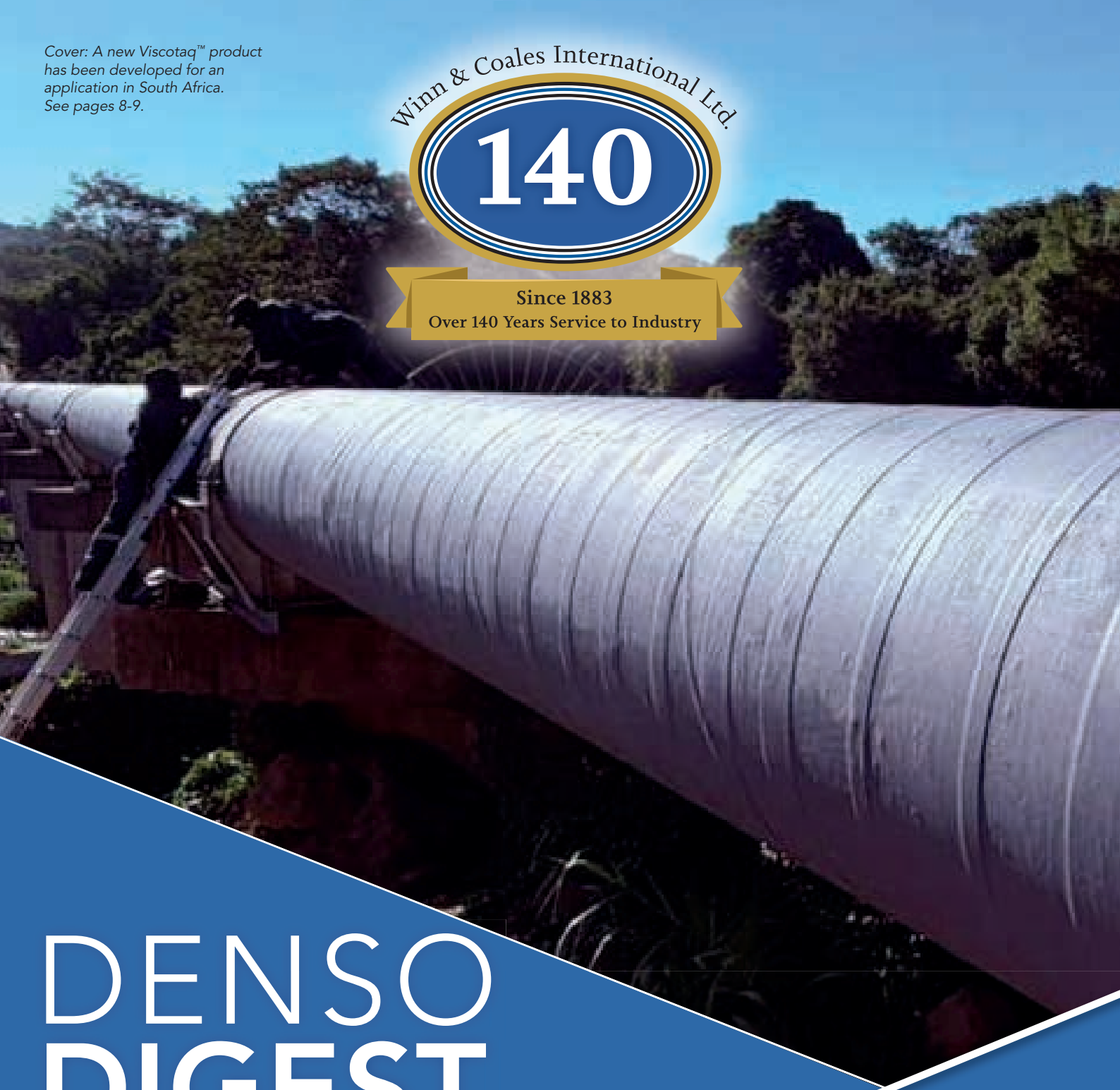
Cover: A new Viscotaq™ product has been developed for an application in South Africa. See pages 8-9.

