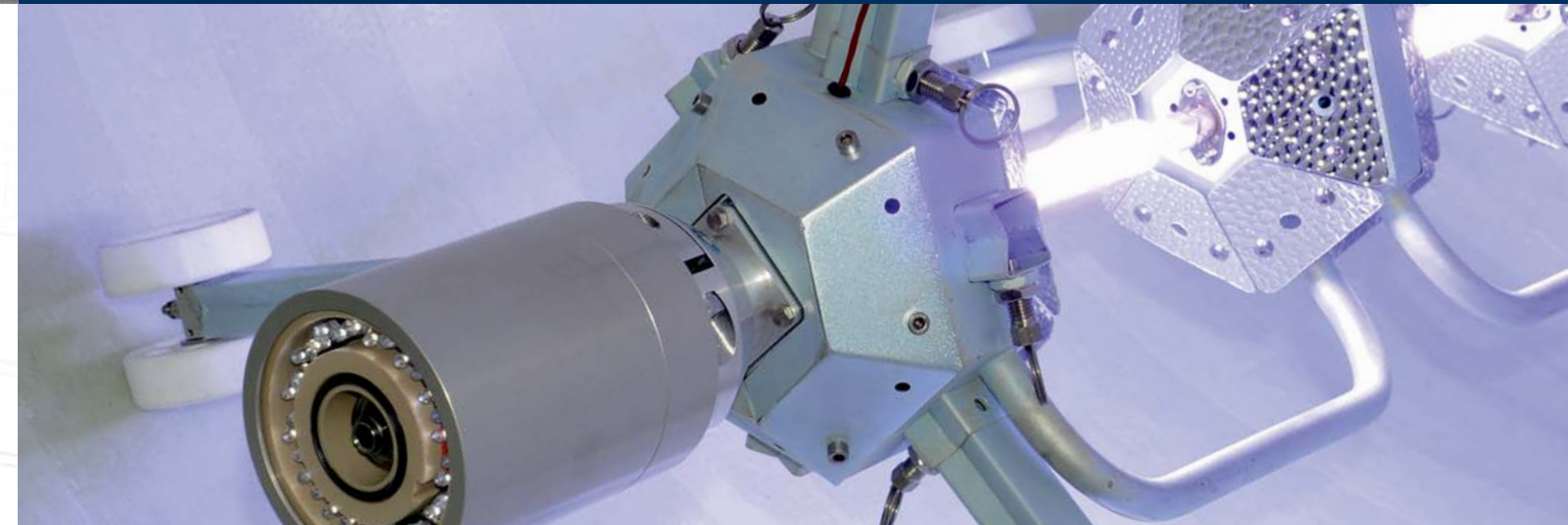
The UV curing technology developed and produced by RELINEEUROPE caters for Alphaliner exactly, making optimal and sustainable quality possible in the end product. A great variety of technical versions, including suitable installation equipment offers optimal solutions for circular, egg-shaped, rectangular and special profiles.

Service & consulting

Users of Alphaliner technology from RELINEEUROPE are able to build on comprehensive services and competent advice. The service offer extends from advice with project planning to user training right through to support with installing the CIPP liner.

TQM - Total Quality Management

We give quality top priority. For uncompromisingly good results we rely on TQM – Total Quality Management – unique in sewer rehabilitation. Liner production and installation process, application technology and accessories, as well as our professional consulting and service are subject to rigorous quality control of the highest standards.

