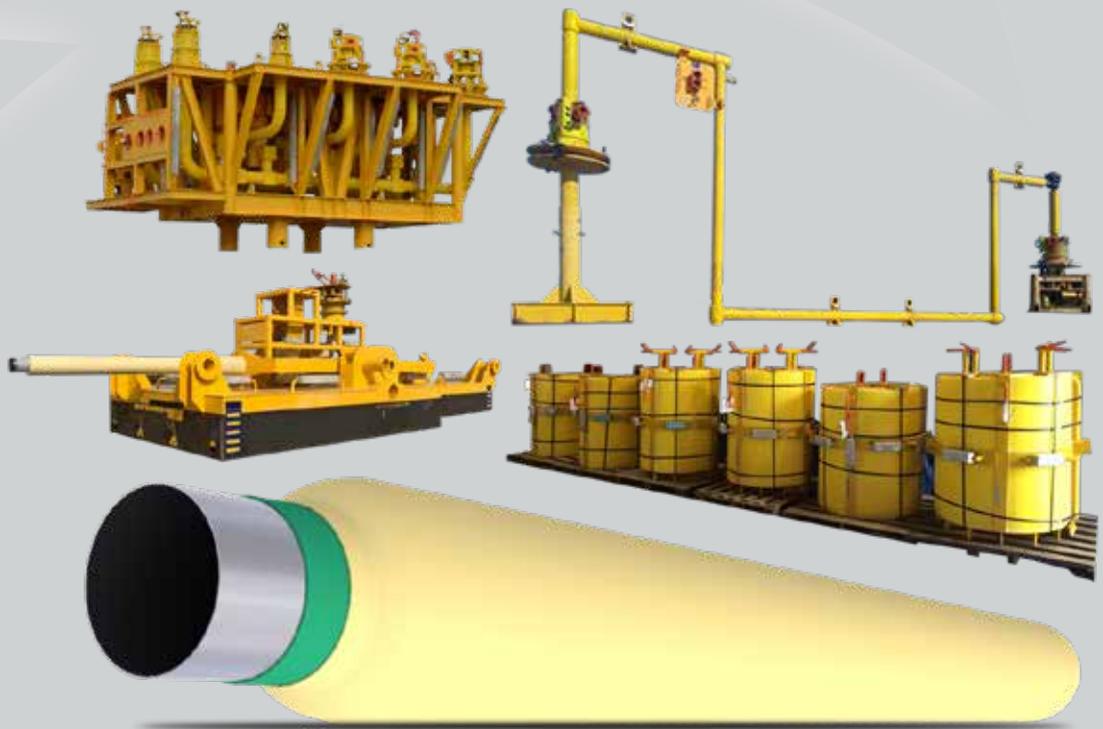


STANDARD SERIES

# FLOW-THERM™

PRE-INSULATED PIPE SYSTEM



PARTNERS IN EXCELLENCE



- End-to-end insulation with the same material provides optimum U-value for entire subsea architecture (same material applied to the pipeline, subsea structure, and field joints)
- Successfully tested under simulated service conditions for one year at 226 °F (108 °C) by the Subsea Wet Insulation Systems Joint Industry Project (SWIS JIP)
- PERMA-PIPE holds the record since 2009 for the world's deepest insulated flowline - Shell Perdido at 9,627 ft (2,934 m) in the Gulf of Mexico

## FLOW-THERM™ ASSURANCE

Subsea pipelines and equipment most often require insulation to maintain fluid temperatures above the point where hydrate or paraffin formation can occur, resulting in restricted or blocked flow and reduced production.

PERMA-PIPE understands these conditions and offers many types of thermal insulation designed to enhance the hydrocarbons flow and other materials transmitted in offshore and onshore pipeline systems. FLOW-THERM™ is specifically designed for subsea applications and is fabricated in ISO certified facilities to ensure the highest quality, safety, and efficiency of our products, services, and piping systems.



## FLOW-THERM™ PERFORMANCE

The FLOW-THERM (formerly Auto-Therm®) system is the Standard Series consisting of either glass syntactic polyurethane (GSPU) suitable for temperatures up to 226 °F (108 °C) or silicone insulation (SI) suitable for higher temperatures up to 320 °F (160 °C) to serve offshore and deepwater project requirements up to water depths of over 10,000 ft (3,050 m).

FLOW-THERM is a highly efficient and cost-effective thermal insulation with excellent compressive resistance when used on subsea flowlines, risers, field joints, and equipments, including such as jumpers, pipeline end terminations (PLETs), pipeline end manifolds (PLEMs), inline structures, shrouds, and doghouses for deep and ultra-deepwater requirements.

