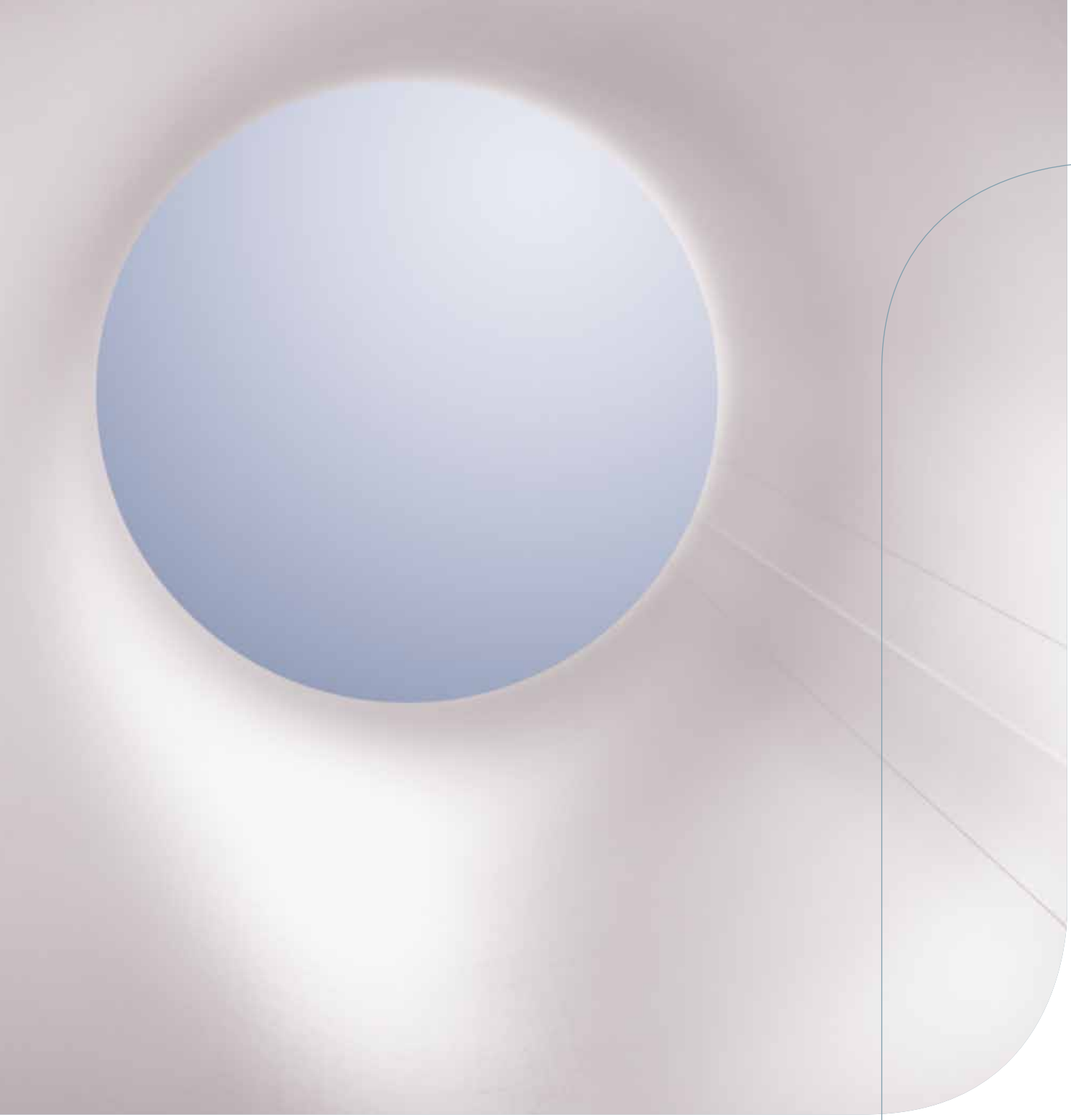
SEWER REHABILITATION: CIPP TECHNOLOGIES

FORMING GLOBAL CONNECTIONS

SPR



SEKISUI SPR´S REHABILITATION TECHNOLOGIES FOR SEWER PIPELINES

SEKISUI SPR is synonymous with the development and implementation of trenchless pipe rehabilitation worldwide. In its activities, SEKISUI SPR uses the two leading key technologies, the spiral wound technology (SPR) and the cured in place pipe technology (CIPP).

