Cover: A Densopol™ Tape System protects a water main in Oman - see pages 12 and 13.

Winn & Coales International Ltd.

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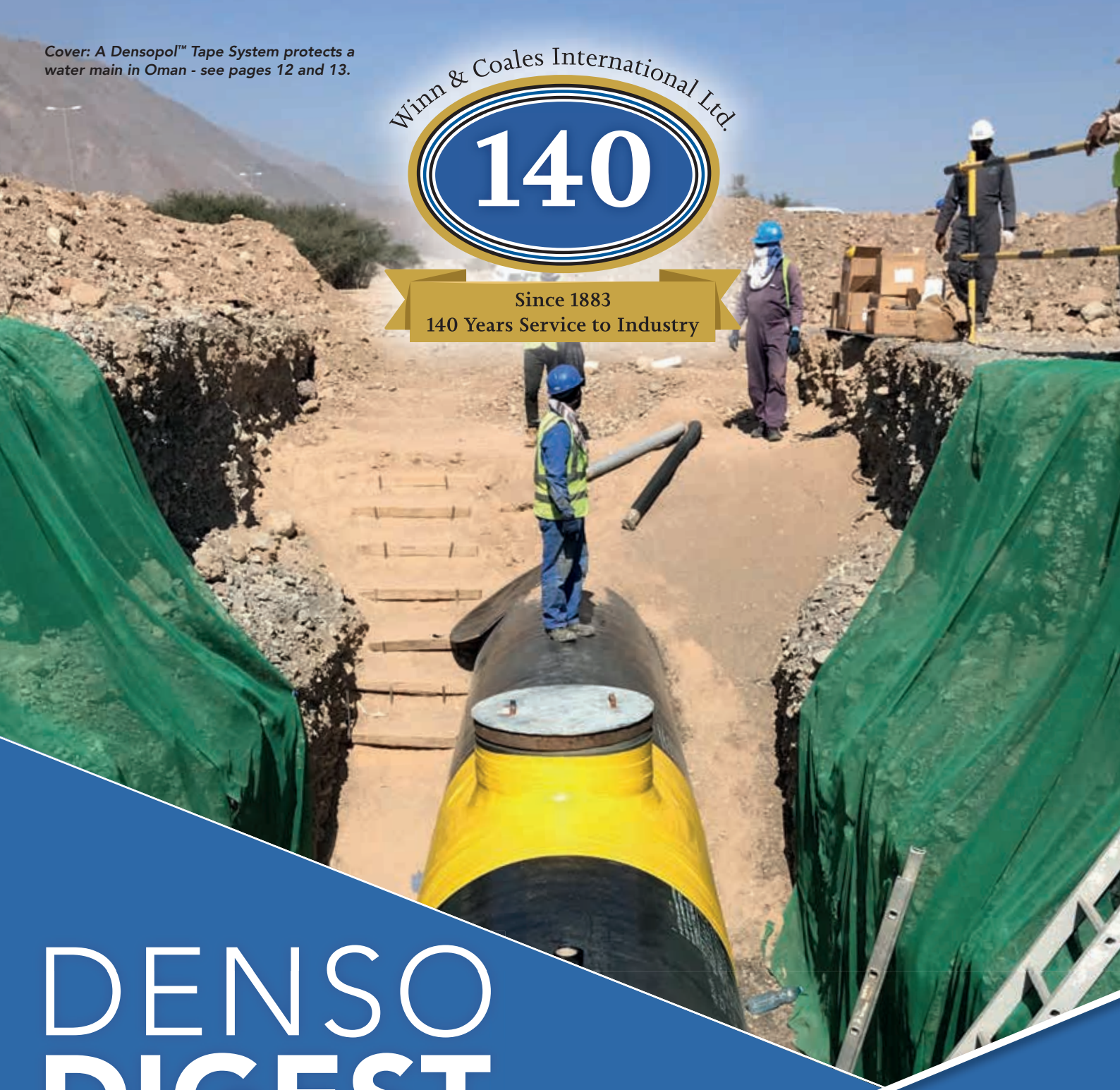

DENSO DIGEST

Winn & Coales International Ltd

Volume 37, Number 1

Denso®

WINN & COALES INTERNATIONAL

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Denso Bore-Wrap™ Protects UAE Gas Pipeline

Application of the Denso abrasion resistant system is underway.