Winn & Coales International Ltd.

140

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DENSO DIGEST

Winn & Coales International Ltd

Volume 39, Number 1

Denso®

WINN & COALES INTERNATIONAL

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Viscotaq™ Casing End Seal System Protection Used in Scotland

Rig-Tech Solutions recently used the Viscotaq™ Casing End Seal System, comprising ViscoPutty™ in combination with ViscoWrap™ ST, Viscotaq™ PVC Outerwrap and Denso™ Glass Outerwrap, to seal the ends of two 20m pipeline casings.

The system can be installed on new and existing casings and is applied to prevent water infiltration and corrosion where the carrier pipe enters the casing pipe. ViscoPutty is applied first to completely fill the void between the pipe and the casing (also, uniquely, the pipe does not need to be centred within the casing). This is followed by a layer of ViscoWrap ST, which provides corrosion prevention and sealing attributes to the application, and a layer of Viscotaq PVC Outerwrap which compresses the preceding layers. The PVC outerwrap also provides mechanical protection to the system, which is further enhanced with the addition of Denso Glass Outerwrap; a protective coating offering exceptional mechanical and impact strength.

This application was carried out by Rig-Tech Solutions for one of their valued clients in the Southwest of Scotland

PROJECT SUMMARY

Product Type:
Coatings for Buried Steel

Country:	United Kingdom
Object:	20m Pipeline Casings
Problem:	Corrosion Prevention
Product Solution:	Viscotaq™ Casing End Seal System

Inset: Peel strength testing (which rendered positive results) between the ViscoWrap ST and the substrate was conducted on the carrier and casing pipes prior to application of the system. ViscoPutty was then applied to fill the void between both pipes (below left).



The completed Viscotaq Casing End Seal System.



Successful 10-Year Trial Leads to SeaShield™ System Specification at Broughty Ferry

In 2015 Winn and Coales (Denso) Ltd were asked to recommend solutions for the protection of jetty piles at a coastal emergency response facility in Broughty Ferry, Scotland. The jetty structure on site consists of piles supporting a walkway to the landing stage, where larger vessels can moor, and piles within the berthing area itself, which also feature large brackets supporting a wave break structure.

Winn and Coales, with the assistance of Shearwater Marine Services Ltd, applied the SeaShield 70™ System which consists of Denso Paste S105™, Denso™ Profiling Mastic, SeaShield™ Marine Piling Tape and Denso™ Glass Outerwrap – to a bracket on one of the landing stage piles to demonstrate the suitability of the system for this application.

In addition to protecting jetty piles, the SeaShield 70 System has the flexibility to provide long term protection to various obstructions such as crossbeams, anode brackets and (as in this case) bracket arrangements for the wave break structure.

Following a 10-year trial demonstrating long term performance, the customer appointed Wallace Stone, Consulting Civil Engineers, to produce tender documents for the protection of all the piles.

Below: Shearwater Marine Services applying the SeaShield 2000FD System's heavy-duty HDPE jackets to the walkway jetty piles



PROJECT SUMMARY

Product Type:
Sub Sea Splash Zone Coating

Country:	United Kingdom
Object:	Steel Jetty Piles and Brackets
Problem:	Corrosion Prevention
Product Solution:	SeaShield 70™ System and SeaShield 2000FD™ System

Below: The contractor applying Denso Glass Outerwrap circumferentially over the SeaShield Marine Piling Tape to a pile located in the berthing area at the end of the walkway.