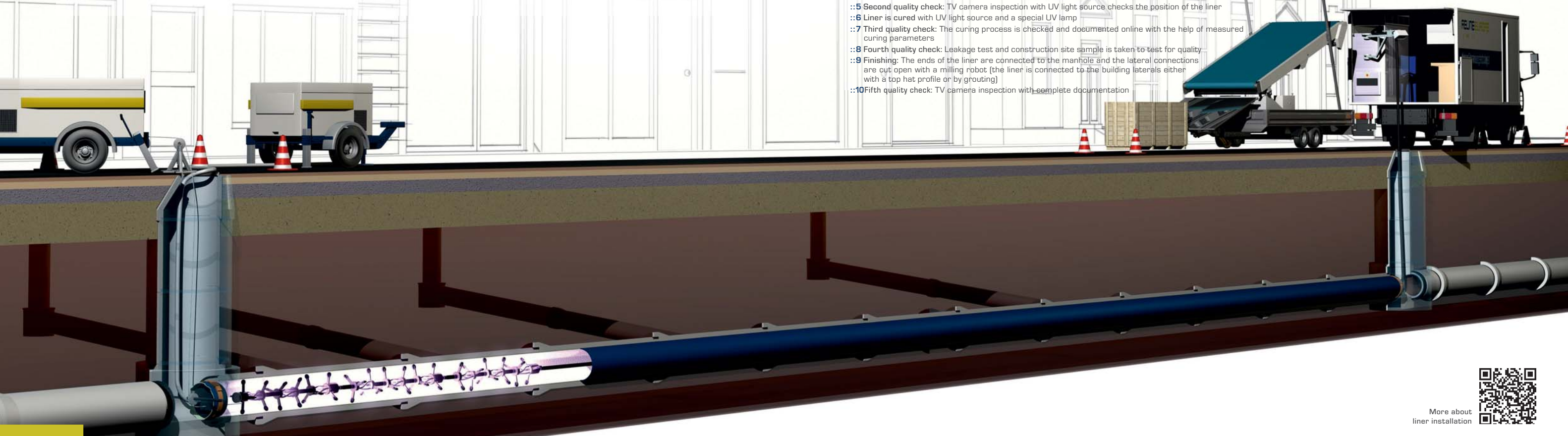


Uncomplicated handling on site and rapid completion of all work on site characterise the installation and curing of the Alphaliner. Up to 300 metres of sewer pipe can be rehabilitated in a working day, enabling the sewer to be taken back into service in the shortest possible time. This reduces traffic disruptions, construction work noise and dirt considerably.

A sewer section rehabilitated with Alphaliner is designed for a 50-year service life. Fast curing times of the liner for rapid completion of projects.
Rehabilitation with Alphaliner is fast and durable. Up to 300 m of sewer pipe can be rehabilitated in a working day.

There are ten steps to rehabilitation using an Alphaliner:

- ::1 Prepare the sewer to be rehabilitated by cleaning and possibly milling
- ::2 First Quality Check: The condition of the sewer pipe is recorded by an inspection with a TV camera
- ::3 Preparation for installation: A protective foil is drawn through into the sewer to protect the Alphaliner's outer skin
- ::4 Drawing in the liner: The Alphaliner is drawn through the manhole into the sewer pipe to be rehabilitated using a winch and possibly also a conveyor belt
- ::5 Second quality check: TV camera inspection with UV light source checks the position of the liner
- ::6 Liner is cured with UV light source and a special UV lamp
- ::7 Third quality check: The curing process is checked and documented online with the help of measured curing parameters
- ::8 Fourth quality check: Leakage test and construction site sample is taken to test for quality
- ::9 Finishing: The ends of the liner are connected to the manhole and the lateral connections are cut open with a milling robot (the liner is connected to the building laterals either with a top hat profile or by grouting)
- ::10 Fifth quality check: TV camera inspection with complete documentation



More about
liner installation



ALPHALINER - High quality design for the best mechanical properties

RELINEEUROPE®

The design of the Alphaliner Designed for rehabilitations with a long service life

Seamless construction is the hallmark of the Alphaliner. This guarantees maximum stability without any weak joints. The even expansion across the breadth of the liner ensures a positive fit inside the old pipe.

