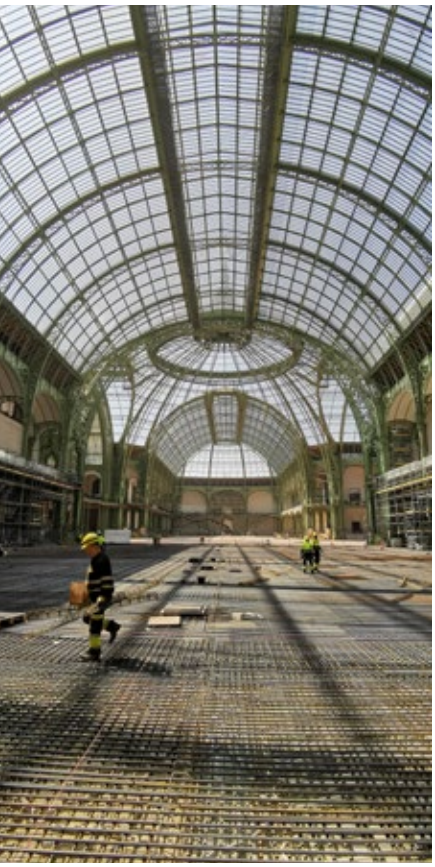
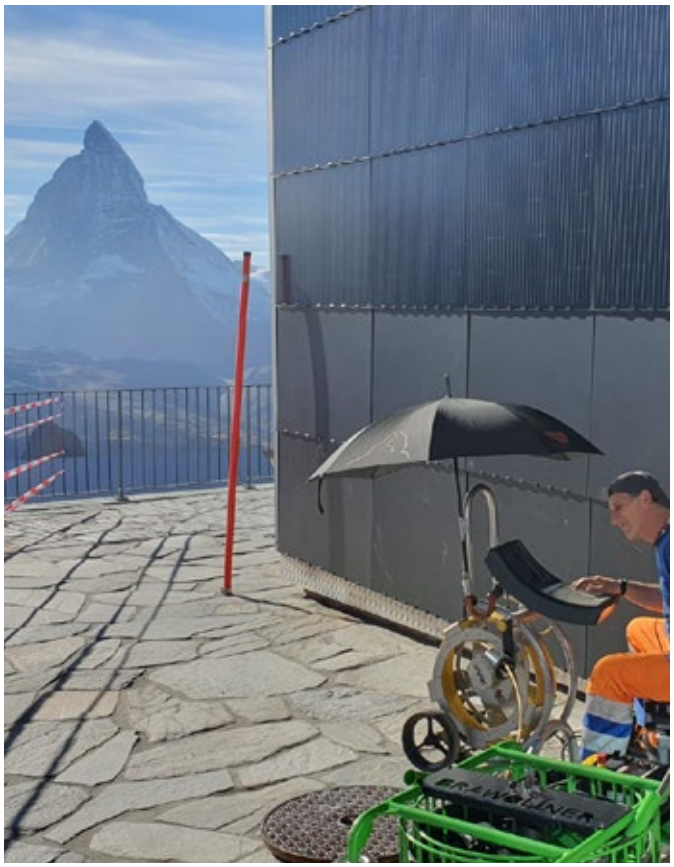
brawosystems.com