SEKISUI SPR's innovative, patented and world renowned cured in place pipe technologies for the rehabilitation of sewer pipes are used the world over for the time and cost efficient means they offer of rehabilitating damaged pipes with minimum impact on the environment.

The pipe rehabilitation process from SEKISUI SPR for depressurised waste water pipes uses a needled felt pipe impregnated with special resins. This is introduced into the old pipe that is to be rehabilitated and thermally cured.

The combination of short installation times and a minimal effect on the environment and infrastructure offers a perfect and cost-effective alternative to conventional pipeline construction. The company's many years of experience in development and manufacturing ensures a long service life for the pipes.

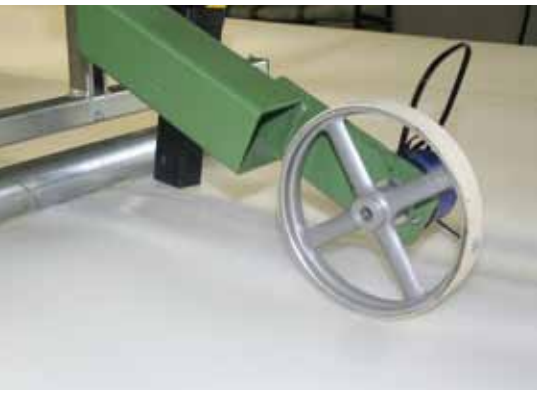
For the CIPP renewal of waste water pipes, SEKISUI SPR offers three product lines:

- PULL-INLINER
- UNILINER™
- NORDIWALL™

	PULL-INLINER	UNILINER™	NORDIWALL™
Medium	Stormwater, sewage and industrial sewage	Stormwater, sewage	Stormwater, sewage
Diameter	150 mm to 1200 mm (6" to 47")	150 mm to 1200 mm (6" to 47")	150 mm to 1000 mm (6" to 40")
Material	Polyester needled felt	Polyester needled felt	Polyester needled felt
Coating	Both sides PE and PU (integrated component)	PE (integrated component acc. to DIBt (German institute for civil engineering)), PP	PE

PULL-INLINER

PULL-INLINER dry pipe



PULL-INLINER production

THE STANDARD FOR ENVIRONMENTALLY-FRIENDLY PIPE LINERS

For over 20 years, the PULL-INLINER has been used all over the world for the quick, economical and trenchless rehabilitation of sewer systems. The PULL-INLINER has set the standard for environmentally-friendly rehabilitation. The outer coating prevents the resin coming into contact with the sewage system and the ground water. This eliminates the risk of irregularities during curing.

The concept of the PULL-INLINER, which is also ideal for the rehabilitation of large diameters and wall thicknesses, consists of the main hose (with integrated PE coating on the outside) and the calibration hose to be inverted with PE or PU coating, both of which are impregnated with synthetic resin.

The PULL-INLINER main hose is a polyester needled felt liner. The calibration hose is impregnated at the factory with the same synthetic resin mixture as the main hose forming a homogenous material combination. The coating with its smooth surface provides excellent flowing characteristics resulting in an increased hydraulic capacity of the new pipe.

Material variants for the felt hose and the resin to be used permit the process to suit special situations, for example special applications in industry with extreme requirements on chemical resistance and thermal stability.