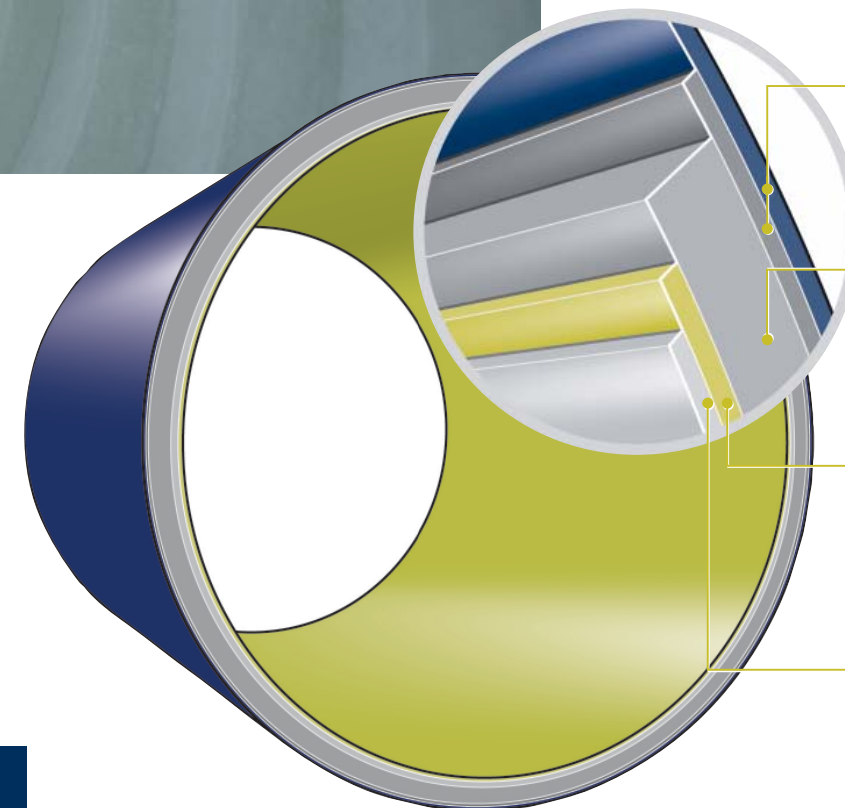


More about the liner design

The Alphaliner's design is based on the highest quality materials, special ECR glass fibre and a resin system with polyester resin (UP) or vinyl ester resin (VE) that is optimised for UV light curing. The technology allows rapid curing with innovative UV light curing and a durable, quality end product.

Technically the best version for any application

With the Alphaliner 500, Alphaliner 1200 and Alphaliner 1500 RELINEEUROPE offers three alternatives of liner that differ in terms of light transparency for better curing and in glass fibre orientation and therefore in terms of their mechanical characteristics. You can always choose the optimal version depending on the structural requirements of the rehabilitation.

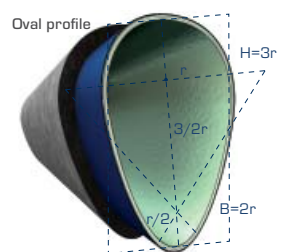
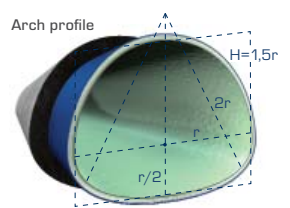
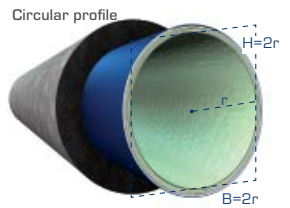


External foils with styrene and UV protection
Particularly stable multiple-layer composite foil, that prevents damage to the glass fibre reinforced material, contact with water and premature curing on site due to sunlight. The bandage effect supports the even expansion of the liner.

Glass fibre reinforcement (GFRP) for maximum durability
ECR glass fibre layers with polyester resin for municipal waste water or vinyl ester resin for industrial waste water. The filament wound layers are immersed very evenly for maximum durability to form an optimised system for rapid curing with UV light.