ADNOC Sour Gas is a pioneer in sour gas field development and operates the world's largest ultra-sour gas operation, with the capacity to produce 1.28 billion standard cubic feet of gas per day and 4.2 million tons of sulphur per year.

To complete the application, Denso™ Poly-Wrap is applied over the Denso Bore-Wrap as a temporary curing aid.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	UAE
Object:	24" FBE coated gas pipeline
Problem:	Abrasion resistance required
Product Solution:	Denso Bore-Wrap™

The project involves the Engineering, Procurement and Construction (EPC) contract for the Optimum Shah Gas Expansion (OSGE) & Gas Gathering project for the supply of materials, and the construction and commissioning of additional components, including a 24" diameter pipeline at the Shah Gas plant.

The expansion will optimise the plant, as well as improve both capacity and higher-end product recoveries, further growing contribution as a safe and reliable supplier of gas to ADNOC and the UAE.

The Denso Bore-Wrap™ was selected as an Abrasion Resistant overlay to the 24" dia. FBE coated pipeline for three separate 110 meter long HDD applications at road crossings.

Denso™ Petrolatum Tape System Protection for USA Gulf Coast Firewater Line

An oil terminal located in the Gulf Coast was installing a new firewater line and they wanted to protect it from corrosion so that it would function correctly in the event of a potential catastrophic fire disaster at the facility. Several hundred flanges and valves ranging from 4" to 20" in diameter needed to be protected on the firewater line. With most paint systems, weather can play a factor in it deteriorating quickly over time, allowing corrosion to set in through the tiniest coating cracks or imperfections. To mitigate this calamity, the owner turned to Denso's Petrolatum Tape System to be the primary source of corrosion prevention on this project.

Denso™ Profiling Mastic is applied into voids and over sharp edges to provide a smooth profile prior to the tape application.

The Denso™ Petrolatum Tape System was specified by the design engineer to ensure the firewater lines would be in pristine working condition for years to come.

The Petrolatum Tape System is comprised of 3 main components and typically has an outerwrap for mechanical protection. This application uses Denso™ Paste, Denso™ Profiling Mastic, Densyl™ Tape, and Denso™ Glass Outerwrap for mechanical protection. This system is easily applied by hand without requiring specialized training or equipment. Furthermore, the application can commence with minimal surface preparation of SSPC-SP 1/2. First, the Denso Paste is applied as the first defense layer of corrosion prevention. This petrolatum primer helps fill in any pitted areas where the Densyl Tape may not come into contact with the surface and contains moisture-displacing corrosion-inhibiting compounds. The second step is application of Denso Profiling Mastic on the flanges and valve's irregular and sharp corners, to create a smooth profile across these areas before applying the Densyl Tape. The Densyl Tape, a petrolatum wax tape, is then spirally wrapped by hand over each flange and valve to completely seal out oxygen and water.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	USA
Object:	Firewater Pipeline
Problem:	Corrosion Prevention
Product Solution:	Denso™ Petrolatum Tape System

Denso Paste is easily applied to the substrate by gloved hand or brush as the initial application step.

Depending on the project's environment and during backfill, there are several different Denso options for an outerwrap to protect the Denso system and keep it in place. In this instance, Denso™ Glass Outerwrap was used as the outerwrap. This material cures quickly, within 30 minutes, creating a hard protective shell around the tape system underneath from mechanical damage. Once cured, the tape system is ready to be backfilled. The Denso™ Petrolatum Tape System meets NACE RP0375-2006 and AWWA C217 standards and is also CSA Z245.30 compliant.

The owner and engineers were pleased with how easily and quickly the Denso Petrolatum Tape System was installed, protecting hundreds of flanges and valves, and completing the project ahead of schedule. This allowed the new firewater line to become operational on time and saved money on the project by the speed of completion. The owner's assets will receive decades of corrosion prevention with the help of the Denso System.

Opposite: A smooth profile is achieved with Denso Profiling Mastic prior to the application of Densyl Tape.

Large water valve completely encapsulated with the Denso Petrolatum Tape System will provide decades of corrosion prevention.

Additional Denso Steelcoat 100/400™ Protection for the Craigavon Bridge

The Craigavon Bridge, Derry City, N.Ireland.