BRAWO® SYSTEMS

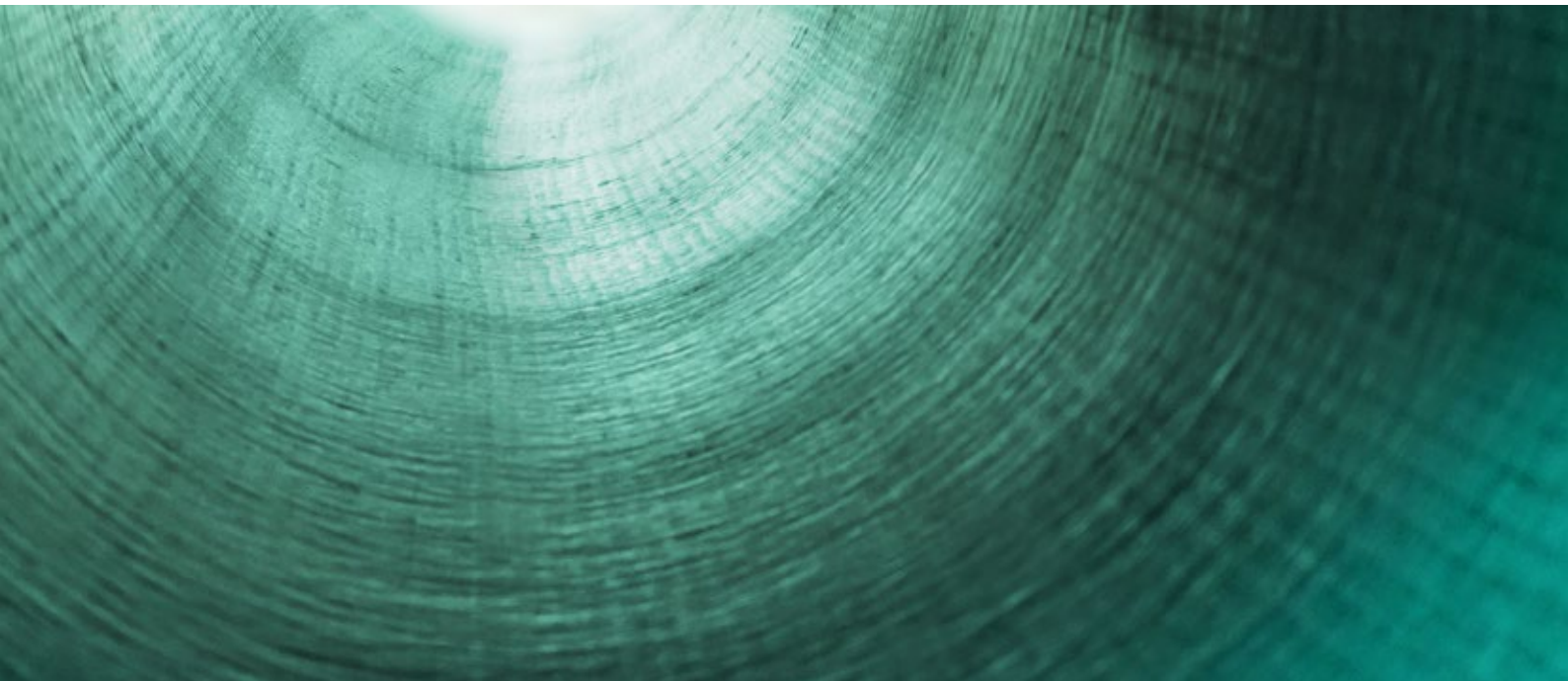
LEADER OF LINING SOLUTIONS





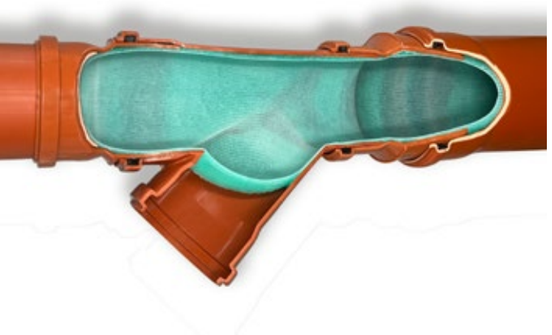
REFERENCES

Trenchless rehabilitation of buildings and properties



Brawoliner®

- **Unique seamless coating**
- **Almost crease-free rehabilitation & perfect fit**



One liner for all four curing methods

OVOID PROFILES

Up to two dimensional changes

Also suitable for special profiles

SQUARE PROFILES

Bends up to 90°

Seamlessly knitted and extremely flexible

SUSTAINABLE
INNOVATIVE
ENVIRONMENTALLY-FRIENDLY
EXCELLENT
CLEAN

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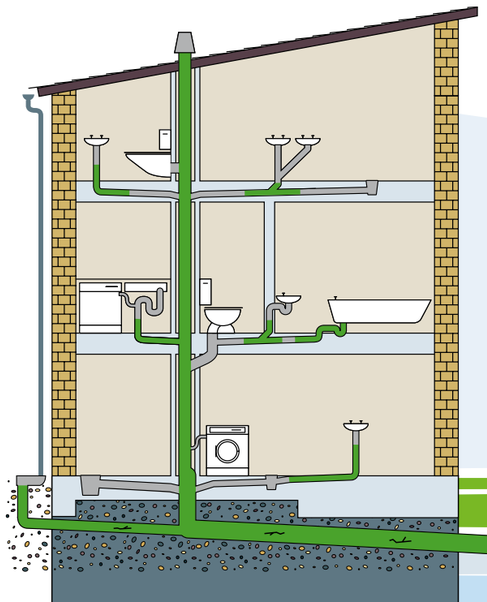


BRAWOLINER®

One liner for all 4 curing methods:

STEAM
LIGHT
HOT WATER
AMBIENT TEMPERATURE

Masterpiece under the Eiffel Tower: RESITECH SAS rehabilitates with BRAWOLINER®

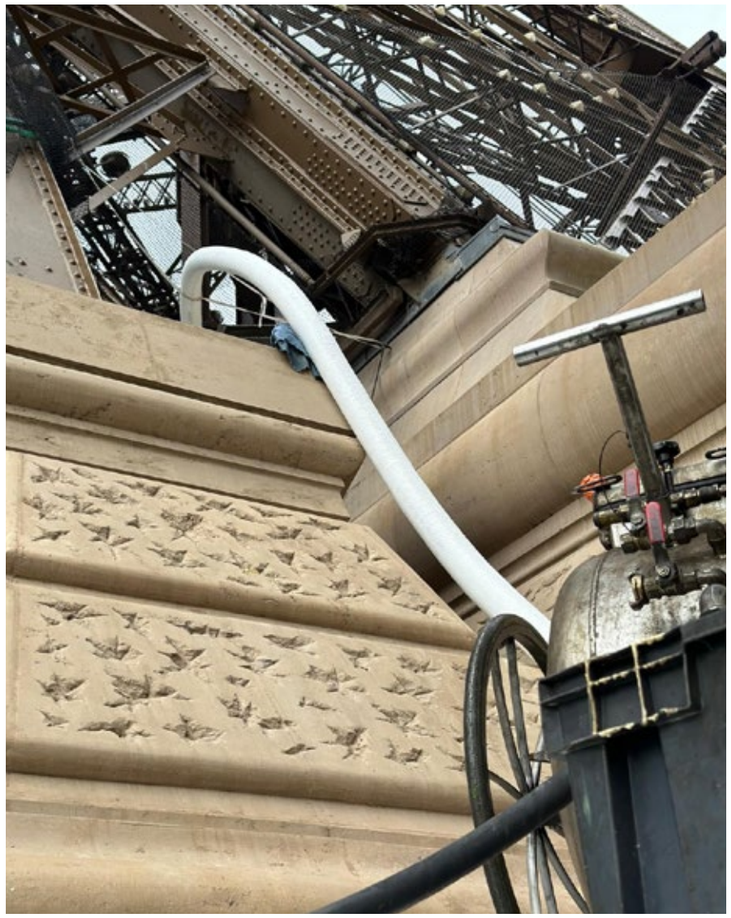
RESITECH SAS rehabilitated the vertical rainwater drainage system on the north pillar of the Eiffel Tower. To do so, the company relied completely on the quality products from BRAWO® SYSTEMS, as breaking open the pillar was obviously out of the question here.

Technical details

- Pipe size: DN 100 mm
- Length of the rehabilitated section: 14 metres
- Pipe profile: three 45° bends and one 90° bend
- Reason for rehabilitation: The affected pipes had numerous cracks and bursts that were causing leaks.
- Rehabilitation method: BRAWOLINER® HT with BRAWO® I resin and steam curing
- Duration of rehabilitation: 1 day

Difficulty:

- No direct access to the pipe possible as there was not enough space around the pipe on the pillar
- The pipe had to be rehabilitated from the bottom upwards through a parabolic indent
- Due to the access and the many bends, the inversion had to be carried out with the AIRBAGLINER® so that the liner was subsequently installed correctly and evenly everywhere.