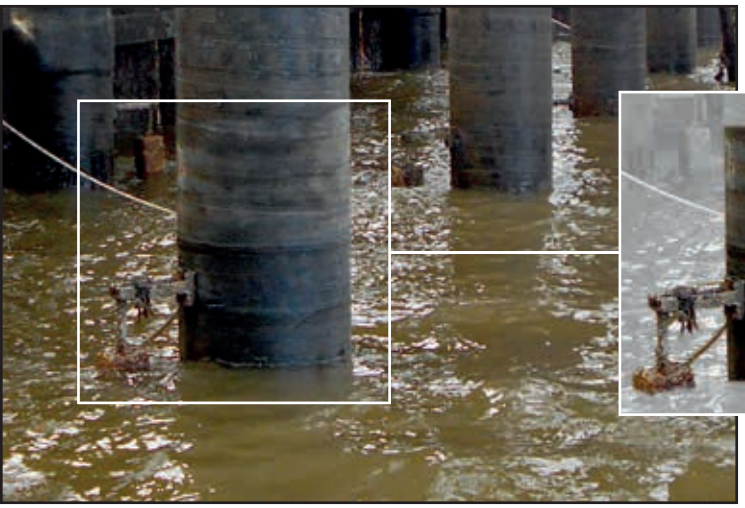
Below: The SeaShield 70 System trial at the time of application in 2015 (left) and after the 10 year trial period (right). Note the bracket supporting the wave brace structure located above the SS70 trial.



After reviewing the success of the trial and holding discussions with Winn and Coales (Denso) Ltd, it was decided to specify the use of the SeaShield 70 System within the wave break area and the SeaShield 2000FD™ System on the walkway piles.

The SeaShield 2000FD System – consisting of Denso Paste S105, SeaShield Marine Piling Tape and SeaShield 2000FD™ Jackets – was selected for the walkway piles as these were more exposed to the tidal currents. The SeaShield 70 System was used in combination with the heavy-duty SeaShield 2000FD System where the cathodic protection system was attached to the piles.

Shearwater Marine Services were subsequently awarded the contract for the completion of the works and the SeaShield Systems were successfully installed in 2025/26.



Above: The completed SeaShield 70 System application. Note the brackets located at the bottom of each pile (see inset for clearer view).



Above: Denso Glass Outerwrap is compressed and cured under a layer of Denso PolyWrap (which is later removed and disposed responsibly).

Below: The completed application of the SeaShield 2000FD System to the walkway piles.



Viscotaq™ Engineered Corrosion Protection at Mt Crosby Eastbank Pumping Station

The Mt Crosby Eastbank Pumping Station forms part of one of Southeast Queensland's most critical water supply corridors. As a key pumping facility within the regional network, the infrastructure at Mt Crosby plays an essential role in maintaining reliable water movement into downstream treatment and distribution systems.

In high-consequence environments such as this, corrosion protection is not simply routine maintenance, it is fundamental to asset longevity, operational reliability and whole-of-life cost management.

In late 2024, four discrete sections of steel infrastructure at the site required a corrosion protection strategy tailored to their specific exposure conditions.

Project Background and Challenge:

The affected areas presented varied environmental risks, including:

- Concrete-to-steel interface zones
- Soil-to-air transition areas
- Exposure to sodium hypochlorite vapours
- UV-exposed above-ground steel surfaces

Each condition required a considered, engineered response rather than a single universal coating approach.

Wrap Resources Australia Pty Ltd were engaged to provide project advisory and technical guidance, supporting the development of a layered corrosion protection strategy aligned with operational and environmental requirements.

Why Viscotaq™ Was Selected:

Denso's Viscotaq™ system was chosen for its ability to deliver controlled, cold-applied corrosion protection within sensitive water infrastructure environments, including applications requiring compliance with AS/NZS 4020:2018 for products in contact with drinking water.

From a safety perspective, the system eliminates open-flame risks and removes the need for on-site mixing. Its solvent-free formulation supports safer installation while reducing material waste.

From a performance standpoint, Viscotaq™ provides strong adhesion to prepared substrates and maintains dimensional stability under varying environmental conditions. Its visco-elastic properties allow it to accommodate minor movement without cracking or disbondment.

Importantly, the system enables reinforcement and top-coating layers to be incorporated depending on the specific exposure profile of each asset section.

Below: The water pipe is spirally wrapped with ViscoWrap followed by Viscotaq PE Outerwrap and finally Denso Glass Outerwrap.