Wear-resistant layer/chemical-protective layer
(approx. 0.5 mm) based on DWA-A 143-3 and DIN EN ISO 11296-4 RELINEEUROPE's Alphaliner is the first CIPP liner system to be fitted with a specifically thick wear-resistant and chemical protective layer. This gives the system maximum wear and chemical resistance and the ability to withstand flushing.

Inner foil with styrene barrier
3-layer composite foil as an installation aid. This is removed after curing and its excellent transparency facilitates UV light curing.



Constant quality from the factory – liner production

The Alphaliner is manufactured in continuous uninterrupted lengths of up to 300 metres. Before the production of the actual liner, layers of glass fibre, specially developed for liner construction, are immersed very evenly in a polyester or vinyl ester resin and the necessary auxiliary agents in a special impregnation process.

Good reproducibility and consistently high quality are hallmarks of the manufacturing process. The production processes are monitored with a systematic quality control.

All material and production process controls are saved and documented in a liner database. Production staff and management are shown any deviations online.



Mechanical characteristics	Alphaliner500		Alphaliner1200		Alphaliner1500	
	ISO 178	EN 1228	ISO 178	EN 1228	ISO 178	EN 1228
Short-term E-modulus, 5% quantile	8400 N/mm ²	9500 N/mm ²	11400 N/mm ²	12000 N/mm ²	11400 N/mm ²	12000 N/mm ²
Long-term E-modulus, 5% quantile	5250 N/mm ²	5937 N/mm ²	8571 N/mm ²	9022 N/mm ²	8571 N/mm ²	9022 N/mm ²
Short-term flexural tension, 5% quantile	180 N/mm ²		210 N/mm ²		210 N/mm ²	
Long-term flexural tension, 5% quantile	112 N/mm ²		157 N/mm ²		157 N/mm ²	
Reduction ratios for 50 years' service life A1	1,60		1,33		1,33	
Single length	up to 300 m		up to 300 m		up to 300 m	
Wall thicknesses	3 - 28 mm		3 - 28 mm		3 - 28 mm	
Classification to DWA-M 144-3	12		19		19	



The Alphaliner is packed and protected against UV light and can be stored for months without any loss of quality.

The design of the Alphaliner is determined by the optimally co-ordinated components: The basis for quality and long service life



Longest Alphaliner: The longest Alphaliner to date has been installed in La Saussaz (F) at 330 m in a single length. The old pipe to be rehabilitated had a diameter of DN 400.

RELINNEUROPE SERVICES

You can build on this service



Alphaliner – Tried-and-tested technology for large profiles

Alphaliner technology has proven its worth, particularly in the rehabilitation of large sewer pipes. It is possible to see the benefits of the liner's design and the RELINNEUROPE's UV curing technology perfectly optimised for the Alphaliner with very fast curing times, particularly in terms of efficiency.



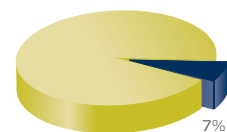
Production, logistics and handling on site must be optimally co-ordinated when rehabilitating large profiles. Alternative logistics concepts, for example, using returnable containers, have already been implemented to transport liners weighing several tonnes.

On site, the large liners are drawn evenly into the sewer pipe using mobile transport conveyors. The constant curing performance of RELINNEUROPE's UV light technology with a curing performance of up to 12,000 W enables rapid and therefore economic curing on site.

The recently developed Alphaliner 1500 enables liners with wall thicknesses greater than 10 mm to be cured with pure light curing. Therefore, liners with combination curing that have to be permanently stored in cooled conditions only have to be used in exceptional circumstances. This greatly simplifies logistics, making it more flexible and cost effective.



More about the technology



RELINNEUROPE: Share of large profile of total production

- Total volume DN150 - DN800
- Total volume > DN800

Based on RELINNEUROPE's understanding of quality, an Alphaliner is only "ready" once it has been installed on site. Users of our process are therefore able to rely on a wide range of services to ensure optimal quality of the rehabilitation project.