Advantages and results

The trenchless rehabilitation method brought considerable advantages:

- Time and risk savings, as no demolition work was necessary.
- The knitted liner can be turned inside out at very low pressure, which was a great advantage during the complicated pipe rehabilitation from bottom to top.
- The unique quality of the hose is perfect for enabling a very good flow after the rehabilitation process.

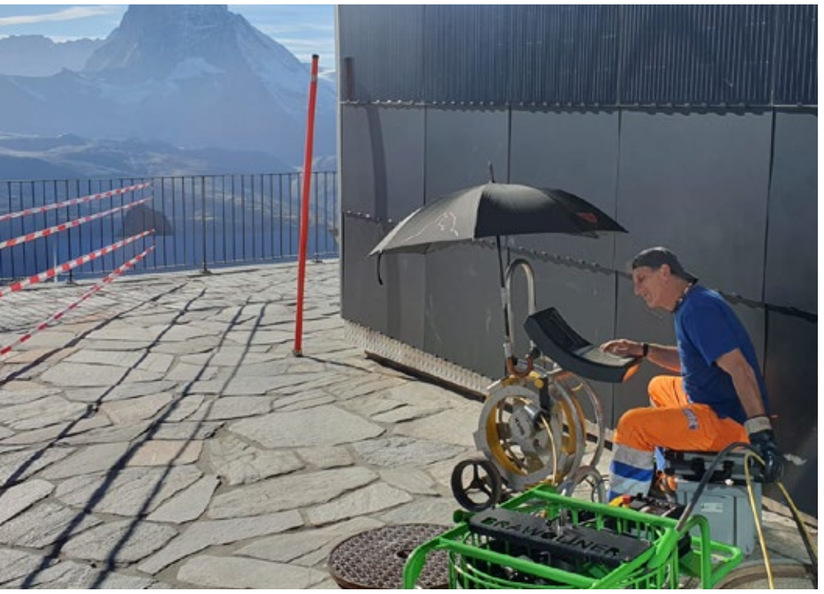
Conclusion

The pipe rehabilitation below the Eiffel Tower by the company Resitech France was an efficient and gentle solution for the maintenance of the waste water pipes. An open construction method at the north pillar and in parts of the basement levels would not have been possible. The minimally invasive procedure and the high quality reliability of the products emphasise the advantages of this modern rehabilitation method.

At a glance

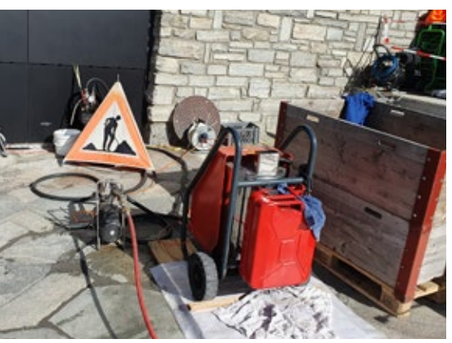
Where:	Paris, on the north pillar of the Eiffel Tower
Company:	RESITECH SAS
Pipe:	three 45° bends and one 90° bend (DN 100)
Liner:	BRAWOLINER® HT
Curing method:	steam

No mountain is too high for BRAWOLINER®



The viewing platform on the Gornergrat at 3100 metres is one of the most popular tourist attractions in Zermatt. For the perfect view of the Matterhorn and the Swiss mountains, every day many visitors take the Gornergrat railway. Keeping it maintained and constantly replacing parts are therefore important for tourism. Pipe rehabilitation under these conditions and at this height is difficult, but no problem with the BRAWOLINER®!

In 2023, in addition to a newly planned drinking water reserve, leaks were also detected in the underground pipe. The Swiss company Landolt Kanaltechnik AG was commissioned to rehabilitate the affected downpipe. Landolt Kanaltechnik has been using BRAWO® SYSTEMS products for ten years. Due to the positive experience, these were also used here.



The 12 metre long DN120 underground pipe of the mountain railway station had to be rehabilitated from the platform to the inspection shaft. As part of the project, the pipes were prepared using the BRAWOLINER® vortex cutter. The pipes were then rehabilitated and finally tested for leaks. The BRAWOLINER® XT DN100 was used and, due to the cold temperatures, the BRAWO® I resin. Curing was carried out with water.

Two sewer rehabilitators were responsible for the construction site and needed a total of four days to complete the work. The main difficulties lay in the logistics, as all the necessary equipment had to be transported up the by the mountain railway. While the BRAWO® SYSTEMS vehicle trailer with all the equipment was parked at the valley station, several loading crates were used to transport the required individual parts to the top each morning and evening on material runs. In an interview with BRAWO® SYSTEMS, project manager Dennis Beck praised the vehicle trailer as well as the smooth rehabilitation of the construction site: „Normally we don't have any problems with the equipment, we just always take the trailer with us, everything is in there, which is great. It couldn't be easier!"

At a glance

Where:	Zermatt, Switzerland, viewing platform on the Gornergrat
Company:	Landolt Kanaltechnik AG
Pipe:	12 metre long DN 120 underground pipe
Liner:	BRAWOLINER® XT DN100
Curing method:	hot water

Playing for time: BRAWOLINER® 3D LR at BER Airport

The company Aquendo GmbH from Berlin rehabilitated a 24-metre-long rainwater pipe underneath a safety-relevant airport building at BER with our new pre-impregnated BRAWOLINER® 3D LR.

Technical details

- Pipe size: DN 100 mm
- Length of the rehabilitated section: 24 metres
- Pipe profile: One inlet with dimensional changes, underground drainage pipe and stoneware material
- Rehabilitation method: BRAWOLINER® 3D LR with LED light curing using BRAWO® Magnavity SX
- Difficulty:
  - Short rehabilitation time window due to the necessary safety for air traffic and flight passengers
  - Necessary safety check for those involved and equipment due to the highly sensitive safety area
  - Construction site next to taxiway with ongoing air traffic
- Rehabilitation time: only approx. 2 hours

Advantages and results

The trenchless rehabilitation method brought considerable advantages:

- Time and risk savings: The perfectly prepared construction site and the pre-impregnated liner made it possible to rehabilitate the pipe very quickly and safely for everyone involved. The short time window set by the airport could be adhered to without any problems.
- Quality of the liner: This rehabilitation method offers a service life of at least 50 years for the new pipes.

