

# REFERENCES

## PROCTER & GAMBLE

Istanbul, Turkey  
Renovation of a fire water main  
Total length: 145 m (476 ft)  
Installed in multiple sections  
Primus Line® system: DN 300 PN 12



## INSTALLATION UNDER THE RIVER VISTULA IN 10 HOURS

Krakow, Poland  
Renewal of a natural gas siphon pipeline  
Operating pressure: 5 bar (72 psi)  
Total length: 150 m (492 ft)  
Installed in one section  
Primus Line® system: DN 250 PN 19



## HIGH PRESSURE PIPELINE FOR AKZONOBEL

Hengelo, Netherlands  
Renovation of a brine main  
Operating pressure: 25 bar (363 psi)  
Total length: 105 m (344 ft), 1 section  
Primus Line® system: DN 300 PN 25



## 996 M (3,267 FT) UNDERNEATH THE AIRPORT'S RUNWAY

Palma de Mallorca, Spain  
Renovation of a water main for AENA  
Operating pressure: 6 bar (87 psi)  
Total length: 996 m (3,267 ft)  
Installed in two sections  
Four bends of 45°  
Primus Line® system: DN 200 PN 20



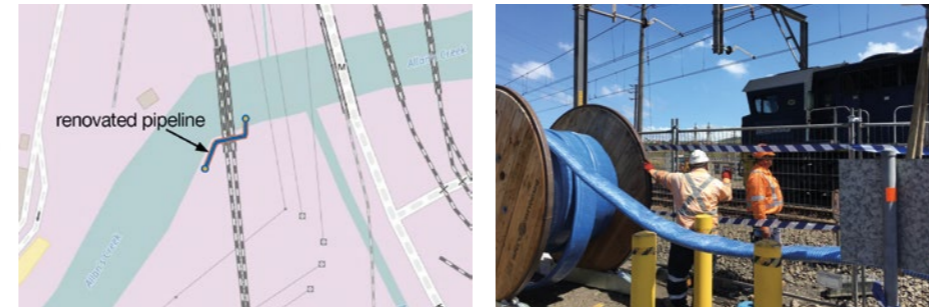
## RENEWAL OF CRITICAL FIRE WATER MAINS AT A SASOL REFINERY

Secunda, South Africa  
Operating pressure: 14 bar (203 psi)  
Total length: DN 250: 38 m (125 ft),  
DN 400: 77 m (253 ft)  
Primus Line® system: DN 250 PN 15,  
DN 400 PN 20



## RAILWAY CROSSING WITH 90 DEGREE BEND FOR A STEEL FABRICATOR

Cringila, Australia  
Rehabilitation of a DN 500 recycled water main  
Operating pressure: 14 bar (203 psi)  
Total length: 420 m (1,378 ft)  
Installed in two sections  
Primus Line® system: DN 400 PN 40  
DN 500 PN 16



## MILITARY BASE, 4,800 M (15,748 FT) FIRE-FIGHTING LINE

Mechanicsburg, United States  
Renewing and upgrading of water infrastructure  
Operating pressure: 4 bar (58 psi) and upgrade to 6.5 bar (94 psi)  
Total length: 4,800 m (15,748 ft)  
Primus Line® system: DN 150 PN 28,  
DN 200 PN 20, DN 300 PN 12



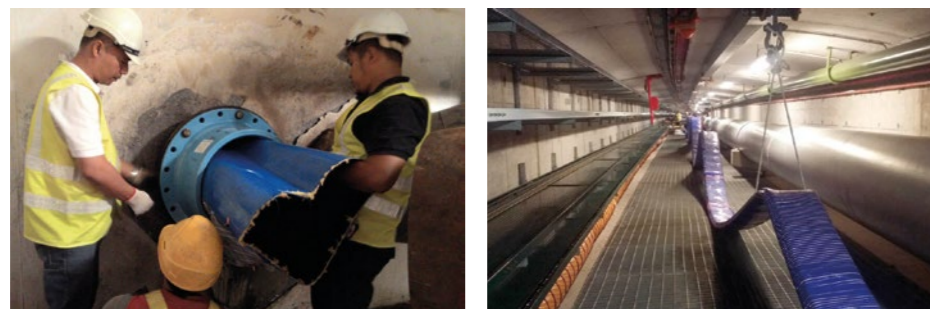
## INDUSTRIAL WATER PIPE FOR A PAPER MILL