RELINNEUROPE only works together with authorised partners in the rehabilitation sector. This is a crucial requirement for high quality that is necessary for long-term use of the rehabilitated pipelines.

RELINNEUROPE Services offers:

:: RELINNEUROPE training center

At our RELINNEUROPE training centre we train our customers' staff in the various aspects of application technology and how to carry out rehabilitation projects. To start, there is a basic training for new trade staff, through to advanced training for experienced foremen right up to management topics for (budding) managers.

:: Technical applications support

Our application engineers are specialists in pipe rehabilitation using Alphaliner and RELINNEUROPE UV equipment and have an outstanding training record. On-site support ensures that future developments and practical experience is made available to each partner company in the shortest possible time and the quality product Alphaliner is always installed at the highest level. In addition, our application engineers are able to support teams of users when handling special projects.

:: Organisation advice/consulting

We offer professional consulting to companies in how to build up and develop an organisation to carry out rehabilitation projects. Efficient structures ensure sustainable added value from their entrepreneurial commitment.

:: RE.DESK

RE.DESK offers our partners a web-based information platform with procedural manuals, forms, structural calculations, equipment lists and a great deal of further information on materials and technology.

More about RELINNEUROPE Services



RELINNEUROPE Services offers training courses directly to the customer and in-house.



RELINNEUROPE EQUIPMENT - tailored specifically to Alphaliner

RELINNEUROPE®



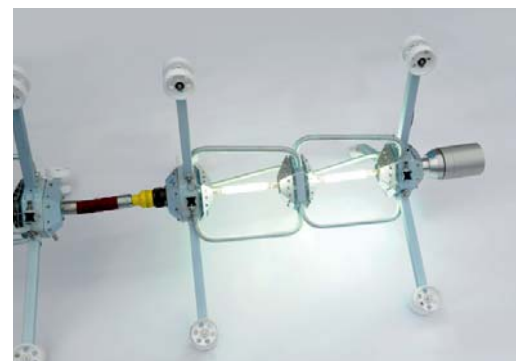
RELINNEUROPE offers the users equipment for successful rehabilitation projects that caters specifically for Alphaliner. The innovative UV technology is developed and produced within our own factory. The system technology has been developed from practice for use in practice. This is demonstrated by many intelligent innovations. For example, UV curing systems from RELINNEUROPE have the maximum curing performance on the market and are equipped with permanent intelligent performance monitoring that automatically compensates for the reduction in power of individual lamps.

UV curing systems from RELINNEUROPE Three versions for individual requirements

UV systems from RELINNEUROPE

A finely graduated use of power from the UV lamps used from 400 to 2000 W enables the UV curing systems from RELINNEUROPE to adapt most effectively to the sewer's particular requirements, enabling extremely fast curing speeds:

- :: UV lamps with 400 W, 1000 W or 2000 W performance
Unique: lamps that can be switched in stages 400 W and above
- :: Permanent monitoring of the UV lamps used
Unique: any reduction in power of the individual UV lamps is compensated for automatically
- :: Professional control, monitoring, recording and documentation
- :: Light-source geometry and the number of UV lamps is adjusted for the liner diameter
- :: Curing speeds based on diameter and wall thickness
- :: UV lamps best suited for the UV light initiator used in the resin system



REE 400 :: DN150 - 500

This mobile UV curing system is particularly good for companies looking to rehabilitate using light-cured CIPP liners or who only carry out rehabilitation projects occasionally. The system is designed for curing liners with dimensions DN150 to DN500 and offers a cable length of 150 metres and a curing performance of 9 x 400 W.

- The system is available in the version:
- :: Mobile (portable components)

REE 2000 :: DN150 - 1300

The REE 2000 system offers the world's most high-performance UV curing technology for rehabilitating all diameters up to DN1300. With a lamp output up to 6 x 2,000 W, this system is particularly suitable for the economic rehabilitation of large diameters with high wall thicknesses.