Conclusion

The pipe rehabilitation at BER Airport by Aquendo was an efficient, fast and gentle solution for the maintenance of the waste water pipes. The minimally invasive procedure and the high quality reliability of the BRAWO® SYSTEMS products emphasise the advantages of this modern rehabilitation method.

At a glance

Where:	Airport BER
Company:	Aquendo GmbH
Pipe:	24-metre-long r ainwater pipe
Liner:	BRAWOLINER® 3D LR
Curing method:	light

Rehabilitation with BRAWOLINER® HT on the Champs- Élysées

Construction of the „Grand Palais des Beaux-Arts“ on the Champs-Élysées started in Paris in 1897 for the 1900 World Exposition and is a historic site, exhibition hall and museum complex. As part of the rehabilitation of the building, which will run from 2021 to 2025, the company TP ENTREPRISE rehabilitated 80 rainwater downpipes in May 2023. For this purpose, the company worked with the products supplied by BRAWO® SYSTEMS.

The building's vertical downpipes are 24 metres long in diameters from DN 150 to DN 200 with up to four dimensional changes and bends from 45 to 90 degrees. They start at the drains in the roof and run through metal pipes along the posts of the original metal structure, down to the basement at the level of the old foundations.

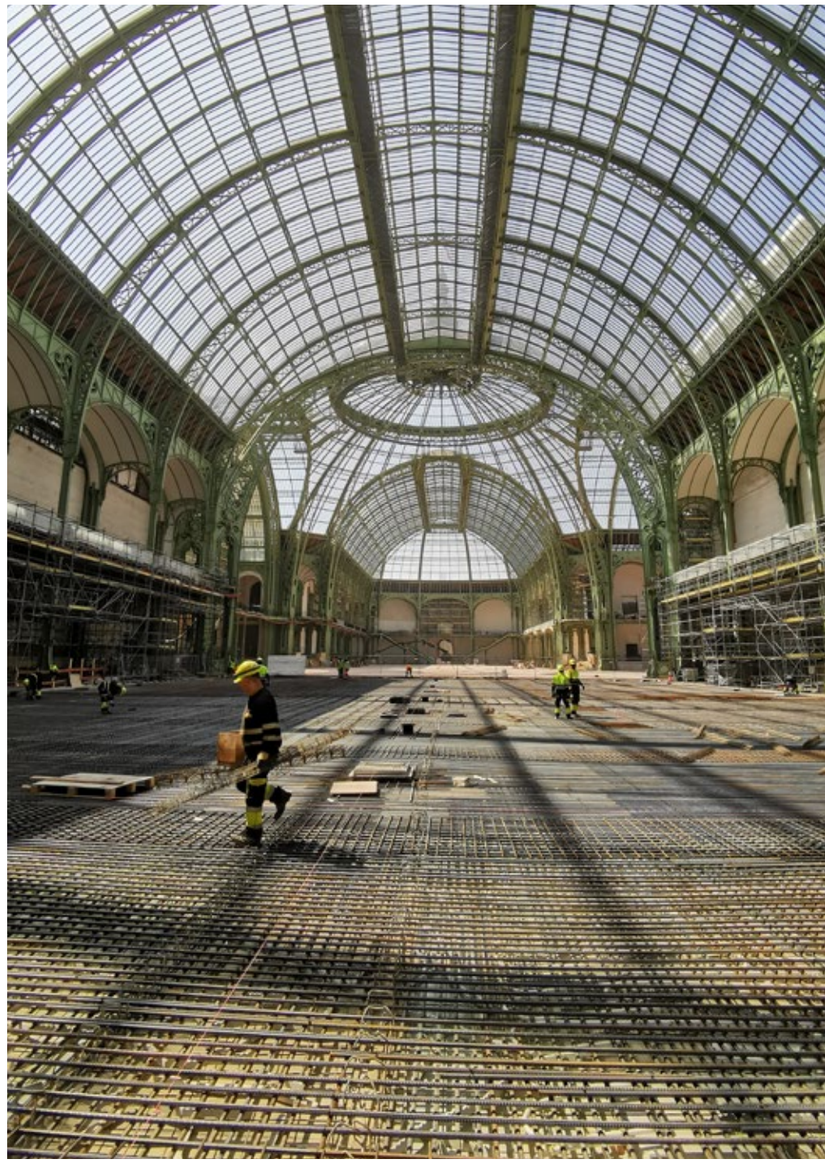
This was not the first time that TP ENTREPRISE cooperated with BRAWO SYSTEMS GmbH on a historical project, having done so most recently at the Commercial Court in Paris. The rehabilitation was carried out from the roof using BRAWOLINER® HT 3D DN 150-225, which was impregnated with BRAWO® III resin and steam-cured at the end.

At a glance

Where:	Paris, Champs-Élysées
Company:	TP ENTREPRISE SAS
Pipe:	vertical downpipes, 24 metres long (DN 150 DN 200)
Liner:	BRAWOLINER® HT 3D DN 150 - 225
Curing method:	steam

The difficulties in this project arose from the design of the building and the persistent hot temperatures. Because the roof of the building is not flat, the access points to the downpipes are too narrow for the equipment commonly used in in-house rehabilitation. Thus, creativity was required when it came to positioning the inversion drum and impregnating the liner. Cramped conditions also made it difficult to move around, which entailed a well-coordinated organisation in the right place at the right time. The hot temperatures also ensured that the installation had to go quickly and smoothly.

Thanks to the good organisation and the already successfully applied BRAWO® SYSTEMS products, it was possible to successfully complete the rehabilitation after approx. 5 weeks.



Information on the products used:

BRAWOLINER® HT:

BRAWOLINER® HT was specially developed for in-house rehabilitation. This involves a high-tech textile hose, which is soaked with epoxy resin and then inserted into the defective pipe by means of air or water pressure. In doing so, the BRAWOLINER® HT completely lines the pipe and thus eliminates all existing and also any potential damage.

Technical data:

- From DN 50 to DN 250
- Bends up to 90°
- Up to two dimensional changes
- Hot curing at higher temperatures with water or steam is possible

BRAWO® III

The resin systems from BRAWO® SYSTEMS have been developed for all common rehabilitation requirements of domestic and industrial sewers.

The BRAWO® epoxy resins can cure both cold and hot. The addition of heat significantly accelerates the curing process.

