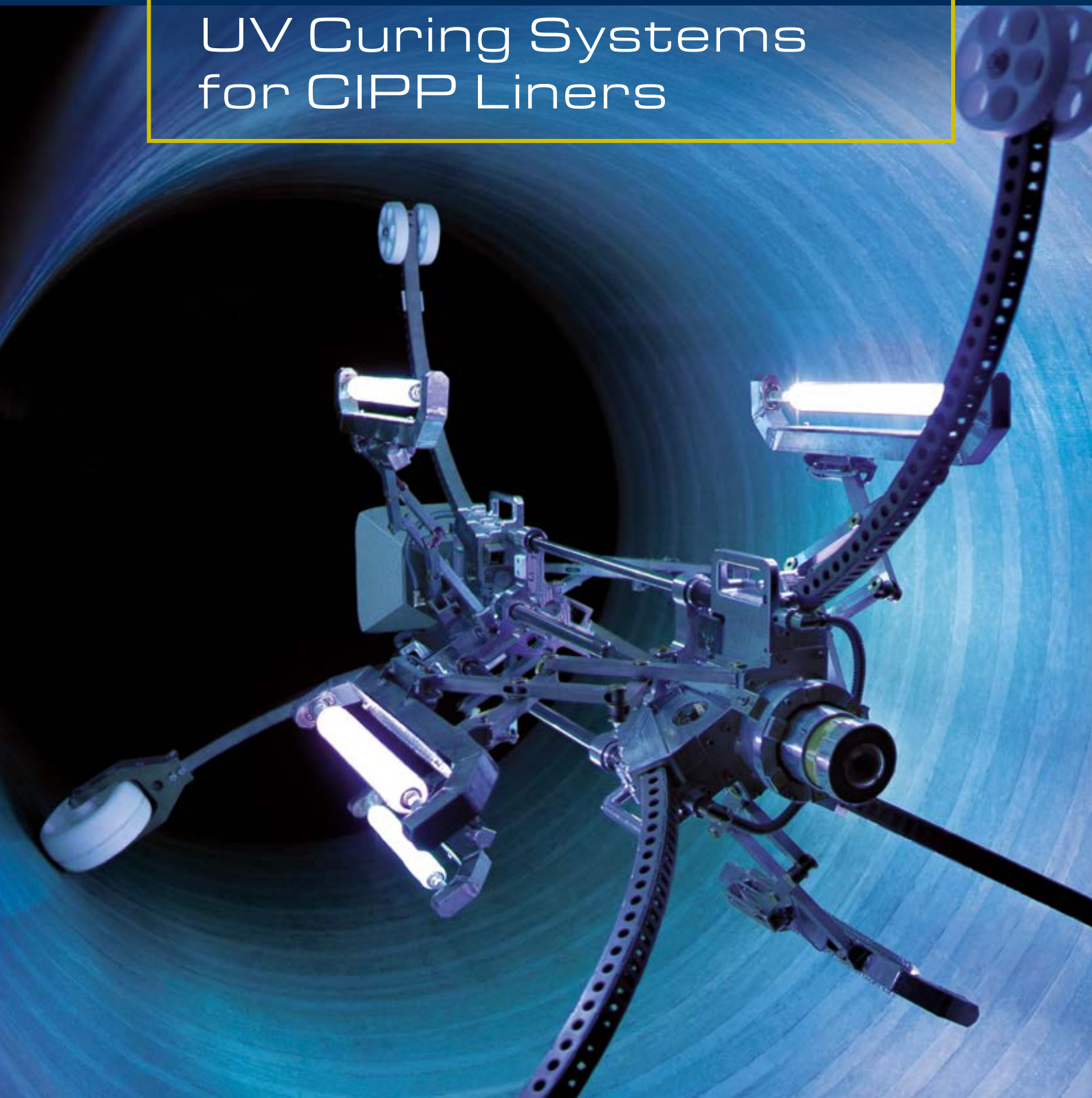


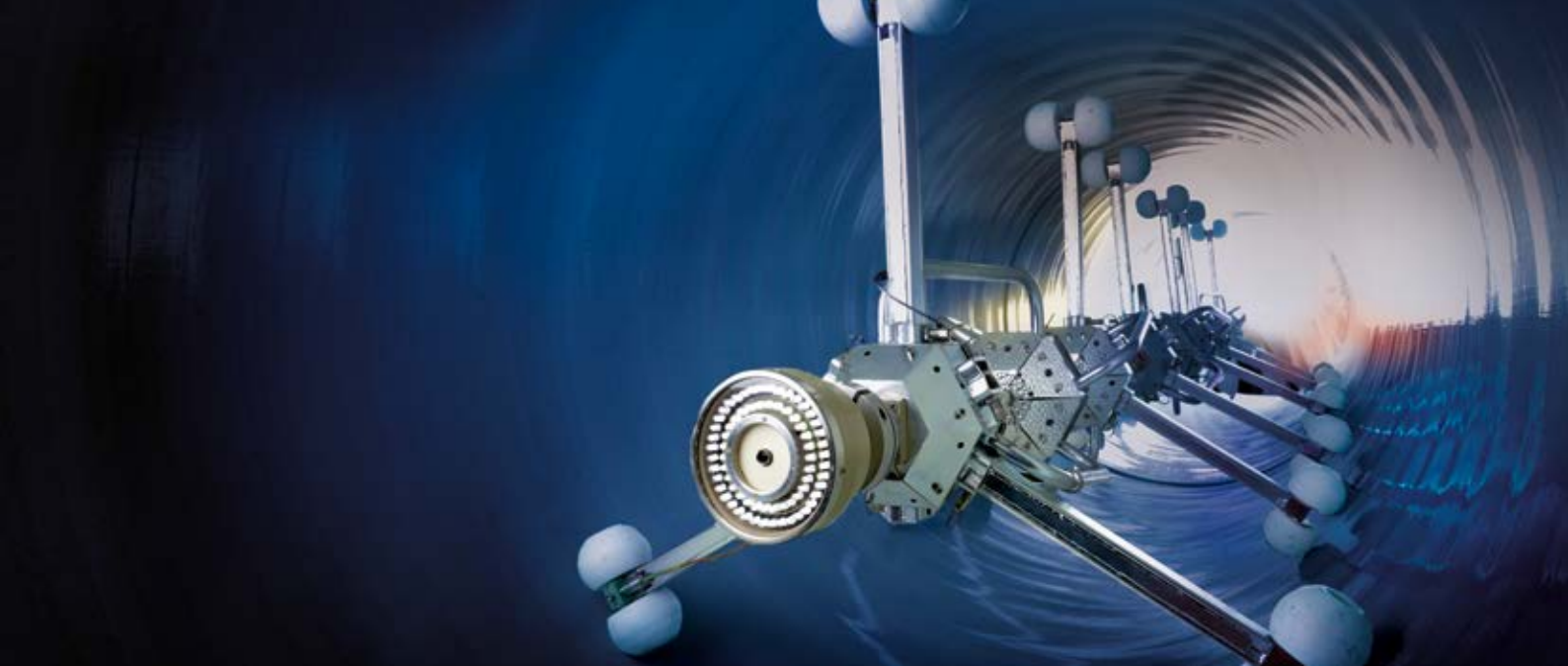
High Performance

UV Curing Systems
for CIPP Liners



Overview Equipment

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RELINEEUROPE's UV Technologies The Perfect Match for GRP Liner Systems

The success of a rehabilitation project with glass fiber reinforced CIPP liners largely depends on the technologies employed. RELINEEUROPE and its Alphaliner are leading the way in the field of trenchless sewer rehabilitation using UV-light curing. RELINEEUROPE is the only manufacturer of GRP liners who also develops and produces **complete systems and equipment**, from **UV curing systems** all the way to turn-key configuration and complete furnishing of **rehabilitation and service vehicles**.

RELINEEUROPE's UV curing systems distinguish themselves through consistent and highest performance, **fastest curing times, best-possible supervision, and documentation**. The power utilized by each bulb in the UV curing systems can be adjusted in steps between 300 W and 4,000 W, depending on the system in use. This enables an **exact adjustment of the light output** to match each CIPP liner and achieve the fastest possible **curing speeds**.

UNPARALLELED: Strongest bulb power also available for large diameters and wall strengths

For the UV curing of GRP liners, RELINEEUROPE offers light sources with the greatest power output. These innovative UV bulbs, with up to 24,000 W total power output, allow you to quickly and safely cure hose liners with very large dimensions (up to DN 1900) and wall thickness (up to 20.5 mm without peroxides and 20 mm with peroxides) using nothing but UV light.