The advantages of the PULL-INLINER at a glance

- Environmentally-friendly technology
- Also ideal for large diameters and wall thicknesses
- Can be used for special profiles
- Coating as an integral component of the liner
- Individual lengths up to 500 m
- Support service offered by experts every step of the way
- Training of personnel
- DIBt approval Z-42.3-335

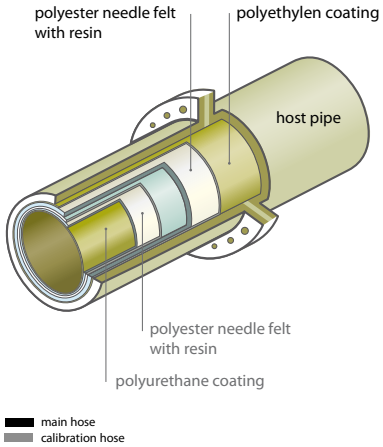
SUPERIOR MATERIAL COMPOSITION

The layering of the PULL-INLINER consists of a homogeneous composition of main and calibration hose, the outer PE coating of the PULL-INLINER and the inner foil PE or PU coating of the calibration hose.

The main hose, generally polyester needled felt hose with a wall thickness of 3 to 33 mm, is manufactured in individual stages until the desired thickness is reached.

The PULL-INLINER has an outer PE coating that forms a water-proof and diffusion-proof separation layer between the liner and the old pipe.

The resin components, the hardener and the aggregates, as well as the resin recipes for impregnation regularly undergo checks, which are subject to quality assurance at SEKISUI SPR.



PULL-INLINER PERFORMANCE DATA

Medium	Stormwater, sewage and industrial sewage
Diameter	100 mm to 1200 mm (6" to 47")
Wall thickness	3 mm to 33 mm (0,1" to 1,2")
Coating	PE-Coating
Calibration hose coating	PE or PU coating
Installation length	Up to 500 m (1600 feet)
Applicable resins	Polyester resin, vinylester resin
Delivery form	Impregnated
Installation process	Combined pull and inversion procedure, water column or inversion drum
Curing process	Water or steam
Special profile	Egg shape

SEKISUI NordiTube Technologies SE – a member of the SEKISUI SPR Europe Group and producer of PULL-INLINER – is certified in accordance with ISO 9001 and 14001.

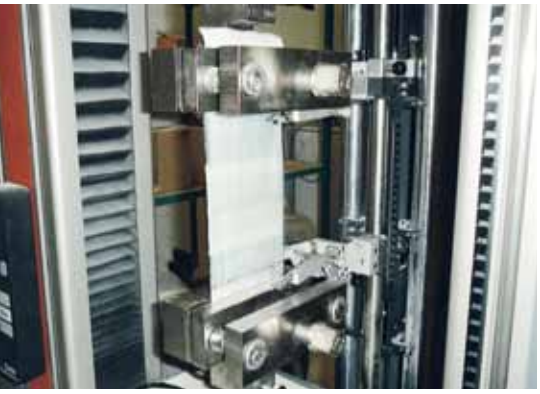
UNILINER™

UNILINER™-rehabilitated pipe

FAST AND FLEXIBLE SEWER RENOVATION

UNILINER™ from SEKISUI SPR is a quality pipe liner that can be used in a wide range of geometries. This pipe liner can be impregnated with different resins according to individual requirements: Polyester resin and epoxy resin.

UNILINER™ is supplied as a dry or pre-impregnated pipe liner. It is specially assembled for the specific application in question. Individual lengths of up to 500 m are possible.



