Perma-Pipe provides Auto-Therm® GSPU insulation for the LLOG Delta House project using BASF Elastoshore mercury free polyurethane

Winning Team
Perma-Pipe and BASF are industry leaders supplying thermal insulations for flow assurance for offshore and onshore pipelines and equipment. Auto-Therm® GSPU (Glass Syntactic Polyurethane), Perma-Pipe’s most popular thermal insulation product for offshore applications, was used extensively for LLOG’s Delta House and prior offshore projects.

Perma-Pipe New Iberia plant with Auto-Therm® GSPU pipe storage

Auto-Therm® GSPU was developed in partnership with BASF, a world leader in polyurethane chemistry and the development and manufacture of polyurethanes and other specialty materials. Perma-Pipe and BASF have a long history of working together to provide insulation technology solutions for many different industries and applications; BASF on material development, and Perma-Pipe on material application processes. Together they have the expertise and capabilities to provide GSPU insulation for subsea pipelines and equipment to meet critical project requirements safely and economically. Their combined expertise resulted in the highly thermal efficient and cost effective Auto-Therm® GSPU, the product used for Delta House.

Perma-Pipe’s Auto-Therm® GSPU, has been used on deepwater subsea pipeline projects since 2005. Backed by years of testing from independent third party organizations including Heriot-Watt University, Edinburgh, Scotland, Stress Engineering, Houston, TX, and the Industry Project (SWS JP) managed by Chevron, to name a few. The SWS JP members include major oil and gas operators, pipeline lay contractors, subsea equipment manufacturers and thermal insulation applicators. In addition to the independent testing, Perma-Pipe and BASF have conducted extensive in house R&D, testing and application trials.

Perma-Pipe is the leading supplier of GSPU insulation to independent and major oil and gas operators in the Gulf of Mexico. Auto-Therm® GSPU has been supplied to over 30 projects, totaling over 1,350,000 feet (411 km) and holds the world’s record for the deepest insulated flowline for Shell Perdido at 9,627 feet (2,934m) water depth, in service since 2009. Perma-Pipe also insulates the subsea equipment including, jumpers, PLETs, PLEM’s, manifolds, trees, goose necks, connector covers / doghouses and other equipment for many offshore projects.

BASF’s Unique Mercury Free Chemistry
Working closely together, Perma-Pipe and BASF were the first to develop and offer mercury free GSPU insulation for the offshore industry in 2004. Perma-Pipe and BASF continue to improve the overall performance, thermal and mechanical properties, and processing methods for Auto-Therm® GSPU.

Auto-Therm® GSPU was developed to provide a combination of excellent material flexibility, low thermal conductivity and optimum temperature performance required for offshore pipelines and subsea equipment. Auto-Therm® GSPU:

- Extremely flexible to meet the stringent requirements for insulated pipeline installation using the reeling method. Auto-Therm® has been reeled to a radius as low as 13 feet (4 m) and has successfully undergone low temperature bending trials at 10°F (-12°C).
- The lowest thermal conductivity GSPU insulation available, resulting in less insulation thickness than other products to meet project specific performance specifications.
- Proven successful in simulated service conditions for one year at 228°F (108°C) by the SWIS JP. With over 35 polyurethane manufacturing locations around the world, BASF is well positioned to supply the global subsea insulation market. With over 110,000 employees and over 1,500 patents filed yearly worldwide, BASF is the world’s largest chemical company and the leader in polyurethane technology.

Perma-Pipe’s Strong Relationship with LLOG
Perma-Pipe has been LLOG’s insulation supplier for their offshore projects including Who Dat, Who Dat extension, Goose, Mandy, GC 141 and others. Working closely with LLOG’s subsea engineering partner, Pinnacle Engineering, LLOG selected Auto-Therm® GSPU to insulate all the flowlines, risers and subsea equipment for Delta House.

Delta House is the largest single project using Auto-Therm® GSPU, consisting of approximately 318,000 feet (97 km) of flowline and riser pipe, and subsea equipment including: 16 jumpers, 8 PLETs, and 4 in-line sleds.

Delta House’s tight schedule required Perma-Pipe to insulate a large quantity of pipe in coordination with the lay contractor’s schedule for spool base welding, reeling and installation. To meet this demanding schedule, Perma-Pipe worked multiple shifts, 24 hours a day for most of the project and coordinated very closely with BASF to ensure on time material delivery to supply Perma-Pipe without interruption.

BASF manufacturing facilities in Houston, TX and Geismar, LA delivered the polyurethane materials to support this schedule while meeting all material and quality standards and specifications. Through this close coordination, Perma-Pipe and BASF completed the GSPU insulation of the flowline and riser pipe to support the installation contractor’s spool base welding and installation schedule without any disruptions or delays.

Perma-Pipe’s patented production process is unique in that it allows 80 foot (24m) nominal length pipe to be insulated for quad and lay installation methods reducing the number of field joints in half resulting in significant cost savings and installation time by the offshore lay contractor.

In addition, Perma-Pipe’s New Iberia, LA facility is strategically located near lay contractor spool bases along the Gulf Coast and with access to the intercostal waterway, allowing for quick and convenient delivery of insulated pipe to lay barges in the Gulf of Mexico. This location also has competitively served the West Africa and Brazil markets.

Subsea Equipment Insulation
Perma-Pipe also provides Auto-Therm® GSPU for subsea equipment. In addition to Auto-Therm® GSPU, Perma-Pipe offers Auto-Therm® SI, a silicone insulation suitable for higher temperatures.
up to 320°F (160°C). For these specialized services, portable processing equipment is mobilized to the equipment fabricator’s yards all along the Gulf coast states.

Perma-Pipe’s multiple portable equipment units, responsive and experienced field crews, ability to mobilize on short notice and close proximity to equipment fabricator’s yards enables tight insulation schedules to be met.

About Perma-Pipe
Perma-Pipe, Inc. is a leading supplier of preinsulated and prefabricated piping system products and solutions for industrial and commercial markets around the world. Perma-Pipe is known worldwide for innovation and the ability to provide solutions for the most difficult applications.

In addition to the offshore oil and gas products supplied to the Delta House project, Perma-Pipe’s other products include:

- District heating and cooling (DHC) piping systems for efficient energy distribution from central energy plants
- Industrial piping systems for efficient and safe transport of hot and cold fluids
- Industrial secondary containment piping systems for transporting chemicals, hazardous fluids and petroleum products
- Piping systems for cryogenic applications including LNG, ammonia, propane and butane
- Onshore insulated long lines for oil, gas and mineral transportation
- Heat trace systems for temperature maintenance and to enable viscous fluids such as heavy crude oil, sulfur and asphalt to flow efficiently
- Leak detection products for piping systems and sensitive areas such as data centers

Perma-Pipe’s global manufacturing footprint consists of 7 facilities:

- New Iberia, LA USA
- Lebanon, TN USA
- Camrose, Alberta, Canada
- Fujairah, United Arab Emirates (UAE)
- Dammam, Saudi Arabia
- Gujarat, India
- Santa Marta, Colombia (opens 2015)

Perma-Pipe also mobilizes portable insulation equipment for projects anywhere in the world where large savings in transportation and logistics costs can be realized by locating the insulation facility near the project.

Perma-Pipe is a division of MFRI, Inc. a public company listed on the NASDAQ exchange. MFRI has two divisions; Perma-Pipe, Inc. and Midwesco Filter Resources, Inc. Midwesco manufactures fabric bag and cartridge filter elements for a variety of industrial end use markets.

Perma-Pipe and BASF are proud to have been selected by LLOG to be a part of the overall success of the Delta House project.