INNOVATIVE: 100 % Electrical Power

In RELINEEUROPE's curing systems, the power output of the bulbs in use is permanently monitored and a consistent and reliable performance is ensured by an electronic ballast unit. Subsequently, 100 % electric power is always available throughout the entire service life of the system, making certain that curing takes place thoroughly and at high speeds.





REE2000

The UV System with up to 2,000 Watt Power per Bulb

The REE2000 is a very powerful UV curing system which can be employed flexibly in a diverse range of settings. It is available in several different designs with a variety of light sources and various cable lengths. We recommend using it for liners with a diameter ranging from **DN 150 to DN 1200**.

Standard Light Trains:

- 9 x 400 W – 600 W for DN 150 – DN 600 switchable to 400 W, 500 W, 600 W
- 6 x 1,000 W – 2,000 W for DN 600 – DN 1200 switchable to 1,000 W, 1,200 W, 1,500 W, 2,000 W

The REE2000 is available either in a **mobile** version (REE2000 mobile) or as a **permanent system** installed in a box truck (REE2000 professional). The mobile version offers the greatest degree for flexibility. With its help, even hard to access job sites can easily be reached.

REE2000 Versions:

- **REE2000 mobile**
cable length 150 m: bulb output of up to 2,000 W
- **REE2000 mobile**
cable length 200 m: bulb output of up to 1,500 W
- **REE2000 mobile**
cable length 250 m: bulb output of up to 1,000 W
- **REE2000 professional**
cable length 300 m: bulb output of up to 2,000 W

REE2000 – Unique Features:

- Easy-to-operate system with a touchscreen monitor; in the case of the REE2000 professional: additional operating panel
- Visualization and recording of all curing-related information as well as of the camera image
- Curing data is either stored on a USB drive, digitally transmitted, or printed out immediately
- Remote diagnosis and maintenance (TeamViewer)
- Optional integration of a TV inspection camera and a leak detector device (only available for REE2000 professional)







REE4000

The UV System with up to 4,000 Watt Power per Bulb

RELINNEUROPE's REE4000 is the most powerful UV curing technology currently available on the market. The system offers a maximum light power out-put of 6 x 4,000 W. With its electronic assistance and documentation systems, it offers the **highest possible levels of reliability** and enables an **autonomous curing process**.

The REE4000 can be used for diameters between **DN 150 and DN 1900**. Particularly in the case of large diameters and thick wall strengths, the system offers unparalleled benefits thanks to its innovative UV bulb technology.

Standard Light Trains:

- 10 x 300 W – 600 W for DN 150 – DN 600
- 6 x 1,000 W – 3,000 W for DN 600 – DN 1200
- 6 x 2,000 W – 4,000 W for DN 1200 – DN 1900

The REE4000 is available either in a **mobile** version, or as a **permanent system** installed in a box truck. The **REE4000 mobile** has a cable drum with an integrated operating panel for cable lengths of up to 200 meters. The **REE4000 professional** comes equipped with an extralong curing cable of 350 meters length.

REE4000 – Unique Features:

- Autonomous curing process with the help of innovative, assistant-based curing
- Specialized REE4000 control and curing software
- QR code scanner to import curing-related data (job site data, initial speed and max. pulling rate, interior pressure)
- Swivel front camera which allows you to inspect the entire pipe, especially those with large diameters
- Sensor technology for the automatic start-stop-system and rear camera within the curing plug
- Automatic emergency switch-off, if the pressure should drop below 50 mbar





REE4000

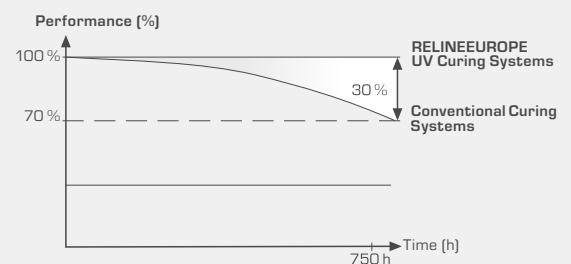
The Only UV Curing System in the World which Works Autonomously

The REE4000 is the most modern and sophisticated technology available. Cutting-edge developments from the fields of automation and digitalization are constantly being incorporated into the design of our light sources and operating systems. With the REE4000, RELINEEUROPE has developed the first and only system which can control the **curing process almost completely autonomously**, providing assistance to operators and substantially increasing safety and security during rehabilitation.