- The system is available in two versions:
- :: Mobile (portable components)
- :: Professional (truck installation)

REE 1000 :: DN150 - 1300

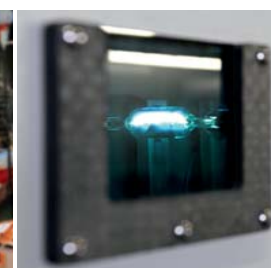
The REE 1000 system offers optimum UV curing technology to rehabilitate all diameters up to DN1300 with modern and high-performance UV technology. With a cable length of up to 300 metres and a curing power of up to 9 x 1,000 W, even large reaches can be rehabilitated quickly and economically.

- The system is available in two versions:
- :: Mobile (portable components)
- :: Professional (truck installation)

More about
RELINNEUROPE
equipment



The innovative design of the light radiators ensures that all areas of the liner are fully and evenly cured by the UV lamps.



TQM - QUALITY ASSURANCE

Quality assurance has top priority



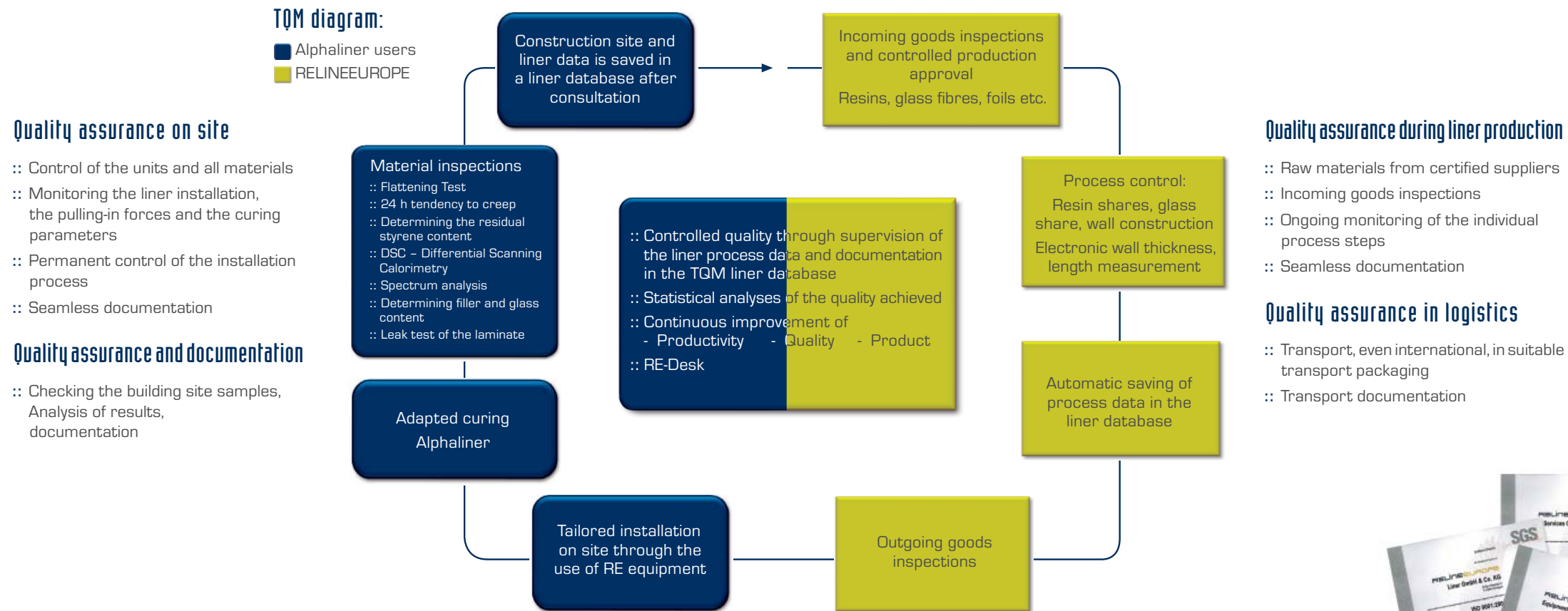
TQM – Total Quality Management

TQM from RELINEEUROPE encompasses the controlled, managed quality assurance across the entire value-added chain – from the raw material through to the fully cured Alphaliner on site and, for the first time, documents all the quality process data in a special liner quality database.