Thanks to the long processing time, BRAWO®III is suitable for the rehabilitation of longer pipe sections or large pipe diameters.

Cleverly rehabilitated – Geiger Kanaltechnik successfully rehabilitates a DN200 - 300 oval profile in the middle of Rothenburg ob der Tauber

The town of Rothenburg ob der Tauber had approached the Geiger Kanaltechnik GmbH & Co. KG branch in Wendlingen because there were problems with a sewage pipe in the middle of the busy old town.

A stoneware pipe over 32 metres long, with a DN 200 - 300 oval profile, was damaged on almost all the sleeve joints on which the pipes are put together. Also, the pipe had severe positional deviations both in the longitudinal and in the transverse direction. There was therefore a risk that sewage would flow outwards into the soil and thus contaminate the groundwater.

Geiger Kanaltechnik GmbH & Co. KG, as a specialist for trenchless sewer rehabilitation, took on this construction project and used the products supplied by BRAWO® SYSTEMS. The section running from manhole to manhole was rehabilitated with a BRAWOLINER® 3D DN 200 - 300 and cured with hot water. Subsequently, the five inlets were milled again with a milling robot.

At the beginning, it was very challenging to find the right date, due to the exposed location which has a lot of public traffic in the town centre, until a suitable time was able to be found outside the holidays. Due to the trenchless rehabilitation process, the construction project was then able to be carried out quickly within one and a half days.

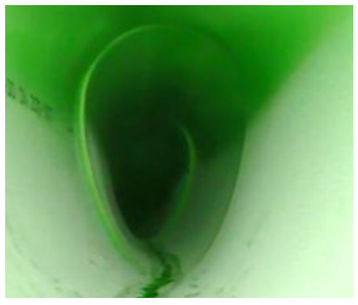
Martin Kielkopf, project manager and certified consultant for property drainage at Geiger Kanaltechnik in the Wendlingen branch, is proud that everything worked so well. “The rehabilitation of oval profiles in this dimension with many deviations in position and direction is a rather exceptional case and currently occurs perhaps only once a year. That‘s why we always check carefully and thoroughly beforehand whether trenchless rehabilitation will really work. And it did work!“

The seamless BRAWOLINER® textile hose is also ideal for oval profiles as well as for almost all circular, corner and special profiles. Thanks to its special loop construction, the BRAWOLINER® is extremely flexible, easy to bend, rehabilitates almost without creases and allows differing dimensions - so nothing stands in the way of trenchless rehabilitation even with complicated profiles.

At a glance

Where:	Rothenburg o. d. Tauber, old town
Company:	Geiger Kanaltechnik GmbH & Co. KG
Pipe:	stoneware pipe over 32 m long, oval profile DN 200 - 300
Liner:	BRAWOLINER® 3D DN 200 - 300
Curing method:	hot water

Before the rehabilitation



After the rehabilitation

Long distance rehabilitated with BRAWOLINER® on the coast of Jersey, UK

The municipality of St. Quen on the island of Jersey launched a major rehabilitation project in autumn 2023. As part of this project, Drain It LTD rehabilitated three underground pipes that run in the roads along the coast. The more than 100-metre-long section was rehabilitated with liners and resins supplied by BRAWO® SYSTEMS.

At a glance

Where:	Jersey, UK (Küste)
Company:	Drain It LTD
Pipe:	three underground pipes (over 100-metre-long section)
Liner:	BRAWOLINER® XT, DN 150 – 250 iin special lengths
Curing method:	hot water

The BRAWOLINER® XT DN150 to 250 in special lengths was used for each of the three construction sites. The liners were first impregnated with BRAWO® III resin. Five resin mixers had to mix this large quantity of resin at the same time. The impregnated liner was cured using hot water after being inserted into the pipe being rehabilitated.

The total length of over 100 metres and the resulting height difference between the start and finish shafts posed a particular challenge for this project. This was no problem for the flexible BRAWOLINER® .

The Drain It LTD team needed approx. 12 hours for each of the individual measures. This special project was accompanied by the BRAWO® SYSTEMS team to monitor and assess the quality of the special length.

Products used

BRAWOLINER® XT

- Liner for pipes subject to high structural loads
- From DN 100 to DN 250
- Higher nominal rigidity
- Bends up to 90°
- One dimensional change

BRAWO® III epoxy resin

The BRAWO® epoxy resins can cure both cold and hot. The addition of heat significantly accelerates the curing process.

Thanks to the long processing time, BRAWO® III is suitable for the rehabilitation of longer pipe sections or large pipe diameters.

Successful in-house rehabilitation of 29 rain pipes with the BRAWOLINER® HT in a residential complex in Bonn

The rainwater pipes of 3 building complexes in Bonn were showing major signs of damage and had to be repaired. For this purpose, Vereinigte Bonner Wohnungsbau AG commissioned the company Abfluss Kanaltechnik Müller GmbH (AKM), which has many years of experience as a specialist for sewer rehabilitation and cleaning.

Between January and March 2023, 29 rainwater pipes with lengths between 15 and 30 metres were completely rehabilitated from the roof. To this end, AKM opted for in-house rehabilitation without cutting and demolition work with proven products from BRAWO® SYSTEMS.

The BRAWOLINER® HT DN 100 and DN125 was used as well as the BRAWOLINER® HT 3D DN 100-150, which are especially suitable for the in-house sector. For example, the product meets the requirements for fire protection and thermal dimensional stability.

The BRAWOLINER® HT was impregnated with a mechanical impregnating tape and the epoxy resin BRAWO® HT for cold and hot curing. The inversion process was then carried out from the roof with a BRAWO® Tech inversion drum DN 700 UL and the liner was cured under ambient temperature (cold curing).

A logistical masterpiece in this project was the rehabilitation of the rainwater pipes from the roof of the building. The large pieces of equipment had to be lifted by crane onto the roof of the 25-m-high residential complex. In addition, the electrical and cold-sensitive equipment had to be stored in the basement of the building every day due to frost. The rehabilitation was able to be successfully carried in 35 working days despite the weather thanks to the BRAWO® SYSTEMS inliner process.