Quality assurance in an in-house lab

BEST RESINS FOR INDIVIDUAL APPLICATIONS

Polyester resin	ISO-NPG / Ortho-NPG
Epoxy resin	NordiPox 40 / 115

The advantages of UNILINER™ at a glance

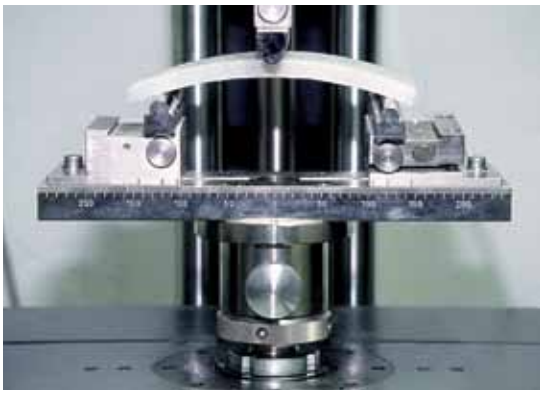
- Licence-free product
- Easy to use
- Pipe liner and resin are manufactured according to requirements
- Cost-effective product for high requirements
- Individual lengths of up to 500 m and bends up to 45 degrees are possible
- Target shaft not necessary
- Support service offered by experts every step of the way
- Training of personnel

QUALITY ASSURANCE FOR FIRST-CLASS RESULTS

SEKISUI SPR constantly performs internal and external quality controls according to national and international standards to ensure that UNILINER™ meets the requirements throughout its service life.

Long-term studies have confirmed that UNILINER™ fulfils the requirements for a service life of at least 50 years. All tests impressively showed that UNILINER™ meets the demands of modern pipeline rehabilitation to the full satisfaction of the testers.

Impregnated at the factory in Schieder-Schwalenberg, Germany



Three-point bending test

UNILINER™ PERFORMANCE DATA

Medium	Stormwater, sewage
Diameter	150 mm to 1200 mm (6" to 47")
Wall thickness	4.5 mm to 25.5 mm (0,2" to 1")
Coating	PE (integrated component acc. to DIBt), PP
Installation length	Up to 500 m (1600 feet)
Applicable resins	Polyester resin, epoxy resin
Delivery form	Dry or pre-impregnated pipe liner
Installation process	Inversion with water column or pressure drum
Curing process	Hot water or steam curing
Special profile	Egg shape, box profile, elliptical shape

SEKISUI NordiTube Technologies SE – a member of the SEKISUI SPR Europe Group and producer of UNILINER™ – is certified in accordance with ISO 9001 and 14001.

NORDIWALL™

NORDIWALL™ quality control

QUALITY FOR THE HIGHEST DEMANDS, SAFE AND RELIABLE

NORDIWALL™ from SEKISUI SPR is characterised by a strong PE coating and a very solid seam composition. NORDIWALL™ can be impregnated with different resins. It is generally installed using a pressure drum. It can be cured using steam or water. NORDIWALL™ is one of the premium products from SEKISUI SPR in the field of rehabilitating sewer pipes.

NORDIWALL™ production

EXTREMELY RESISTANT AT INSTALLATION

The use of a pressure drum has proven particularly well-suited for the installation of the NORDIWALL™.

NORDIWALL™ is specially tailored for each application. Available in lengths up to 320 m.

TWO RESINS FOR PERFECT IMPREGNATION

The success of NORDIWALL™ lies in its composition. It consists of two layers of polyester needled felt sewn together and coated with PE. Over the seam a PE strip is extruded.

NORDIWALL™ can be impregnated with different resins according to individual requirements: Polyester resin and epoxy resin. The NORDIWALL™ liner is available as a dry pipe liner or pre-impregnated.

For 20 years now, the extreme reliability of NORDIWALL™ has repeatedly been demonstrated, and this is confirmed by long-term tests. Continuous, independent investigations according to the various standards, illustrate the high quality of this product. The service life of the product is assured for over 50 years.