These features
make the
REE4000 so unique:

Automatic Compensation for Drops in Electrical Power

The REE4000 guarantees that bulbs always provide 100% **electric power output**. Electronic ballast units ensure that any potential drops in power are registered and immediately compensated for. By comparison: Conventional systems lose up to 30% of their electric performance over the course of the total curing process.



Highest-Possible Bulb Performance to Cure Wall Thicknesses of up to 20.5 mm Using Only UV Light

This innovative UV bulb technology, with up to 6 x 4,000 W, enables a quick curing of even the largest diameters and greatest wall thicknesses, using nothing but UV light. The power output of the bulbs can easily be adjusted stepless to achieve the best possible curing result.



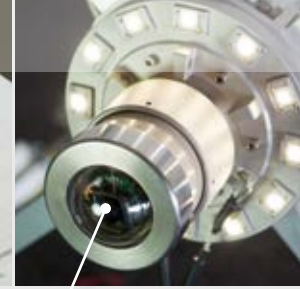


Ultrasound Sensors

Rear camera



QR code scanner



Swivel camera



Digital Curing Assistance Systems for Utmost Reliability and Ease of Use

Integrated QR Code Scanner and Automated Processing of Curing Parameters

The integrated QR code scanner is used to import all relevant data from the delivery note. Based on this data, the system parameters such as the job site information, initial speed and max. pulling speed as well as the required interior pressure are automatically calibrated.

Sensor Technology for Autonomous Control

Innovative sensors transmit all relevant curing parameters and autonomously give impulses to automatically start and stop the curing process. In addition, these sensors also measure a variety of other relevant parameters, such as the temperature and reaction in the resin. Thereby, the ideal curing speed can be regulated.

Innovative Camera Systems

The REE4000 is equipped with a unique front camera with 360-degree unlimited rotation and a rear camera located at the light source. The images recorded by these cameras are transmitted directly to the split-screen monitor, which is attached to the operating panel. This precise camera footage from different angles, allows the operator to stay in charge and perfectly supervise and monitor the rehabilitation process.

Monitoring the Curing Process Online

A record of the entire curing process is automatically kept. This detailed record provides an overview of all parameters relevant to the curing process such as speed, length, pressure, reaction temperature, ignition of the UV bulbs and general job site data.





Complete Configuration of UV Rehabilitation Vehicles

RELINEEUROPE also provides the configuration of complete trucks with incorporated UV rehabilitation systems. Tailormade to our customers' individual specifications, these vehicles are turn-key solutions which are ready-to-use at the job site and include all tools needed.

These vehicles are set up with state-of-the-art UV curing technology (mobile or professional) and come fully furnished with all power units, supplies and equipment required for job site deployment.

- Turn-key UV rehabilitation vehicles
- Operating panel, cable drum, and design of installations and furnishings within the truck
- Individualized configuration made to customers' specifications (include a workbench, rest area, etc.)





Service Vehicles for Efficient Job site Logistics

Typically, in addition to the UV curing truck, a second service vehicle will be deployed to the job site.

RELINEEUROPE also offers a turn-key configuration for the entire service vehicle. It is designed to fulfill all individual customer needs and may include a power generator, compressor, blower and any other accessories needed.

The service vehicles can be equipped with their own power and air supply units as to not be dependent on the curing system used at the job site. They provide sufficient storage space for comprehensive job site supplies, such as sealing plugs, pumps, traffic signs, and anything else which may be needed at the job site.





Conveyor Belt for up to DN 1200



Conveyor Belt for up to DN 1900

Equipment for Trenchless Sewer Rehabilitation

Conveyor Belts with Folding Devices

The newest conveyor belts with an integrated folding device make the installation of hose liners even easier. With their help, especially liners with large diameters can be inserted into the manhole very safely and without damaging the material.

Conveyor Belt with Folding Device up to DN 1200

- Overall dimensions:
6.40 m long, 2.20 m wide, 1.80 m high
- Total weight 3.1 tons
- Tandem axle trailer with overrun brake
- Load-bearing capacity of up to 100 kg per meter
- Height-adjustable hitches

Conveyor Belt with Folding Device up to DN 1800

- Overall dimensions:
5.80 m long, 2.48 m wide, 1.90 m high
- The conveyor belt is accessible and includes two climbing aids with handrails and lateral platforms
- Load-bearing capacity of up to 250 kg per meter
- Controlled via a wireless radio remote control with display
- Height-adjustable hitches

Innovative Winch

The winch, RELINEEUROPE's in-house development, facilitates the introduction of the light train and the removal of inner liner foil. It has a cable length of up to 350 meters and an electrical connector with 230 V / 16 A.