PROJECT SUMMARY

Product Type:
Coatings for Exposed Pipes & Fittings

Country:	Australia
Object:	Water Pipeline
Problem:	Corrosion Prevention
Product Solution:	Viscotaq™ System



In areas where the water pipe is exposed to the possibility of chemical and UV damage the Viscotaq System is coated with an extra layer consisting of Denso Acrylic Topcoat (Grey).

System Design and Application:

Each section of the pumping station was assessed individually.

Section 1: Concrete Interface

Viscotaq™ ViscoMastic and EZ Wrap were applied to prepared and stabilised concrete-to-steel interface areas before being painted with Denso Acrylic Topcoat (Grey). Prior to any application, the surface preparation process included levelling, cleaning and adhesion verification through test patches, ensuring effective bonding and long-term barrier performance of the Viscotaq material.

Section 2: Soil-to-Air Transition

Viscotaq™ ViscoWrap was spirally applied to prepared steel, followed by a Viscotaq™ PE Outerwrap and Denso™ Glass Outerwrap. The glass layer acts as a sacrificial barrier, absorbing mechanical and environmental exposure before underlying corrosion protection layers are compromised.

Sections 3 & 4: Chemical and UV Exposure

In areas exposed to sodium hypochlorite vapours and sunlight, the system comprised Viscotaq™ ViscoWrap, Viscotaq™ PE Outerwrap, Denso™ Glass Outerwrap, and a Denso™ Acrylic Topcoat (Grey). The topcoat provides UV stability and enhanced environmental resistance, supporting durability in aggressive above-ground conditions.

The cold-applied methodology contributed to predictable installation outcomes within a live utility environment.

Expected Performance:

When installed in accordance with the installation specification, the Viscotaq™ system is designed to deliver long-term adhesion, resistance to deformation and sustained corrosion protection across varied exposure environments.

By incorporating reinforced outerwraps (mechanical protection) and UV-resistant topcoats where required, the solution provides layered protection aligned with water network performance expectations.

One Corrosion Protection Partner Across the Network:

The Mt Crosby Eastbank Pumping Station project demonstrates how engineered, zone-specific corrosion protection can be delivered across critical water infrastructure safely, securely and sustainably.

Through cold-applied visco-elastic technology and layered system design, Denso Australia supports water utilities with engineered solutions across their assets.

Special thanks to the team at Wrap Resources Australia Pty Ltd for providing project advisory and technical coordination.

New Viscotaq™ Product Used For The Southern Aqueduct Project - Durban Kwa Zulu Natal

In a major first for any currently available acrylic/ viscoelastic tape wrap system, our new Viscotaq tape product ViscoCoat UV EZ Wrap, does not need a painted overcoat to complete the system.

This new Viscotaq product has just been used to protect pipe lengths and weld joints on the Southern Aqueduct Project - Durban Kwa Zulu Natal.

ViscoCoat UV EZ Wrap - Tape Construction:
The acrylic backed Nettex outer layer was first manufactured on our Acrylic Plant then coated with a 1.5 mm thick extruded Viscotaq ST compound on the Durban factory FME viscoelastic plant.

Southern Aqueduct Project Applications:
Use on Pipe Lengths:
ViscoCoat UV EZ Wrap rolls 400 mm wide by 40 m lengths were applied to the pipe lengths at Africa Pipe Mill by rolling rig before being transported 500 miles back down to the KZN site.

Use on Field Joint Coatings:
150mm wide x 10m tape applied by hand with a 55% overlap to achieve double thickness over field welds.

PROJECT SUMMARY

Product Type:
Coatings for Exposed Pipes & Fittings

Country:	The Republic of South Africa
Object:	Water Pipeline
Problem:	Corrosion Prevention
Product Solution:	Viscotaq™ UV EZ Wrap System

The ViscoCoat UV EZ Wrap protected pipeline passes through some difficult terrain.



The ViscoCoat UV EZ Wrap protected water pipeline.

Ever since the introduction of Viscotaq products into South Africa in 2021 the brand has rapidly gained an excellent reputation and for the first time in 2024 it was wrapped automatically in a pipe mill and used in some large water pipeline protection projects as shown below...