## FLOW-THERM™ FEATURES

- Excellent material flexibility, low thermal conductivity, and optimum temperature performance
- Lower thermal conductivity GSPU insulation results in reduced insulation thickness and lower costs compared to other materials while meeting project thermal performance specifications
- Extreme flexibility meeting the stringent requirements for reel lay pipeline installation
- Can be reeled at a radius as low as 13 ft (4 m) and has successfully undergone low-temperature bending trials at 10 °F (-12 °C)

## FLOW-THERM™ SOLUTIONS

FLOW-THERM provides long-term insulation for deep and ultra-deepwater piping applications that comply with all industries' specifications to ensure quality, consistency, safety, and efficiency. PERMA-PIPE can mobilize upon relatively short notice and meet the critical path insulation schedules required for the offshore industry. Our offshore and subsea manufacturing is strategically located in New Iberia, Louisiana, USA, supported by our corporate and sales office in Spring, Texas, USA. Our portable equipment spreads, our experienced field crews and applicators, and our proximity to subsea equipment fabricator's yards and lay contractor spool bases mean that we are available when you need us.

PERMA-PIPE offers turnkey services to meet operational and project challenges beyond the piping system that our clients have come to trust. We provide project planning, engineering support for system construction, design assistance and calculations, project management, pre-fabrication services, and field service training certification to reduce your installation, environmental, and safety concerns from start to finish of a piping project. Our extensive track record of successful global projects will showcase our experience.





## FLOW-THERM™ OPTIONS

### Standard Series:

Glass Syntactic Polyurethane (GSPU)  
Silicone (SI)

### Carrier Pipe Options:

Carbon Steel  
Stainless Steel  
Clad Pipe

### Applications:

Subsea Processing Equipment  
Offshore Pipelines  
Field Joint Coatings

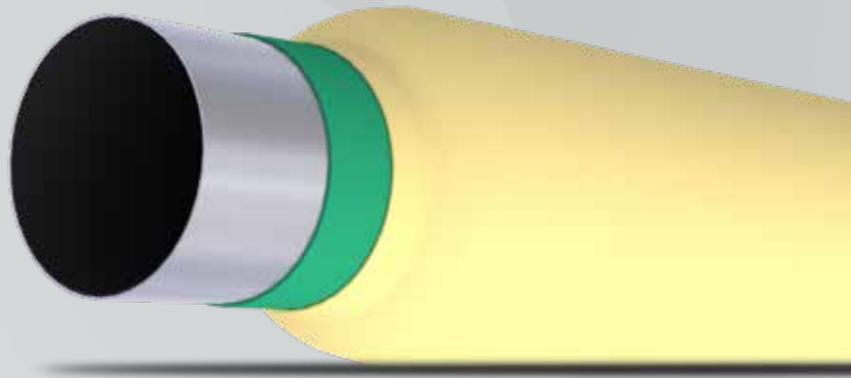
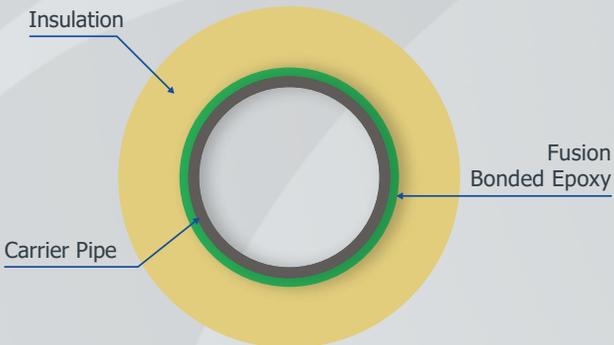
[Please see datasheet for FLOW-THERM specifications at [permapipe.com](http://permapipe.com)]

## PARTNER WITH PERMA-PIPE

PERMA-PIPE International Holdings, Inc. (NASDAQ:PPIH) is a global engineered pipe services company offering core competencies in anti-corrosion coatings, insulation solutions, containment systems, leak detection systems, engineering support, field service, and custom fabrication.

When you do business with PERMA-PIPE, you are partnering with a company that has served the industry for over 100 years and has vast experience in all the markets we serve. You are not just buying a long-lasting, reliable piping system; you are also investing in a partnership with a company that stands behind its products and services while providing lasting peace of mind.

## TYPICAL FLOW-THERM™ CROSS-SECTION





 [askpermapipe@permapipe.com](mailto:askpermapipe@permapipe.com)

 [permapipe.com](http://permapipe.com)

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