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Equipment for Trenchless Sewer Rehabilitation

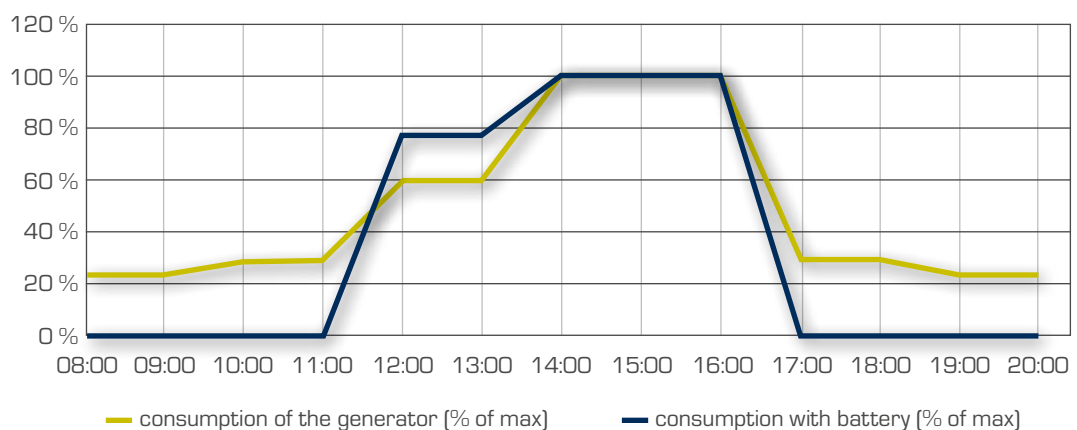
UV-Power Hybrid for REE2000 & REE4000

The electrical power required at the job site may vary greatly. With the UV-Power Hybrid it is possible to run the UV curing system by either using a battery power pack or a diesel generator, as needed. This way, preparation and follow-up work at the job site does not require the uneconomical operation of a generator, thereby noise emissions and negative environmental impacts are substantially reduced. When the power demand is higher, e.g. during the curing process, the generator is automatically switched on and simultaneously recharges the battery power pack.

This also results in further advantages compared to conventional generators:

- Longer service life and later investment in a new replacement generator
- Short payback period
- More pleasant and healthy working environment in and around the UV curing system
- Environmentally friendly and smaller carbon footprint
- Diesel savings and lower CO₂ emissions
- Minimized impact on surrounding residents by reducing exhaust fumes and noise.

Consumption of the generator with Power Hybrid





Service and Maintenance

Complementing its products and systems, RELINEEUROPE also offers comprehensive maintenance and repair services for UV systems and machinery.

On-Site Service at Your Job Site

Our experienced team is available for repairs around the globe. Even at short notice, our installers will assist you directly at your local job site.

Comprehensive Inspection Packages

RELINEEUROPE provides comprehensive inspection packages for UV curing systems. These include an in-depth examination of all electronics, the cable drum, light trains as well as measuring the intensity of light emitted by the UV bulbs. In addition, winches and tail lifts are inspected in compliance with the Accident Prevention Regulations (issued by the German Social Accident Insurance, DGUV). We can also calibrate the pull force measurement device for your winches.

All inspections are conducted in RELINEEUROPE's specialized professional workshop by experienced experts.



You are welcome to request additional information concerning our portfolio of equipment and rental supplies by e-mail to customerservice@relineurope.com.

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RELINE UV-Group

The **RELINE UV-Group** is one of the leading manufacturers of trenchless pipe rehabilitation technologies worldwide. With their validated expertise and many years of experience in the field of UV-curing glass fiber reinforced liner systems, the group can offer its customers tailor-made system solutions: starting with the Alphaliner CIPP liner to UV systems, from all equipment and accessories required to including all-encompassing services.

Customers around the world are using the Alphaliner and RELINE UV equipment for their sewer rehabilitation projects for municipalities and industrial enterprises.

Members of RELINE UV-Group

RELINEEUROPE GmbH, Rohrbach, Germany

RELINEAMERICA LLC, Saltville/Virginia, USA

RELINEJAPAN LLC, Tokyo, Japan

RELINECHINA (Shanghai) Environmental Technology Co., Ltd., Shanghai, China

RELINE UV ASEAN PVT Ltd., New Delhi, India