These pictures show some recent water pipeline applications using a mill wrapped Viscotaq Tape system for the pipe lengths and also in-situ for the welded field joints at Shell Cross and Chatsworth in the Republic of South Africa.



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Densopol 80HT™ Tape System used to Protect Buried Carbon Steel Pipeline in the UAE



PROJECT SUMMARY

Product Type:
Coatings for Buried Steel

Country:	United Arab Emirates
Object:	Carbon Steel Oil Pipeline
Problem:	Corrosion Prevention
Product Solution:	Densopol 80HT™ Tape System

1.The pipe surface was cleaned with all dust and contaminants removed.



2.The pipe was coated with Denso Primer D™ and allowed to dry.





A Densopol Tape system was chosen to give effective long-term corrosion prevention to a buried carbon steel oil pipeline in the UAE.

The Densopol 80HT™ Tape System consists of a coat of Denso Primer D™ followed by a wrap of Densopol 80HT™ Tape. The system is then completed with a wrap of Denso™ PVC Self-Adhesive Tape 200 (Yellow).

The Denso system was applied to the pipe lengths in the factory then transported to site and assembled in-situ before burial.

A special mention is deserved for contractor POSCO - Popular Oilfield Services who have been involved in the application of the Densopol 80HT system for this project and have consistently proved loyalty and support throughout the Hail and Ghasha projects.

Prior to the start of the project, POSCO had received all relevant product application training and advice from Denso's technical staff and their official agent in the region, Bin Moosa & Daly Ltd.

3.The pipe was spiral wrapped with Densopol 80HT™ Tape with a 55% overlap.



4.The pipe was spiral wrapped with Denso™ PVC SA Tape with a 55% overlap.



Midwestern Natural Gas Pipeline - Structural Pipeline Repair with Protal™

In October 2025, a section of 16" high pressure natural gas pipeline exhibiting external corrosion defects was identified for a composite repair. The affected area measured approximately 24 inches in length with <50% wall loss. Following assessment and surface preparation, the repair zone was defined as a 36" linear section to ensure full coverage beyond the corroded area and proper load transfer of the composite system.

For this project, the Denso Protal™ 2800CF Composite System was selected due to its proven performance in corrosion rehabilitation and mechanical reinforcement applications. The system was applied using the "Spiral Wrap" method to ensure consistent overlap, uniform tension, and optimized adhesion throughout the carbon composite zone. The proper number of layers were installed to meet the design requirements per ASME PCC-2 Art. 401.

Prior to application, environmental conditions were verified to ensure compliance with the Denso's specifications. The dew point was monitored throughout the installation and recorded between 52°F and 44°F, confirming suitable ambient conditions for proper curing and adhesion.

The surface was prepared by mechanical cleaning to remove any residual corrosion products and achieve the optimal surface profile. Once prepared, the Protal™ 3210 Filler and Protal™ 7300,

1. Protal 3210 Load Transfer Filler was applied.





2. Protal 7300 Epoxy applied next as an adhesive primer for the carbon fiber system.

used as an epoxy primer, were applied accordingly, followed by successive spiral wraps of the Protal™ 2800CF composite material. Each layer was firmly tensioned to eliminate trapped air and ensure intimate contact between layers. Denso Polywrap film was finally applied and perforated, compressing the moisture-cured urethane material down against the substrate. The repair process was completed in approximately 30 minutes, demonstrating the efficiency and ease of application of the Protal™ 2800CF system. Throughout the composite wrap install process, all Denso material batch numbers were documented for traceability and quality assurance purposes.

This project highlights the effectiveness of the Denso Protal™ 2800CF System in addressing wall loss due to external corrosion defects quickly and reliably. The resulting composite reinforcement provides long-term protection against corrosion and mechanical stresses, restoring the pipeline's integrity and extending its operational life with minimal downtime.



