



CASE STUDY

MALAYSIA OIL & GAS COMPANY

Offshore Pipelay

GROUNDBREAKING ADVANCES IN OFFSHORE PIPELAY

DENSO'S VISCOTAQ™ OFFSHORE FIELD JOINT COATING SYSTEM



Project Data

Location	Malaysia
Completion	2024
Project Type	Offshore Pipelay
Products Used	Viscotaq™ OFJC System (Denso ViscoWrap™ XHT, Denso Viscotaq™ PE Outerwrap, Denso™ Glass Outerwrap and Denso Rock Shield)

Project Details

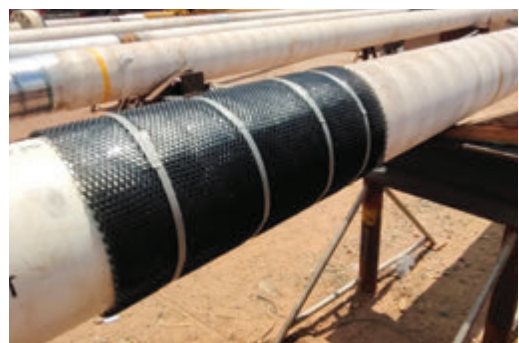
In June 2024, a Malaysia-based oil and gas exploration and production company embarked on an ambitious offshore pipelay campaign aimed at developing three offshore gas fields in Southeast Asia. Executed by a renowned global Offshore Installation Contractor (OIC), the project entailed the construction of two new sour-rated carbon steel pipelines, including risers and subsea spools. These pipelines included an 11.1 mi (18km) run of (10") (254mm) diameter pipe and a 13.6 mi (22km) run of 12" (304.8mm) diameter pipe, both designed to operate at a temperature of 228°F (109°C).

Project Overview

For this challenging project, the team selected a state-of-the-art global offshore installation DP3 pipelay barge capable of performing S-lay operations with up to 60" (1,524mm) diameter pipelines. This campaign was the first time the offshore installation contractor used a cold applied field joint coating system, specifically the innovative Viscotaq™ Offshore Field Joint Coating (OFJC) system. For this project, the Viscotaq OFJC system was comprised of four layers: ViscoWrap™ XHT, Viscotaq™ PE Outerwrap, Denso™ Glass Outerwrap, and Denso Rock Shield.

- ViscoWrap XHT: is comprised of a viscoelastic adhesive compound, reinforced with an HDPE mesh and backed with a PE film. It provides the corrosion protection layer of the Viscotaq OFJC system.
- Viscotaq PE Outerwrap: is comprised of a polyethylene tape coated with an adhesive layer. It provides circumferential compression to the corrosion protection layer of the Viscotaq OFJC system.

(con't →)



Date Published: 2024

Denso North America - Canada (Ontario)
90 Ironside Crescent, Unit 12 / Toronto, M1X 1M3
Tel: 416-291-3435 Fax: 416-291-0898
sales@densona-ca.com

www.densona.com
A Member of Winn & Coales International

Denso, Inc. - USA
9710 Telge Road / Houston, TX 77095
Tel: 281-821-3355 Fax: 281-821-0304
info@densona.com

Surface Prep



Viscowrap



PE Outerwrap



Glass Outerwrap



Rock Shield



- Denso Glass Outerwrap: is comprised of a woven glass fabric, impregnated with a moisture-cured polyurethane resin. It provides mechanical protection to the Viscotaq OFJC system.
- Denso Rock Shield: is comprised of an extruded polymer mesh. It provides sacrificial, additional mechanical protection to the Viscotaq OFJC system during pipeline construction.

Rigorous Testing

The start of this successful campaign began in early 2023 with an extensive third-party testing phase. This testing was to confirm that the Viscotaq™ OFJC system met the requirements of the international standard ISO 21809-3; ultimately, it was deemed that the Viscotaq OFJC system successfully met all requirements of the standard, at a maximum service temperature of 239°F (115°C). The Denso Glass Outerwrap also demonstrated outstanding abrasion resistance and excellent impact resistance.

Training and Product Qualification Tests (PQT) were conducted at one of the OIC's facilities in Kuantan, Malaysia. This demanding phase required a short total cycle time including the time allowed for the Denso Glass Outerwrap to cure to a minimum of Shore D 40. The PQT phase concluded successfully, with the OIC's applicators demonstrating their ability to apply the entire system in under 4 minutes with the Denso Glass Outerwrap achieving an average Shore D 45 hardness after a cure time of 5 minutes. The product application was so user-friendly that after just 2 hours of training, the OIC's applicators were able to start applying the Viscotaq OFJC system independently.

In addition to the PQT, the OIC required Roller Box Testing to be completed. The Viscotaq OFJC system was subjected to a 10-tonne load roller/stinger simulation. This testing was completed during the Pre-Production Test (PPT) stages at the OIC's yard. The Viscotaq OFJC system met all requirements of the Roller Box and PPT.

Seamless Project Execution and Project Completion

The project was awarded to Winn & Coales (Denso) Ltd in collaboration with Pluperfect Technology, Denso's local Malaysian partner, at the end of 2023. Denso promptly manufactured approximately 7,000 pre-cut ViscoWrap XHT sheets (the inner layer of the Viscotaq OFJC system) – along with the other system components – within three weeks.

By June 2024, the installation team had completed the entire FJC work onboard the OIC's pipelay vessel, finishing three days ahead of schedule and realizing savings of over one million USD.

Conclusion

This project has highlighted the advantages of the Denso Viscotaq OFJC system. This choice of system has demonstrated to both the client and the OIC that a cold-applied FJC system can be safe, efficient, robust, and effective while significantly reducing specialist equipment and manpower.

Project Key Performance Highlights

Key performance highlights from the use of the Denso Viscotaq™ Offshore Field Joint Coating System on this project include:

- Achieving a record 1,766 hours free of Lost Time Injury (LTI) during the FJC operation.
- Averaging 200 to 290 Field Joint Coating (FJC) joints per day for the 12 in (304.8mm) and the 10 in (254mm) diameter pipelines respectively with a peak of 305 joints per day.
- Production application time of less than 5 minutes per joint.
- One of the lowest industry repair rates of 0.28% and 0.07% for the 12 in (304.8mm) and 10 in (254mm) diameter pipelines respectively. Averaging 0.19% for the entire campaign versus the KPI of 5%.
- Realising further cost savings by eliminating the need for PU infill foam on concrete weight joints.

Company Profile

Denso, Inc. a subsidiary Winn & Coales international, specialize in the manufacture and supply of corrosion and chemical resistant coatings and linings for the long-term protection of steel, concrete and timber surfaces in the toughest corrosive environments. The company is at the forefront of innovative corrosion prevention technology, focused upon developing an extensive range of custom solutions to meet the specific needs of different industries. Our full range of products are manufactured to comply with the strict quality standards. The products are designed for longevity, with corrosion prevention solutions that can offer up to 30+ years of maintenance free service.

Date Published: 2024

Denso North America - Canada (Ontario)
90 Ironside Crescent, Unit 12 / Toronto, M1X 1M3
Tel: 416-291-3435 Fax: 416-291-0898
sales@densona-ca.com

www.densona.com
A Member of Winn & Coales International

Denso, Inc. - USA
9710 Telge Road / Houston, TX 77095
Tel: 281-821-3355 Fax: 281-821-0304
info@densona.com