Montville, United States  
Rehabilitation of twin DN 300 (12 inch) industrial water lines in three days  
Operation pressure: 11 bar (160 psi)  
Total length: 2 x 298 m (2 x 978 ft)  
Four bends of 45°  
Primus Line® system: DN 300 PN 25



## COOLING WATER PIPE IN MAINTENANCE TUNNEL

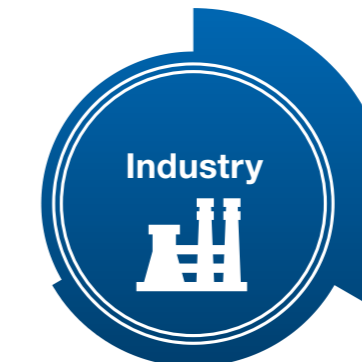
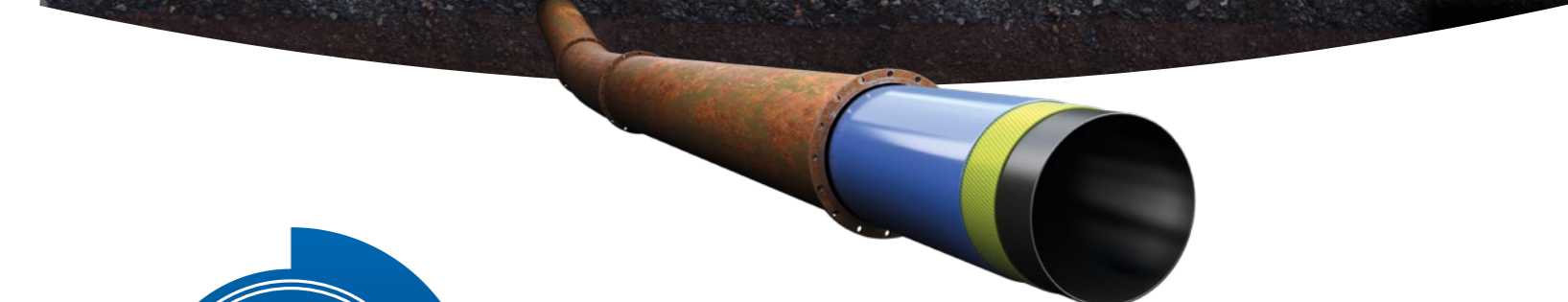
Putrajaya, Malaysia  
Rehabilitation of a twin DN 500 chilled water pipeline  
Operating pressure: 4 bar (58 psi)  
Total length: 100 m (328 ft)  
Installed in two sections  
Primus Line® system: DN 500 PN 16



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**Primus Line® – Flexible technology for the trenchless rehabilitation of pressure pipes**

- ✓ Airports
- ✓ Military Bases
- ✓ Chemical Plants
- ✓ Nuclear Power Plants
- ✓ Food Processing Industry
- ✓ Paper Mills
- ✓ Refineries



Designed,  
developed and  
made in Germany



# PRIMUS LINE® INDUSTRY

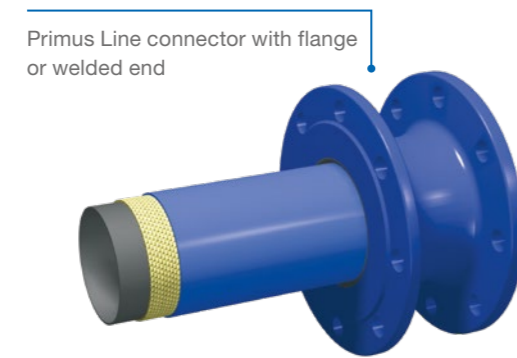
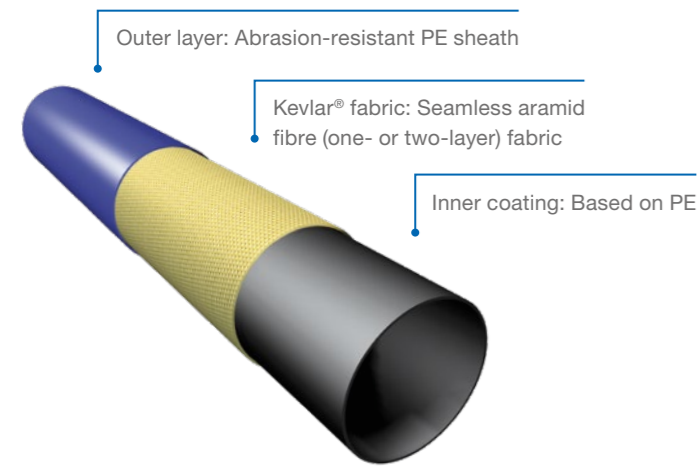
## APPLICATION