The advantages of NORDIWALL™ at a glance

- Product for qualified users
- Pipe liners are manufactured according to requirements
- High-quality product with a PE coating
- Individual lengths of up to 320 m and bends up to 90 degrees are possible
- Optimised surfaces
- 1000g/m² coating
- Extruded seam cover
- End shaft not necessary
- Support service offered by experts every step of the way
- Training of personnel

BEST RESINS FOR INDIVIDUAL APPLICATIONS

Epoxy resin	Impregnated on site / highly resistant to chemicals
Polyester resin	Factory impregnation for all product sizes

NORDIWALL™ PERFORMANCE DATA

Medium	Stormwater, sewage
Diameter	150 mm to 1000 mm (6" to 40")
Wall thickness	4,5 mm, 6 mm, 8 mm (0,17", 0,23", 0,31")
Coating	1000 g/m² PE coating
Installation length	Up to 320 m (1050 feet)
Applicable resins	Epoxy resin and Polyester resin
Delivery form	Dry or impregnated (polyester) pipe liner
Installtion process	Inversion with pressure drum or water column
Curing process	Steam or hot water
Special profile	Egg shape

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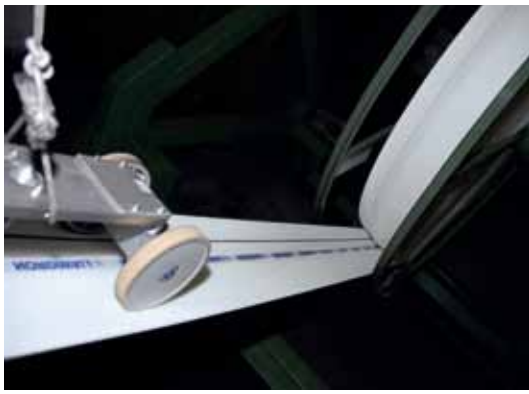
NORDIWALL™ production



NORDIWALL™ production

Everything from a single source.
SEKISUI SPR is synonymous with superior solutions for underground infrastructure worldwide. SEKISUI SPR offers outstanding and environmentally sustainable technologies and services for supply and drainage through its global distribution network. Customers profit from the broad portfolio including trenchless rehabilitation, vacuum sewer systems and pipe inspection. With experts in the rehabilitation, construction and maintenance of underground infrastructure systems worldwide, SEKISUI SPR offers all services from a single source.

THE BEST ALL IN ONE
THE BEST FOR YOU – WORLDWIDE

Modern urban life would be utterly impossible without underground infrastructure. However, it is becoming apparent that underground infrastructure systems worldwide are deteriorating substantially as a result of the age of pipe systems and a steady increase in traffic loads. The also rising demands on sustainable and environmentally-friendly urban development pose a major challenge to local authorities. SEKISUI SPR offers the right solutions to meet those challenges. Trenchless technologies permit renewal by rehabilitating the existing infrastructure without protracted construction works and without modification of the cityscape. It is also possible to expand and maintain existing infrastructure systems without excavation. Trenchless technologies guarantee a faster, more cost-effective and environmentally-friendly solution compared to replacement.

SEKISUI SPR employs some of the world's leading technical and operational infrastructure specialists, and is thus in a position to offer a solution for all requirements, from planning through to construction. In delivering those solutions, SEKISUI SPR operates in three divisions: Sales & Support, Trenchless Infrastructure Solutions and Construction. In concrete terms, this provides for a global interchange of experience between individual experts to devise the optimum infrastructure solution for the specific location.

SEKISUI SPR concentrates the international underground infrastructure competences of the SEKISUI Chemical Corporation (Osaka). It is already represented in over 40 countries on all continents.

GLOBAL CONNECTION

PROMINENT TECHNOLOGY

ENVIRONMENTAL CONTRIBUTION

SALES & SUPPORT

- Sales Asia
- Sales Europe
- Sales America
- Sales Australia

TRENCHLESS INFRA-STRUCTURE SOLUTIONS

- Trenchless rehabilitation
  - CIPP
    - NORDIPIPE™
    - TUBETEX™
    - UNILINER™
    - NORDIWALL™
    - PULL-INLINER
  - SPR
    - SPR™
    - SPR™ PE
    - SPR™ EX
    - SPR™ ST
- Vacuum sewer system
  - SIVAC®
- Pipe inspection

CONSTRUCTION

- Rehabilitation of pipe networks
- Pipe construction
- Maintenance of drainage systems on waste disposals

MAKE YOUR CONNECTION

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