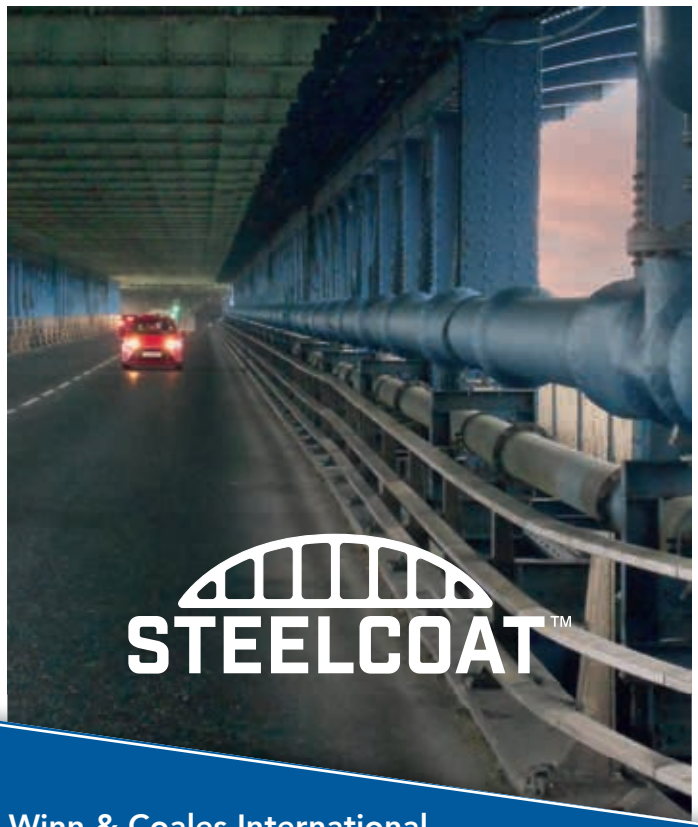
In 2013 Winn and Coales (Denso) Ltd supplied their Steelcoat 100/400™ System to provide long term corrosion protection to a Gas Pipe located on the Eastern Side of the Craigavon Bridge in Derry City.

PROJECT SUMMARY

Product type:
Coatings for Exposed Ductile Iron

Region:	N.Ireland
Object:	Waste water pumping main
Problem:	Corrosion prevention
Product Solution:	Denso Steelcoat 100/400™ System

The waste water pumping main runs beside the traffic on the busy bridge crossing.



The success of this application helped to lead to the use of the same system by Northern Ireland Water to protect 281m of a 500mm dia waste water pumping main with 77 bolted flanges and 32 support brackets on the same bridge.

APP Fusion Group from Lisburn, who supply Winn and Coales (Denso) Products mentioned the proposed application to Winn and Coales in 2016 and following discussions with AECOM in Belfast the Steelcoat 100/400 System was selected as the preferred option for protecting the wastewater pipe.

BSG Civil Engineering Ltd were appointed as the main contractor for the work and the application of the system was carried out over a 10 week period during August, Sept and October 2022.

Above and below: The Denso™ Acrylic Topcoat that completes the Steelcoat 100/400 System protected waste water pumping main, was coloured blue to match the surrounding steelwork.

Work was carried out with a partial lane closure of the carriageway on the bridge and the use of the Steelcoat 100/400 System helped to minimise the disruption to traffic as the system provides long term corrosion protection with minimal surface preparation thus reducing the time of application.

Winn and Coales (Denso) Ltd provided training and site support during the application which was carried out professionally by BSG and their sub contractor, O'Kane Civil Engineering.

The Steelcoat 100/400 System has been used by many Water Companies throughout the UK to protect above ground pipes and has been proven to provide long term corrosion protection over many years.

The System consists of Denso™ Hi-Tack Primer, Denso™ Profiling Mastic, Denso™ Hi-Tack Tape, Denso™ Ultraseal Tape and Denso™ Acrylic Topcoat. On the Craigavon Bridge Contract the Denso Acrylic Topcoat was supplied in same blue colour as the bridge structure.

Combined Denso™ and Viscowrap™ System Protects Weathered Asbestos Pipeline

Kwa Mhlanga Construction approached Denso for a suitable system that will offer a solid seal to an existing 1016 mm Ø asbestos pipeline in exposed conditions.

PROJECT SUMMARY

Product type:
Coatings for Exposed Ductile Iron

Region:	Republic of South Africa
Object:	Asbestos pipeline
Problem:	Surface deterioration
Product Solution:	Combined Denso™ & Viscotaq™ Systems

Above: Denso™ Glass Outerwrap coated with Denso™ Shield applied as the final mechanical layer.