Total consumption on the construction site:

BRAWO® HT resin	828 kg
BRAWOLINER® HT	
DN 100	330 m
DN 125	150 m
BRAWOLINER® HT 3D	
DN 100-150	25 m

Products used

BRAWO® HT epoxy resin

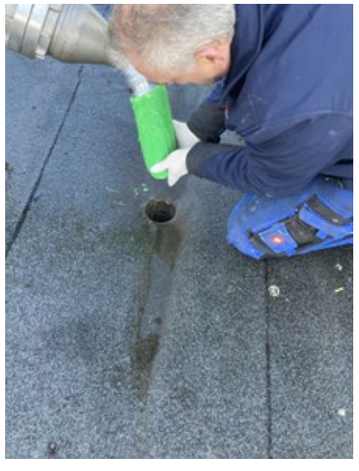
The resin systems from BRAWO® SYSTEMS have been developed for all common rehabilitation requirements of domestic and industrial sewers. The BRAWO® epoxy resins can cure both cold and hot. The resin for rehabilitation inside buildings meets the requirements with regard to thermal dimensional stability (≥ 93 °C according to DIN 75-2) and fire protection (building material class B2 according to DIN 4102).

BRAWOLINER® HT: the special product for the rehabilitation of internal pipes (in-house)

The BRAWOLINER® HT is a seamless textile hose for the rehabilitation of defective pipes with complicated pipe runs and small nominal widths. Due to a special loop construction, the BRAWOLINER® HT is extremely flexible. This makes it the ideal rehabilitation solution for defective pipes with bends of up to 90° and up to two dimensional changes. With a service life of up to 50 years, the BRAWOLINER® HT is an economical and environmentally friendly alternative to open construction. Thus, the sewage system in buildings and houses can be rehabilitated quickly and cleanly, almost silently, without opening ceilings and walls.

At a glance

Where:	Bonn, residential complex
Company:	Abfluss Kanaltechnik Müller GmbH
Pipe:	29 rainwater pipes (between 15 and 30 m)
Liner:	BRAWOLINER® HT BRAWOLINER® HT 3D
Curing method:	ambient temperature



The duct before the beer flows: KS Abwassertechnik makes Esperantoplatz safe for Oktoberfest with BRAWOLINER®

KS Abwassertechnik rehabilitated leaking pipes underneath Esperantoplatz directly on the Theresienwiese in Munich in order to safeguard the festivities at the annual Oktoberfest. The company relied completely on the quality products from BRAWO® SYSTEMS.

Technical details

- Pipe size: DN 100 – 200 mm
- Length of the rehabilitated section: approx. 375 metres
- Number of pipes: approx. 10
- Reason for rehabilitation: The affected pipes had several leaks, which could have posed a complication for the annual festival at the Munich Oktoberfest
- Rehabilitation method: BRAWOLINER® HT with BRAWO® I & III resin and hot water curing
- Rehabilitation time: approx. 2-3 weeks

Difficulty:

Tight time frame for the measures

Advantages and results

Above all, the trenchless rehabilitation method saved time and reduced risks, as no demolition work was necessary.

Conclusion

The pipe rehabilitation on Esperantoplatz was completed quickly and smoothly and guarantees a successful Oktoberfest, at least as far as the quality of the sewage network is concerned! As in previous projects, KS Abwassertechnik worked with the holistic solution provided by BRAWO® SYSTEMS.

At a glance

Where:	Munich , Esperantoplatz
Company:	KS Abwassertechnik GmbH
Pipe:	10 pipes, approx. 375 m
Liner:	BRAWOLINER® HT
Curing method:	hot water

Minimally invasive and gentle: trenchless pipe renovation at Rechts der Isar Hospital in Munich

The waste water pipes above a highly sensitive pharmacy area in the Rechts der Isar Hospital in Munich had to be repaired. The company KS Abwassertechnik GmbH rehabilitated all the waste water pipes with BRAWO® SYSTEMS equipment.

Technical details

- Pipe size: Pipes DN 100-200mm
- Length of the rehabilitated section: 170 metres
- Renovation method: BRAWOLINER® HT with BRAWO® RR resin and overnight cold curing
- Difficulty:
  - Highly sensitive pharmacy area under the waste water pipes (trailing pipes hidden in suspended ceiling)
  - The rehabilitation work had to be carried out via the hospital's canteen kitchen, which cooks for around 5,000 patients, doctors and nursing staff.
  - This meant that only night work was possible.
- Rehabilitation duration: 2-3 weeks in each case within 9 months, including all preparatory and follow-up work.

Advantages and results

The trenchless rehabilitation method brought considerable advantages:

- Minimal disruption: by using only one access point and avoiding any demolition work, the highly sensitive pharmacy area with the modern, technical prescription picker was spared any disruption and protected from damage or contamination by the leaking waste water pipes.
- Time saving: the work during the rehabilitation period, including all preparatory and follow-up work, was completed in just 2-3 weeks in each case.
- Efficiency: in contrast to conventional methods, the BRAWOLINER® application enabled the rehabilitated waste water pipe to be quickly put back into service.
- The canteen kitchen was able to remain in operation throughout the entire construction period!

Conclusion

The pipe rehabilitation in the Rechts der Isar Hospital by KS Abwassertechnik GmbH, using BRAWO® SYSTEMS products, was an efficient and gentle solution for repairing the waste water pipes. The minimally invasive procedure and simple handling emphasise the advantages of this modern rehabilitation method.

At a glance

Where:	München, Klinikum rechts der Isar
Company:	KS Abwassertechnik GmbH
Pipe:	waste water pipes, 170 m
Liner:	BRAWOLINER® HT
Curing method:	ambient temperature

Sustainable in-house rehabilitation of an apartment complex in the French port city of La Rochelle

A 52-metre-high apartment building was completely rehabilitated by Bouygues Batiment and made fit for the future. For instance, the residents were able to look forward to new windows and a new exterior paint job, and what is not visible to many and yet of great importance, the vertical wastewater pipes were repaired again.

The local company Ortec rehabilitated all the wastewater pipes in the building with equipment from BRAWO® SYSTEMS.