### Pipeline rehabilitation made easy

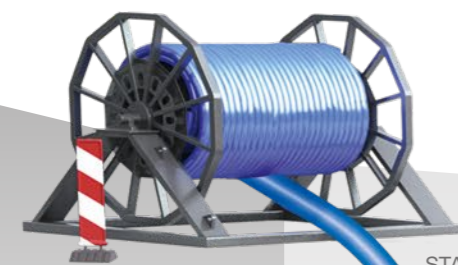
Primus Line® is an innovative technology for the trenchless rehabilitation of pressure pipes suitable for different industrial applications. The process is based on a flexible high-pressure liner and a connection technology, which has been developed specifically for this system. The system complies with numerous international hygienic certifications including NSF/ANSI 61, AS/NZS 4020:2005, KTW W 270, and many more.

Pressure pipelines in industrial companies are often located in difficult to access areas, sometimes even encased in concrete or asphalt. The renovation with traditional open-trench methods can be highly time-consuming, costly and affecting operations. With Primus Line® as a no-dig solution, surgical operations with minimal construction pits can be realized. In addition, the product is completely manufactured and quality controlled in a factory environment, allowing a quick, safe and reliable installation on site. Furthermore, minimum equipment requirements reduce the effect on daily operations. Quick rehabilitation allows industrial companies to improve their productivity.

## FEATURES



Factory-produced product

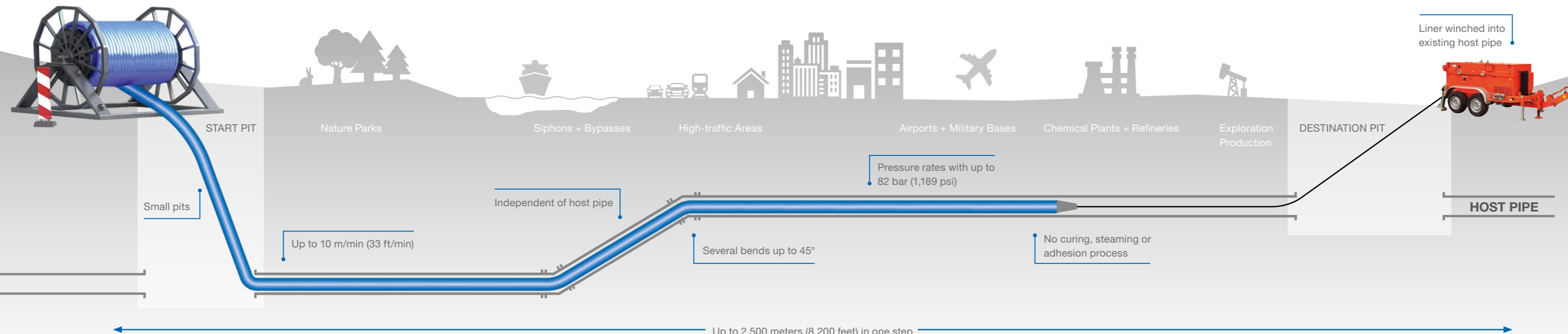


## MOST SUITED ENVIRONMENTS

Pipelines often run through environments that are hard to access. Obstacles to an easy and fast rehabilitation of ageing pipes can be of geographical, economical, architectural or environmental nature.

Primus Line® easily overcomes those obstacles and is uniquely suited for projects in the following areas:

HOST PIPE



# PRIMUS LINE

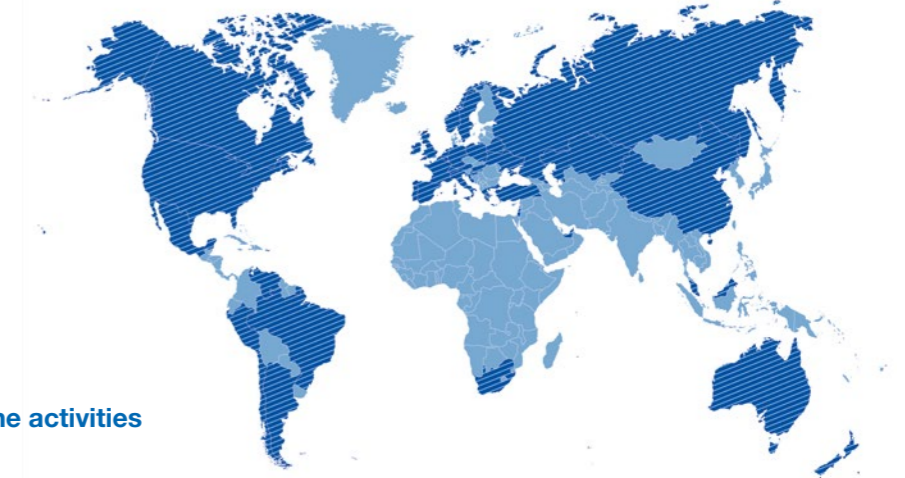
The prime solution for pipes.

- ✓ **Safe and reliable**
  - 100% quality control during the manufacturing process and before shipping
  - No curing, steaming or adhesion process
  - Independent of weather conditions during installation
  - 50+-year lifetime
- ✓ **Operational Advantage**
  - Minor installation footprint
  - Minimum use of equipment
  - Decreased impact on traffic
- ✓ **Technical Advantage**
  - Installation through multiple bends of up to 45°
  - Withstands thermal expansion of the host pipe and seismic movement
  - Fully flexible seamlessly woven Kevlar® fabric
  - Customized connectors enable optimal integration into your system
- ✓ **Cost Advantage**
  - Quick re-commissioning for minimal time of service interruption
  - Installation speeds of up to 10 metres (33 ft) per minute
  - Up to 2,500 metres (8,200 feet) per pull
  - Low pre-investment for installers
  - Small pits and reduction of road work

Headquarters in Germany

Branch offices in the USA and in Australia

Installation Partners worldwide



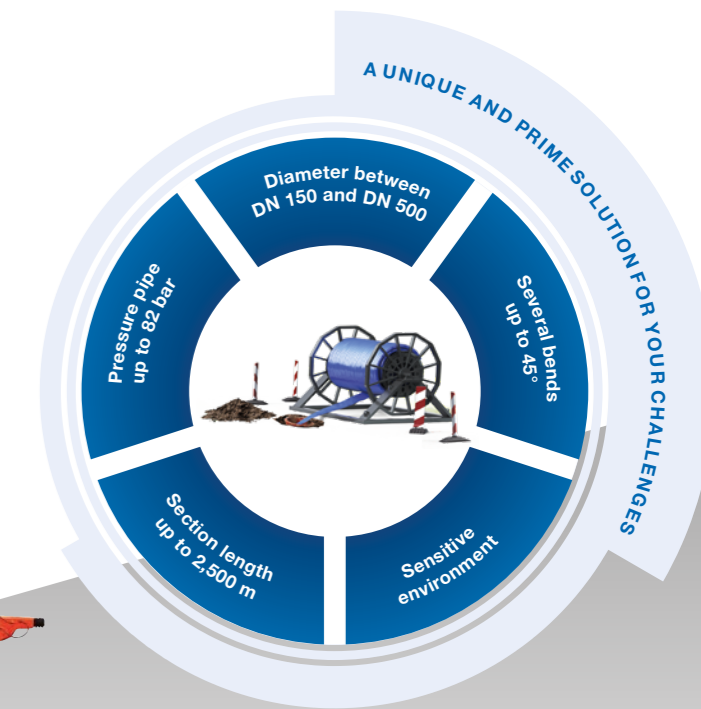
Global Primus Line activities

## APPLIED WORLDWIDE

### Rely on experience!

For more than 55 years, Rädlinger has already been active in the construction industry. Today, Rädlinger primus line GmbH is part of the Werner Rädlinger Group with about 400 employees. With more than 15 years of experience in trenchless pipeline rehabilitation and projects in more than 40 countries, Primus Line® belongs to the leading technologies in the field of trenchless pressure pipe rehabilitation in the world.

Primus Line relies on Germany as production site. A global partner network and own branches in Australia, China, Canada and the USA grant a fast and smooth project handling on site.



## SUITABILITY OF PRIMUS LINE®

Currently Primus Line® is more suitable to rehabilitate damaged pressure pipes between DN 150 and DN 500 (6 inches - 20 inches) in diameter with several bends and for installation sections between 300 metres and 2,500 metres (approx. 1,000 feet - 8,200 feet) in a sensitive or difficult environment quickly and reliably than any other existing system in the world.