The pipe had been exposed to the elements for over five years and the prolonged exposure caused the pipe surface to show cracks along the cradle areas.

Below: Viscowrap™ ST applied with Viscomastic™ on concrete collar joint.

The surface was suitably prepared using a steel wire brush to clean and provide a sound surface for the coating to adhere to. Denso proposed Viscowrap™ ST, Denso™ Glass Outerwrap with Denso™ Shield topcoat as the final layer.

Viscomastic™ was applied at the spigot and socket interface to provide a uniform surface for both the tapes to conform to.

Combined Denso™ + Viscotaq™ System Protects Fuel Storage Plant Tank Base

Denso's Steelcoat™ Tank Base Protection System has been successfully used as the preferred system at the Watloo Fuel storage facilities for a number of years.

PROJECT SUMMARY

Product type:
Coatings for Exposed Ductile Iron

Region:	Republic of South Africa
Object:	Fuel storage tanks
Problem:	Tank base watertight seal required
Product Solution:	Combined Denso™ & Viscotaq™ Systems

Engineers at the fuel storage plant decided that they would prefer to have the weld between the tank body and the ring beam exposed at all times and would therefore only require a "water-tight seal" between the concrete plinth and the steel ring beam to seal off any possible ingress of water or fuel spillages that may result in the corroding of the tank base.

As a result the Viscowrap™ EZ system combined with some additional Denso™ products was proposed and a demonstration was carried out on site to monitor the performance of the proposed system.

After the applied demonstrated section was exposed to the elements and harsh conditions for two months, the plant engineers approved the system to wrap the first tank with a circumference of 40m.

Profiling of the interface between the concrete plinth and steel ring beam using Viscomastic™

Applied Viscotaq™ EZ Wrapping with Denso™ Shield Topcoat.

The combined system used consists of Denso Butyl P16HT™ Primer, Viscomastic™, Viscowrap™ EZ Wrap, Denso™ Basecoat and Denso™ Shield Topcoat.

Combined Denso™ and Viscowrap™ Protection for Auckland Airport Fuel Pipeline

Auckland Airport's underground fuel pipeline upgrade program requires a coating solution with minimal disruption to Airfield operations.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	Auckland, New Zealand
Object:	Fuel pipeline
Problem:	Corrosion prevention
Product Solution:	Viscowrap™ HT and Denso™ PVC Tape

Auckland Airport chose the Viscotaq™ tape coating material which can be applied efficiently in the field with minimal preparation and yet provides excellent long term corrosion protection. Viscowrap™ HT was selected as the preferred coating solution due to minimal surface preparation requirements, remains flexible, no VOC and ease of application in confined locations around the Airport. It has been applied in multiple locations since 2021.

Viscotaq is now part of Auckland Airport's pipeline coating specification as a solution orientated approach for having to work in congested, high demand areas needing utilities to be returned to service ASAP.

Picture: Viscowrap™ HT applied to the fuel pipeline.

Above: Viscowrap™ HT applied to a tee junction.
Centre: The completed Viscotaq coating is checked for holidays.
Right: A wrap of black Denso PVC Tape completes the protection.

Combined Denso™ and Viscowrap™ Protection for SUMP Assembly

In January 2023, Denso was selected by a local Geelong contractor to provide an engineered solution for their important clients, Greater Western Water. Denso's solution was to protect a SUMP Assembly as well as a MSCL (Mild Steel Cement Line) Pipe. Training and support for the overall project was overseen by our Victorian Business Manager, Kyle Fortune.

The SUMP Assembly began with careful surface preparation of the steel followed by a field 'peel test' of the ViscoWrap™ ST. This test is completed as a prequalification to confirm whether the surface cleanliness has been prepared to the respective standard. Following this, ViscoMastic™ was applied around the flange area of the SUMP Assembly.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	Victoria, Australia
Object:	SUMP assembly and MSCL pipe
Problem:	Corrosion prevention
Product Solution:	Viscowrap™ ST and Denso™ PVC Tape and Densopol 60HT™ Tape

SUMP APPLICATION STAGES:

1. Surface preparation

2. Field Viscowrap ST peel test.

3. Viscotaq Mastic is applied.

4. Viscowrap ST is applied.

5. Complete Viscowrap ST wrap.

6. Denso PVC Tape overwrap.

The ViscoMastic acts as a contour to allow ViscoWrap ST to be applied without any voids or air pockets at the flange face. ViscoWrap ST coating was used to feather each vertical face. The feathering process used 100mm wide tape which was then tied in on all circumferential regions using ViscoWrap ST 300mm wide tape.