For the rehabilitation of the 12 downpipes being rehabilitated, 650 metres of BRAWOLINER® HT 3D DN 70-100 were processed. The liners were impregnated beforehand with the epoxy resin BRAWO® III and then inverted in the respective old pipe using a BRAWO® TECH inversion drum from the roof of the apartment complex. The curing was finally carried out by means of steam curing and a processing temperature of 85 degrees Celsius, for which a 50 UL steam generator was used. The rehabilitation with the BRAWOLINER® HT and steam curing is particularly suitable for in-house rehabilitation projects and guarantees safety by fulfilling all structural requirements and holding the demanding DIBt approval for the rehabilitation of wastewater pipes inside buildings.

The employees from Ortec took about three weeks to clean the old wastewater pipes, install the liners and open the inlets. During this time, the residents of the apartment building were on site and did not have to leave their homes for the work.

Before Ortec started with this project, they completed a two-day training course with Yaker Ait of BRAWO® SYSTEMS, who trained them how to use the BRAWO® SYSTEMS equipment and also provided support during the first installation on the construction site.

BRAWOLINER® HT:

BRAWOLINER® HT was specially developed for in-house rehabilitation. This involves a high-tech textile hose, which is soaked with epoxy resin and then inserted into the defective pipe by means of air or water pressure. In doing so, the BRAWOLINER® HT completely lines the pipe and thus eliminates all existing and also any potential damage.

Technical data:

- From DN 50 to DN 250
- Bends up to 90°
- Up to two dimensional changes
- Hot curing at higher temperatures with water or steam is possible

At a glance

Where:	La Rochelle, an apartment complex
Company:	ORTEC ENVIRONNEMENT SAS
Pipe:	12 downpipes
Liner:	BRAWOLINER® HT 3D DN 70 - 100
Curing method:	steam (BRAWO® Steamgenerator 50 UL)

Rohrreinigungs-Service Schipper GmbH relies on new BRAWO® UVPox epoxy resin for light curing

Kaiserslautern, November 02, 2022. The rehabilitation expert, Rohrreinigungs-Service Schipper GmbH from Bremen, relies on the brand new BRAWO® UVPox epoxy resin from the system provider BRAWO® Systems from Kaiserslautern on its construction sites. The form-fitting contact in the old pipe with no penetration of water from behind, the possibility of visual inspection by the coloured resin and targeted and fast curing are the most impressive features here.

For more than 50 years, the experts from Rohrreinigungs-Service Schipper GmbH have been carrying out all work in the field of sewer rehabilitation, pipe cleaning and leak testing in the metropolitan region of Bremen and Oldenburg. By using the latest methods and technology and a team that is always well trained, the company enables its customers to carry out a quick, clean and flawless rehabilitation.

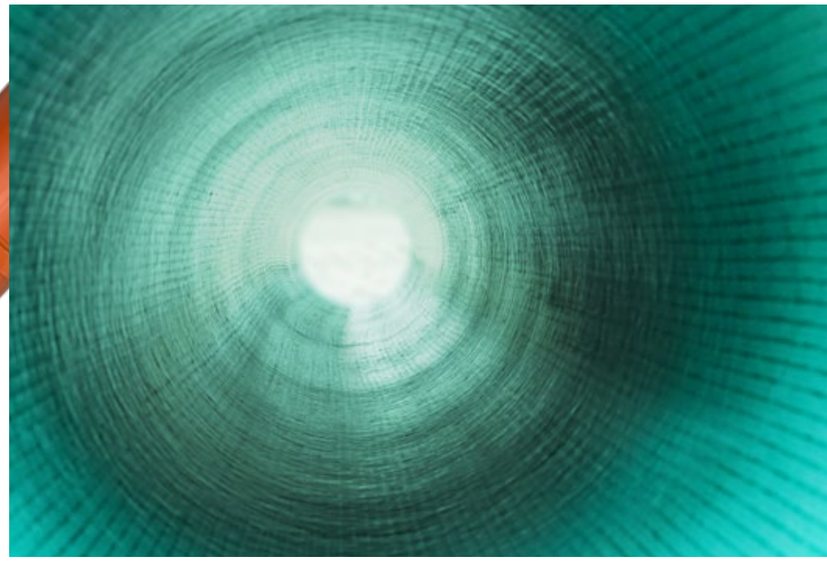
In October 2022, Rohrreinigungs-Service Schipper GmbH used the new epoxy resin BRAWO® UVPox from BRAWO® SYSTEMS for the first time on a construction site in Bremen. An approximately 15-metre long old pipe was rehabilitated with the BRAWOLINER® 3D with an open end. Two jumps in dimension from DN 100 to DN 125 and then to DN 150 were mastered without any problems and a double inversion of a BRAWOLINER® including airbag liner was used. Within a few hours, the old pipe was rehabilitated and the construction site was able to be taken back down. „We are delighted with the result of the rehabilitation with the new BRAWO® UVPox resin," says Stefan Sieling, Managing Director of Rohrreinigungs-Service Schipper GmbH. „Thanks to BRAWO® UVPox, we no longer have any problems during light curing when it comes to penetration of water from behind and, due to the extremely long processing time, we have no time pressure during the rehabilitation process. The fast curing makes the rehabilitation with light using our BRAWO® Magnavity system even more efficient!"

Fast and efficient light curing with the new BRAWO® UVPox

BRAWO® UVPox is the first pigmented light-curing epoxy resin on the market, which can be used for innovative curing with UV and LED light in conjunction with the BRAWOLINER®. The additional work that was previously necessary when using light curing for the rehabilitation of building and property drainage systems, such as the installation of a liner end collar to close the annular gap or a connection collar for the watertight connection of side inlets, is now no longer mandatory. In addition, an almost endless processing time ensures high installation reliability and targeted control of rapid curing by light. BRAWO® UVPox rounds off the smart light curing range provided by BRAWO® SYSTEMS. Together with the light curing systems BRAWO® Pico for the diameter range DN 50 to DN 100 and BRAWO® Magnavity for the diameter range DN 100 to DN 300, the rehabilitation experts from Kaiserslautern offer the light portfolio for all applications in building and property drainage.

