



GEOTECH LPT

Line Pipe Technology

# HDPE In-Pipe Lining Technology



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- **GEOTECH-LPT** specializing in high-performance thermoplastic (HDPE) for internal pipeline protection and rehabilitation.
- **Part of GEOTECH ENERGY SA** <https://www.geotech-energy.com/>
  - Geotech-LPT complements capabilities of GEOTECH ENERGY, pipeline operations, operation & maintenance, inspection and integrity management
    - Coating Monitoring & Inspection
    - Engineering & Design
    - Operations Control & Monitoring
    - Risk Based Inspection (API 580 & API 581)
    - Projected Remained Life
    - Fitness for Services Assessment (API 579)
  - <https://www.geotech-energy.com/services/pipeline-operation-and-maintenance-services/>

# High-density polyethylene (HDPE) lining systems for internal pipeline protection and rehabilitation

Oil & Gas	Mining	Municipal
Water Injection and Disposal Sour/Wet Gas Three-Phase Oil Emulsion Crude Oil Brine CO <sub>2</sub>	Slurry Transport Tailings Concentrate Pregnant Leach Solution Acid Wastewater	Raw Water Potable Water Fire Water Mains Sewer Mains

Within these market segments, there are a multitude of additional services that are well suited for an internal corrosion and abrasion resistant thermoplastic liner.

High-density polyethylene (HDPE) lining is often the best cost and time saving alternative to traditional dig and replace methods.

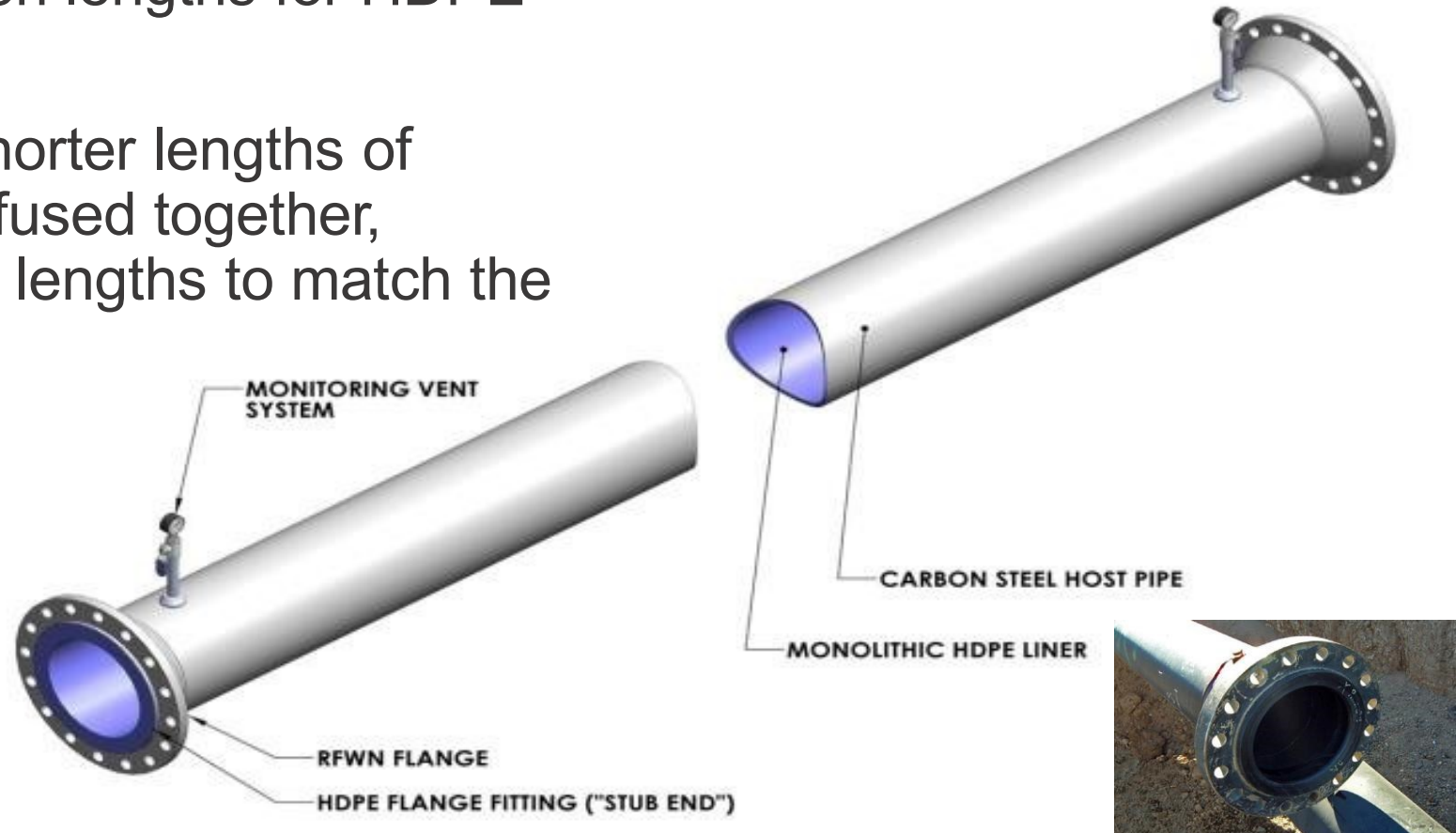
# Why HDPE LINING?