As the final step for the SUMP Assembly, Denso™ PVC Tape was applied for below-ground mechanical protection using the same wrapping principles as ViscoWrap ST.

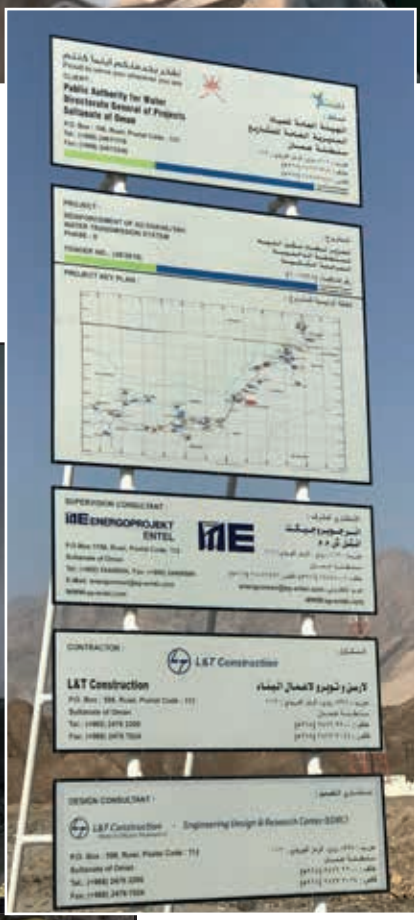
The MSCL Pipe Application was a less complex system to apply as the wrapping only needed to cover the field joints and elbows of the pipe. This application began with surface preparation to an SSPC-2 standard (same as the SUMP Assembly). Denso Primer D™ was then applied by brush. After the primer was allowed to tack off, Densopol 60HT™ was applied beginning and ending with a full circumferential overlap whilst maintaining a 55% (double-layer) from start to finish.

This project is one of many that Denso expect to be involved with as part of the Minns Road, Greater Western Water development project.

Densopol™ Tape System Protects Water Transmission Pipeline in Oman

Densopol 80HT™ Tape being applied to the water main by hand.

DIAM – Public Authority for Water aim is to ensure the provision of high quality, sustainable and reliable potable water services to all people in the Sultanate of Oman. Diam's Mission: Working towards establishing water transmissions and distribution networks and applying systems to manage them with high efficiency.



Densopol 80HT™ Tape is applied in overlapping strips around awkward profiles such as pipe tees etc.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	Oman
Object:	Water transmission pipeline
Problem:	Corrosion prevention/reinforcement
Product Solution:	Densopol 80HT™ Tape System

Below: The Densopol 80HT™ Tape System comprises: Denso Primer D™, Densyl™ Mastic, Densopol 80HT™ Tape applied spirally with a 55% overlap and Denso™ PVC SA Tape 200 yellow (Outerwrap) also applied spiral with a 55% overlap.

DIAM is committed to reinforce the existing Water Transmission System in Al Dakhiliyah Governorate in Oman to meet the rapidly increasing demand due to increased development in the region for households, special demands imposed by industrial areas developed by PEIE, as well as institutional, touristic and government facilities. The reinforcement includes enhancement of the CS water transmission pipeline with diameters varying from 500 to 1700 mm and a total length of 192 km, upgrade of existing pumping system, construction of new pumping stations with balancing reservoirs, as well as construction of new strategic reservoir.

All carbon steel pipeline lengths are protected with a 3LPE system. The heavy duty Densopol System was selected for the protection of some of the girth weld joints and the pipe Tees based on its successful case histories on various projects throughout the GCC Region.

