



# **CORROSION UNDER INSULATION SOLUTIONS**

**PREMIER ENGINEERED PRE-INSULATED  
PIPE SYSTEMS**

PARTNERS IN EXCELLENCE



- XTRU-THERM® utilizes high-density polyethylene (HDPE) as a durable, waterproof jacket material
- POLY-THERM® utilizes fiber-reinforced polymers (FRP) for applications requiring high impact resistance
- Fully bonded system, from the steel to the anti-corrosion coating layer, foam and jacket
- Void-free and closed-cell polyurethane foam for optimum performance, CUI mitigation, and longer service life
- A wind-down end seal system prevents water ingress at the pipe cutbacks
- An optional aluminum diffusion barrier maintains thermal conductivity over time and maximizes the complete bond between jacket and polyurethane insulation

## PREVENTION MATTERS

Corrosion under insulation (CUI) is a severe form of localized, external corrosion that commonly occurs on insulated carbon steel piping systems that operates between 25 °F (-4 °C) and 350 °F (177 °C). The cause of CUI is widely known and it is important to understand the most common contributors:

- Moisture, or water in all forms, is the greatest contributor to corrosion
- Operating temperature
- Chemical and process liquid exposure
- Intermittent idle or variable (cyclic service) operations

Prevention lies in controlling these contributors to CUI through proper system design and material specification, installation, and maintenance.

## SYSTEM DESIGN & MATERIAL SPECIFICATION EXCELLENCE

Prevention starts with the proper design of the piping system and the selection of materials. PERMA-PIPE is available to support from start to finish with:

- The selection and engineering of the suitable insulation system start with the foam density, thickness, compressive strength combined with an adequate jacket. The goal is to provide the optimum thermal conductivity at project operating temperatures, avoid moisture ingress, and prevent damage during shipment, installation, operation, or maintenance with the result of extending the life of your asset
- Design of the piping system to meet project requirements with compatible and same standard field joints
- PERMA-BOND™ and FAB-COAT™ anti-corrosion coatings are available according to operating temperature and environmental conditions

## EASY INSTALLATION

Field applied insulation systems are vulnerable to poor installation and require a high level of craftsmanship. PERMA-PIPE's pre-insulated piping systems are:

- Manufactured in an ISO certified, quality-controlled, factory environment ensuring the highest quality and repeatability
- Custom designed in modular sections of pipe spools which ship from our plant to the project site is easily assembled
- Field joints are coated, insulated, and jacketed onsite with identical or compatible materials creating a watertight end-to-end system



## PERMA-PIPE'S SOLUTIONS

PERMA-PIPE provides industry-leading solutions addressing CUI problems. XTRU-THERM (HDPE jacket) or POLY-THERM (FRP jacket) systems avoid premature failure of the piping system due to corrosion and resulting in production downtime, costly maintenance & repair, and health & safety risks. Furthermore, these systems not only increase overall value by reducing installation and field labor costs, but also extending the life of the piping system.

## MAINTENANCE-FREE

If system design, material specification or installation do not lead to CUI, maintenance can. PERMA-PIPE's pre-insulated pipe systems are virtually maintenance-free.

- PermaAlert® leak detection systems detect small amounts of moisture on the pipe or in the insulation, providing an early warning of potential problems
- XTRU-THERM and POLY-THERM can be designed to include inspection ports
- Polyurethane insulation is fully bonded to the pipe and it is a closed-cell foam preventing water migration where inspection ports are used



## 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.

## CUI SYSTEMS THAT YOU CAN TRUST

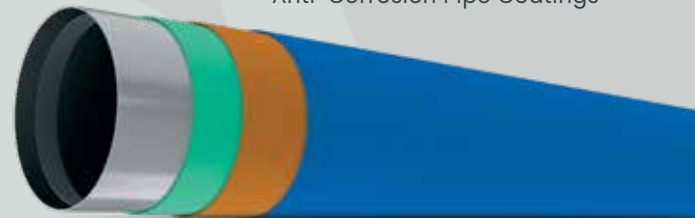
### XTRU-THERM™

Pre-Insulated Pipe System



### PERMA-BOND™

Anti-Corrosion Pipe Coatings



### POLY-THERM™

Pre-Insulated Pipe System



### FAB-COAT™

Custom Coatings





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