3. Above & Below: Completed section of the Protal 2800CF pipeline repair system in place.

PROJECT SUMMARY

Product Type:
Coatings for Buried Steel

Country:	United States of America
Object:	16" High Pressure Natural Gas Pipeline
Problem:	Structural Repairs
Product Solution:	Protal™ 2800CF Tape, Protal™ 7300, Protal™ 3210 Filler & Denso Polywrap



Dow Inc's Path2Zero Project Is On Track Again Utilizing Denso Protal™ & Bore-Wrap™



Dow Inc.'s proposed Path2Zero petrochemical complex in Fort Saskatchewan, Alberta—one of the province's largest active industrial projects—has regained momentum after a period of uncertainty. The $10-billion CAD project, designed to be a net-zero emissions facility, is now expected to begin its first phase of operations in late 2029, about two years later than originally planned. Phase 2 is scheduled for completion by the end of 2030.

Stockpile of Protal™ 7200 coated pipelengths awaiting an overwrap of Denso Bore-Wrap™.

Dow is dedicated to the community providing over $16 million in charitable donations over the years. More recently Dow has donated over $9 million dollars to the local community building a new aquatic center, assisting food banks and various other great causes in the last 2 years.

This project will triple Dow's ethylene and polyethylene capacity while retrofitting the site's existing assets to be compliant with Net-Zero carbon emissions. Dow has outlined a clear path to decarbonize its manufacturing facilities while growing and delivering low-emissions products to customers. Dow's Fort Saskatchewan Path2Zero expansion project will create the world's first net-zero emissions integrated ethylene cracker and derivatives site.

The Path2Zero project required extensive piping. This piping also required long term protection with an epoxy coating and an abrasion resistant outerwrap to protect the pipe during installation. This project was awarded to Franks Group in Nisku Alberta.

Frank's Group is a family-owned industrial corporation founded in 1970 by Frank Marrazzo Senior on the north side of Edmonton and now has 6 facilities in the Nisku Industrial area south of Edmonton to better serve and complement its various customers. The multi plant operation is presently owned by Frank Marrazzo Junior.

Denso Bore-Wrap™ is applied over the coat of Protal 7200™.



Franks Group was awarded the contract to supply coating to the Dow Path 2 Zero piping. Franks had previously supplied coating for below ground infrastructure. They were now required to apply coating for the below ground piping. Dow required extra protection for the underground pipe, so they specified Denso Protal 7200 applied at 60 mil (1500 microns) nominal thickness instead of the normal 30 mil (750 microns) nominal thickness.

The surface was prepared by removing all grease and contaminants, grit-blasting the steel to a near-white finish (SSPC-SP 10 / NACE No. 2) with an angular anchor profile between 2.5 to 5 mils (63 to 127 microns).

The pipe was to be installed in an aggressive abrasive environment so the decision was made to install Denso Bore-Wrap over the Protal 7200 as well. This would give the underground pipe superior protection for long term coating performance. The Bore-Wrap was applied over the Protal 7200 epoxy coating at the Franks Group same location after the Protal 7200 was applied, cured and inspected. This would improve production time and ensure that a quality job was completed with minimal pipe handling. Denso representatives worked closely with training Franks Group applicators and third party inspectors to make sure that a seamless quality finished product was provided as a result of this teamwork.

Below and top right: Pipelengths coated with Protal 7200 and Denso Bore-Wrap ready for installation.



PROJECT SUMMARY

Product Type:
Coatings for Buried Steel

Country:	Canada
Object:	Ethylene Cracker Pipework
Problem:	Corrosion Prevention
Product Solution:	Protal™ 7200 & Denso Bore-Wrap™



Denso North America Canada provided approximately 40,000 litres of Protal 7200 Spray Grade covering over 200,000 square feet of pipe ranging in diameter from 8" to 16". There were also 644 cases of Bore-Wrap supplied to wrap approximately 80,000 lineal feet or 24.6 Kilometers of 6" and 20,000 lineal feet or 6 kilometers of 10"pipe.

In the end, we can sleep a little better at night knowing that this is not just another oilfield money making project, but a safe, clean, forward thinking project that makes our world a little better than it was left previously.
Well done Dow, Franks, and Denso.

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.

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- ☐ Protection of mounded LPG vessels and fuel tanks.

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