At a glance

Where:	Bremen
Company:	Rohrreinigungs-Service Schipper GmbH
Pipe:	approx. 15-metre long old pipe, two jumps in dimension
Liner:	BRAWOLINER® 3D
Curing method:	light



In-house rehabilitation in the city of love – easily done thanks to BRAWO® SYSTEMS

Magnificent view of the Eiffel Tower during the installation of the BRAWOLINER® HT DN 100

TELEREP rehabilitates 38-metre-long downpipe on a multi-storey apartment building within two hours in the middle of Paris

TELEREP is a specialist in trenchless sewer rehabilitation and the market leader for in-house rehabilitation work in France. TELEREP is part of the SARP Group, a sewerage and drainage company with over 80 years of experience.

The day before the rehabilitation, TELEREP prepared the construction site to ensure a smooth workflow. The first challenge at this construction site was to get the compressor onto the roof of the twelve-storey apartment building. This one had to be transported upwards from outside, along the wall of the building. The other equipment was able to be brought onto the roof using the lift and an access window.

At a glance

Where:	Paris; multi-storey apartment
Company:	TELEREP FRANCE SASU
Pipe:	38 m downpipe
Liner:	BRAWOLINER® HT DN 100
Curing method:	steam (BRAWO® SteamGenerator 50 UL)

Facade of the twelve-storey apartment building in the middle of Paris

Control of the inversion with the BRAWO® Control Box

During steam curing

The length of the downpipe to be rehabilitated was 38 metres. In order to rehabilitate the downpipe in one piece, TELEREP needed a flexible and reliable rehabilitation system. The main difficulty was to impregnate the liner and install it promptly in the pipe before it cured. Thanks to TELEREP's experienced installers, the rehabilitation went quickly.

To speed up the curing process, the BRAWO® Steam Generator 50 UL was used, which generates steam with only a small volume of water. Especially for the rehabilitation of downpipes, steam curing offers great advantages.

The BRAWO® Control Box was used to check and regulate the temperature of the steam and the air pressure during the curing process. It took the three TELEREP employees 25 minutes to impregnate the liner and within eight minutes it was possible to wind it up in the inversion drum. In total, the installation including curing took about 2 hours.

During the work, the installers were secured with safety harnesses. After installation, the liner ends were milled open to then reconnect the downpipe to the horizontal connections to the kitchens and bathrooms.

Yaker Ait from BRAWO® SYSTEMS Sales, France, is pleased about the increasingly intensive cooperation with TELEREP: *„Our customer sees the many possibilities with BRAWO® SYSTEMS equipment, appreciates the quality and our experience with our rehabilitation system. I am often at the construction sites in person, helping and supporting our customers. In this way, I train my colleagues directly at the construction site and in the field. Customers appreciate our global service, which in my view, makes a not insignificant difference! Telerep has again shown that the company is capable of handling even difficult in-house rehabilitation jobs in an extremely professional manner. The view of the Eiffel Tower was a special bonus in this case.“*

Entrance to the sewer downpipe

Final inspection of the work with the camera

Close to Montparnasse: rehabilitation of 50-year-old inhouse pipes in the Pullmann Hotel, Paris

With more than 3000 m of BRAWOLINER® 3D DN 100-150 and 4 tonnes of BRAWO® resin, the company AFS Chemisage rehabilitated the vertical wastewater pipes of the Pullmann Hotel in Paris.

Hotel tower with 32 levels

Before the start of the rehabilitation project, the situation was as follows:

The hotel building and the pipelines were from the 70s. The vertical wastewater pipes were made of cast iron and the building had to undergo a major renovation that would take four years. Originally, all the wastewater pipes were to be replaced. However, during the renovation, the replacement of the pipes was cancelled due to the high costs and time involved.

After flooding on some floors due to damaged pipes, the work was re-evaluated:

The end customer took the relining method option due to time and costs.

The challenge was the very short time frame of only five weeks. To repair 42 vertical cast iron DN 125 down pipes with the lengths of 70 m and 64 m each. We needed four people to install the liners and ten people to re-open the connections.

“The work was cleaning, relining, re-opening connections and reconnecting.

Because of the big job site we had a lot of equipment and people, so the tight supply demands had to be delivered just in time on the job site,” Yaker Ait from BRAWO® SYSTEMS described. “We managed the supply and service of this big volume in spite of the extreme length of the liner just as planned.”

BRAWOLINER® 3D DN 100-150

The BRAWOLINER® 3D was used in this project due to its extraordinary properties.

As it was specially developed for large dimensional changes or several jumps in dimension in succession, the BRAWOLINER® 3D could be used in widths from DN 70 to DN 400. The seamlessly knitted liner adapts optimally to any pipe diameter and impresses with an excellent installation result.

Impregnation of the 70 metres of BRAWOLINER®

Three installations at the same time

The extremely flexible polyester loop construction allows for enormous lateral expansion. This makes the BRAWOLINER® 3D an optimal rehabilitation solution for difficult wastewater systems.

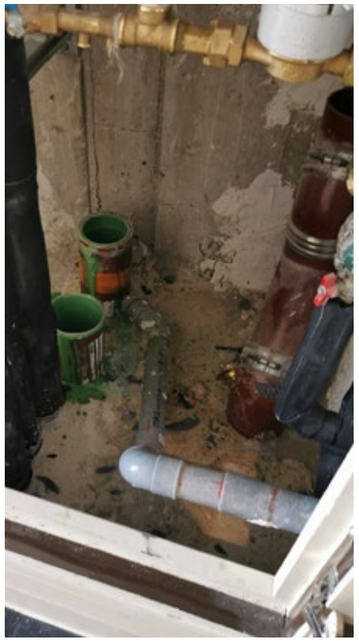
The BRAWOLINER® 3D was able to demonstrate these unique properties in the Pullmann project. After the installation work, the liners fitted perfectly and crease-free to the old pipes in the Pullmann Hotel.

Fast hardening due to steam curing.

In the Pullmann Hotel the new BRAWO® SteamGenerator 50 UL was used. Its low weight and mobility on the job site is ideal for installations in small areas and tight conditions e. g. like hotel floors or hotel rooms. This led to a fast rehabilitation process and the vertical pipes could be rehabilitated in a few hours in each case.

At a glance

Where:	Paris; Pullmann Hotel
Company:	AFS PLOMBERIE CVC
Pipe:	42 downpipes DN 125 each 64 m or 70 m
Liner:	BRAWOLINER® 3D DN 100 – 150
Curing method:	steam (BRAWO® SteamGenerator 50 UL)



Lining of stag pipes from the top floor

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