

Interflow[®]

Primus Line[®]

New life for pressure pipelines



Primus Line®

Primus Line® is a flexible slip lining solution for the trenchless rehabilitation of pressure pipelines. The system consists of a flexible Kevlar®-reinforced liner and specially developed end fittings. The liner is self-supporting and does not require adhesion to the host pipe – an annular space remains.

Developed by experienced engineers, the system is suitable for rehabilitating pipes of different materials and has proven itself on numerous projects within Australia. As well as rehabilitating damaged pipelines, it can also be used to increase the pressure within existing systems, protect them from corrosion and build bypass systems or stand-alone solutions.

Primus Line is available in nominal diameters ranging from DN150 to DN500.

Primus Line installation

1. Small access pits are excavated at the beginning and end of each section of pipe that is undergoing rehabilitation. The pipe is then cut to create an entry and exit point.
2. The deteriorated pipeline is cleared of debris and obstructions, cleaned, and inspected, noting any bends or changes in diameter.
3. The spool of folded liner is placed at the starting pit of the pipe section. From there, it is winched through the pipe using a pulling head until it reaches the end point.
4. Once the liner is in place, a sealing balloon is inserted at the start and end of the liner, allowing compressed air to be blown into the liner. At the right pressure, the liner will unfold and open to its full diameter.
5. Once inflated, the liner is cut, leaving a 1m length protruding from the pipe. This overhang is used to install specially designed two-piece connectors to each end, providing a permanently sealed connection between the rehabilitated pipe section and the adjoining pipe section.
6. The rehabilitated section is then pressure tested and disinfected before being reconnected to the existing main.

Structural properties

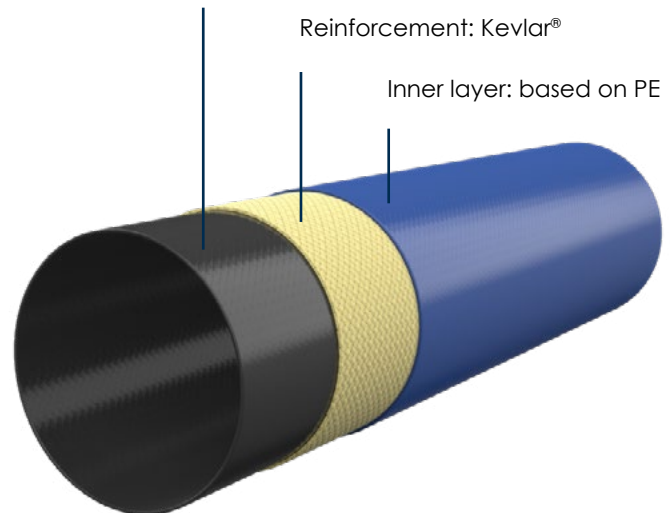
The liner's strength and flexibility is due to its three composite layers; an outer layer made of abrasion-resistant polyethylene, a middle layer of woven Kevlar fabric, and for drinking water applications, an inner layer based on polyethylene (PE).

Based on ISO 11295:2017, Primus Line is considered an independent pressure pipe liner.

Outer layer: Abrasion-resistant PE sheath

Reinforcement: Kevlar®

Inner layer: based on PE



Bend-traversing capabilities

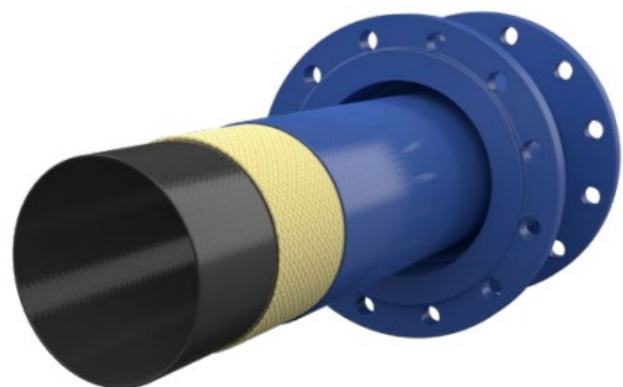
Pipelines often do not run in a straight line. In ailing pipelines, this presents an unsolvable problem for most pipe rehabilitation systems. With its flexible, multi-layered structure, Primus Line can master multiple bends of up to 45° with ease.

Hydraulic capacity

Primus Line's small wall thickness of 6-8mm minimises cross-sectional loss, maintaining near-constant capacity. In addition, Primus Line guarantees improved flow-through characteristics in the pipeline from the smooth PE inner layer.

Low risk, fast installation

Primus Line is made from three flexible layers of Kevlar and PE – a proven pipe material that does not rely on curing for its strength. Installation is performed quickly, at speeds of up to 10m per minute in straight sections, and because there are no resins or heating, there is no risk of cracking, shrinkage, stretching, soft spots or excess resin build-up, making installation a low risk process.



Primus Line connector with flange or welded end

The environment

Sustainability is inherent in the design of Primus Line. Existing pipelines remain in place and excavation is minimal, significantly reducing the impact of rehabilitation compared with dig and relay solutions. With no resins or heat-curing required, no harmful styrene vapours are produced.

The small site footprint makes Primus Line the perfect solution for high volume residential zones, difficult to access sites, and protected natural areas.



Primus Line is winched through the pipe section from a compact, pre-wound spool.



The liner is folded during manufacturing, allowing it to tow easily through the pipe.

Community

Primus Line ensures minimal community disruption:

- The liner is delivered to site on spools, so there is no need for on-site pipe storage.
- Support vehicles are generally small, and equipment is minimal, which reduces the size of the site's footprint and minimises disruption to local traffic.
- There is no waiting for curing or heat treatment, reducing time on site.



Small footprint of the installation set-up minimises community disruption.



After inflation, the 2-piece connectors are installed.

Primus Line®

A low impact lining solution breathing new life into pressure pipelines.

Safety

Ensuring the safety of our people and the community is our number one priority. Primus Line provides a safer alternative to other methods because there are no resins and chemicals to store, handle and dispose of, and no heating, boiling or steam to work with.



Finished product: rehabilitated pipe with Primus Line connectors and hydrant offtake.



Reinstating site after rehabilitation works have been completed.

Experience

Primus Line is a tried and tested system that has been used in pressure pipeline applications across the globe for over 20 years. We have been installing Primus Line since 20xx. With xx installations to our name, we are the only experienced provider of Primus Line in Australia.



A custom-built manifold to allow three liners to be installed at once.

Testing

The liner system has a minimum product life of 50 years. The required extrapolation factors have been established in a series of long-term tests based on ISO 9080. The Primus Line system is certified to AS/NZS 4020:2005 for drinking water products.

An independent external test laboratory monitors the adherence to quality standards during manufacturing.

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