- High density polyethylene (HDPE) is highly **resistant to chemical and biological attack**. Installation of an HDPE liner allows elimination of corrosion inhibitors or chemical biocide treatment for your pipeline.
- HDPE **offers improved resistance to abrasion and erosion** as compared to bare carbon steel. Use of an HDPE liner can significantly increase your pipeline lifespan in abrasive and internally corrosive applications.
- Installation of an HDPE liner is usually much faster and **more cost-effective** than complete pipeline replacement (dig-and-replace) methods.
- HDPE pipe liner surface is approximately 30 times smoother than that of new commercial steel. Use of **HDPE liner improves flow characteristics** and lower operating costs for your pipeline.
- Environmentally friendly trenchless technology **minimizes requirement for digging, eliminate the need for replacing the steel pipeline** and reduces the social and environmental impact of projects.
- HDPE lining **minimizes ongoing operating and maintenance costs** by providing you with a fit-and-forget solution.
- Monitoring vents, gauges, and valves can be used to easily and continuously confirm the integrity of the HDPE lining system and the internal protection of your carbon steel pipelines.
- HDPE lined flange connections have been successfully used in leak-free service on thousands of projects and at pressures above 5,000 psi.
- There is no maximum pressure limitation for the HDPE liner as the host steel pipe provides the structural integrity and pressure containment.
- HDPE lining can be used in applications with temperatures up to 180°F/82°C or higher.
- Pull lengths of 1200 meters or more are possible on HDPE lining projects up to 60" diameter, depending on conditions and parameters.
- Pipeline field bends of 30° or more are possible for the HDPE lining system.
- HDPE resin is a global commodity and generally inexpensive compared to other pipeline protection alternatives.

# Installation

**Step 1.** The host steel pipeline is subdivided into appropriate pull section lengths for HDPE liner insertion.

**Step 2.** On the job site, shorter lengths of HDPE liner are thermally fused together, creating longer monolithic lengths to match the steel pipe segments.



# Installation

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**Step 3.** A cable or Kevlar rope with a sizing plate and blow-down pig is sent through a steel pipeline section.

**Step 4.** At the opposite end of the steel pipe pull section, the cable is attached to a pull-head on the matching HDPE liner.





# Installation

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**Step 6.** Once the HDPE liner has been pulled completely through the host pipe, the tension is released and the HDPE expands, allowing the liner to form a “friction fit” against the steel.

**Step 7.** Specially machined HDPE flange “stub-ends” are used to isolate the lined segments. Steel compression rings are utilized to ensure a leak-free connection between the HDPE casketed steel flanges.

**Step 8.** The lined segment is thoroughly tested prior to bolting up the steel flanges at which point the pipeline is ready to be placed back in service.

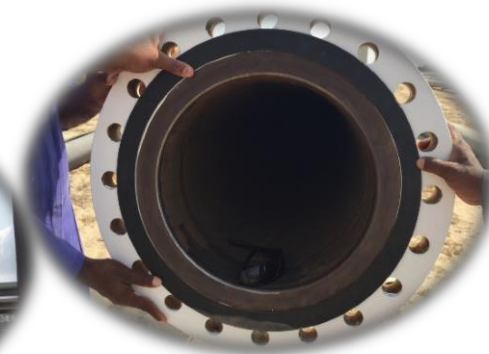


# Installation

**Step 5.** The HDPE liner is pulled through a roller reduction box prior to entering the steel host pipe.

The radial compression of the HDPE liner allows it to temporarily fit within the inner diameter of the steel pipe.

This reduction in the HDPE liner's outer diameter is maintained due to axial tension during the pulling process.





# Why Geotech-LPT ?

- We are committed to doing a more efficient and cost-effective lining solution for protecting your pipelines.
- The safety of not only our personnel and the personnel and property of our clients is of the utmost importance. If we cannot do the work safely, we will stop the work activity.
- All activities are planned prior to commencing. Toolbox talks are conducted daily to ensure that every aspect of a project is planned and executed correctly.
- We are committed to leaving our jobsites in better condition than they were when we arrived by extending the life of pipeline with the installation of the HDPE Liner. We will also remove any debris that we have created.
- Geotech LPT is continually developing new methods and advanced technologies to provide increasingly better, faster, and more cost-effective solutions for our customers.

# Safety and Environment

Safety is of the utmost importance to us all.

This commitment benefits all parties involved. Not only will all of us make it back to our families. We will make our companies strong and productive by increasing employee morale and productivity. GEOTECH LPT's commitment is to empower all our employees to give us feedback to ensure a safe and productive work environment.

Our HSE team is very experienced in the Pipeline industry, and all employees are encouraged to use their 'Stop Work' authority. Our employees are required to participate in a Toolbox talk every day they go to work.

Environment is our home

GEOTECH and its employees respect the environment and will act accordingly. It is an integral part of our work ethic.

HDPE lining protects the environment by enhancing pipeline integrity preventing pipeline leaks and eliminating the need for corrosion inhibitors.

HDPE line pipe requires significantly less repair, maintenance, replacement, while trenchless technology minimizes disruptive digging, reducing the social impact of a project.

# Quality & Experience

GEOTECH LPT is committed to listening to our customers' needs and deliver a solution that will meet or exceed their expectations.

The HDPE pipe lining technology has been used worldwide for approximately 25 years.

Our team is comprised of individuals that have been key to the industry's growth, development and success. Our team has extensive experience working in many parts of the world. This has given us a unique outlook so we can better understand the needs of our clients. Individually, our staff have held critical industry positions for over years and some personnel have spent more than a decade perfecting their skills in the HDPE pipe lining business.

GEOTECH LPT is committed to continuously improve our HDPE Liner Installation program by training our employees. We invest in our employees so that our company can offer our clients the best HDPE Lining options.

# Contacts

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# Thank You

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