SeaShield™ Protection for the Pinewood River Bridge

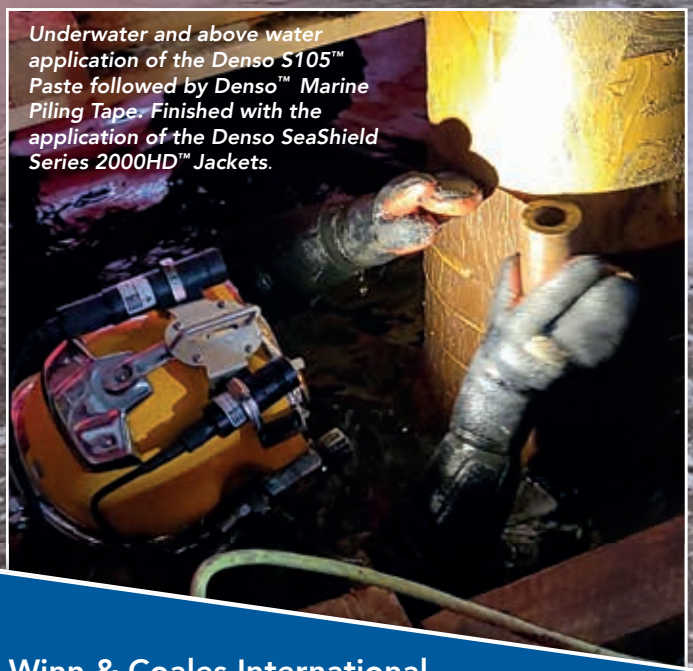
LH North Ltd. was awarded the contract for the rehabilitation and repair of the Pinewood River Bridge in Pinewood, Ontario Canada.

Big Lake Dive & Marine were tasked with the commercial diving and underwater installation of the Denso SeaShield™ Jackets.

LH NORTH

BIG LAKE DIVE & MARINE

SeaShield™



Underwater and above water application of the Denso S105™ Paste followed by Denso™ Marine Piling Tape. Finished with the application of the Denso SeaShield Series 2000HD™ Jackets.

PROJECT SUMMARY

Product type:
Sub Sea Splash Zone Coating

Country:	Canada
Object:	Steel piles
Problem:	Corrosion prevention
Product Solution:	SeaShield Series 500™ & 2000HD™ Systems

Pinewood River Bridge is an important transportation artery for commuters and cargo.The purpose in installing the Denso SeaShield Jackets aims to provide marine pile protection, which would extend the longevity of the bridge by preventing the bridge from corrosion and deterioration.

The Denso products used in this project are expected to provide long-lasting protection against corrosion, wear and tear, marine growth, and other environmental elements that could possibly harm the structure and safety of the bridge.

Application of Denso™ Marine Piling Tape over the Denso S105™ Paste.

Frigid winter temperatures along with unclear water were just a few of the obstacles in which the working parties had to overcome. Teamwork was critical in this operation.

With LH North professionally and effectively applying the Denso SeaShield Series Jackets above the water line and Big Lake divers applying the Denso SeaShield Series Jackets below the waterline down to the murky mudline, deliverables were being checked off the list one by one.

The project used a combination of Series 500 and Series 2000HD Jackets depending on their position. All parties involved worked diligently to successfully carry out the work required.

Group effort in positioning the SeaShield Series 500™ FRP Jacket in place.

If you would like more information about our long-term corrosion prevention and sealing systems that deal with the problem areas listed below, simply tick the boxes and send us back this completed page and we will supply you with more information.

BURIED ONSHORE COATINGS

- ☐ External corrosion prevention for undergroud pipelines, welded joints, valves and fittings.
- ☐ Protection of mounded LPG vessels and fuel tanks.

EXPOSED SURFACE COATINGS

- ☐ Corrosion prevention for chemical plant, structural steelwork, above ground pipes, storage tanks, offshore rigs, bridges and support cables, cranes and pipe bridges.
- ☐ Corrosion prevention for metal roof purlins and metal roof sheets.
- ☐ Protecting pre-stressing and post tensioning bridge cables and ground anchorages.

SUBSEA & SPLASH ZONE COATINGS

- ☐ Maintenance corrosion protection for steel jetty piles.
- ☐ Subsea pipelines and outfalls.
- ☐ Protection of timber and concrete piling.

INDUSTRIAL LININGS

- ☐ Internal linings for tanks, pumps, vessels and pipelines.
- ☐ Linings for concrete bunds and floors.
- ☐ External abrasive wear protection.

MEMBRANES AND FLASHINGS

- ☐ Tanking / waterproofing.
- ☐ Exposed rooftops and parapets.

SEALING MASTICS

- ☐ Joint sealing of precast concrete manholes and culverts.
- ☐ Joint and crack sealing of asphalt road surface wearing courses.
- ☐ Joint sealing for airport runways.
- ☐ Sealing of cable entry ducts.

INDUSTRIAL TAPES

- ☐ Sealing and insulating.
- ☐ Protecting and bonding.

DIY WEATHERPROOFING

- ☐ Waterproofing and flashing.

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