Regular quality reports, which are also used by RELINEEUROPE partners document the quality results.

TQM diagram:

- Alphaliner users
- RELINEEUROPE



Quality assurance on site

- :: Control of the units and all materials
- :: Monitoring the liner installation, the pulling-in forces and the curing parameters
- :: Permanent control of the installation process
- :: Seamless documentation

Quality assurance and documentation

- :: Checking the building site samples, Analysis of results, documentation

Quality assurance during liner production

- :: Raw materials from certified suppliers
- :: Incoming goods inspections
- :: Ongoing monitoring of the individual process steps
- :: Seamless documentation

Quality assurance in logistics

- :: Transport, even international, in suitable transport packaging
- :: Transport documentation



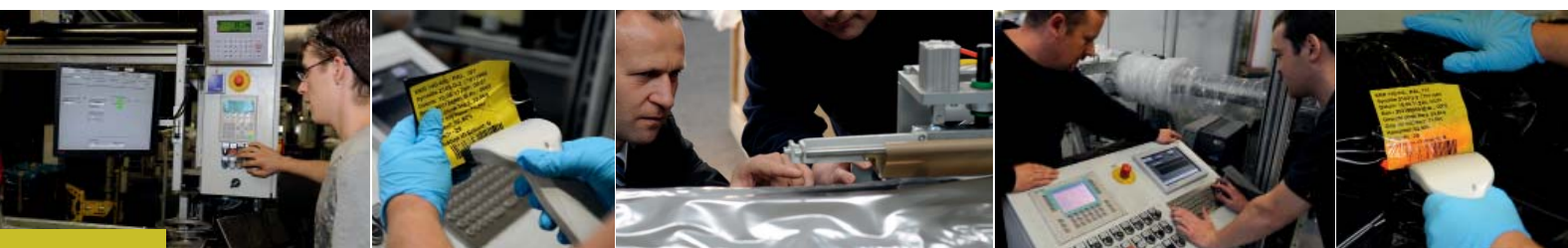
The Alphaliner process has national approvals:

- :: DIN EN ISO 9001:2008 AT09/0303
- :: Germany:
 - DIBt certification Z-42.3-447
 - Güteschutz Kanalbau e.V. RAL quality mark for sewer construction S27.32
- :: Switzerland:
 - QUik approval No.2011-09-5623-05/06
- :: France:
 - CSTB 17/11-232
- :: Denmark:
 - Danish control ordinance CVR-no. 19 34 20 85



All departments within RELINEEUROPE have introduced a quality management system certified to ISO 9001:2008.

Total Quality Management from RELINEEUROPE: Quality assurance in manufacture, logistics and on the construction site, including inspection and documentation.



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About

RELINEEUROPE®

RELINEEUROPE is a corporate group founded in 2009 and has since established itself as an international systems provider for companies in the pipe rehabilitation sector.

RELINEEUROPE concentrates on modern, trenchless pipe rehabilitation technologies for the application areas: drainage and the rehabilitation of residential connections, together with a selection of pressured pipeline systems.

The focus of the Group is always the overall sewer system. With innovative solutions, which have been developed from practical experience, we make a contribution towards economic and sustainable rehabilitation.

Technology & Services for trenchless pipe rehabilitation

:: Trenchless pipe rehabilitation technologies

:: Equipment

:: Services

We are available for you worldwide!

