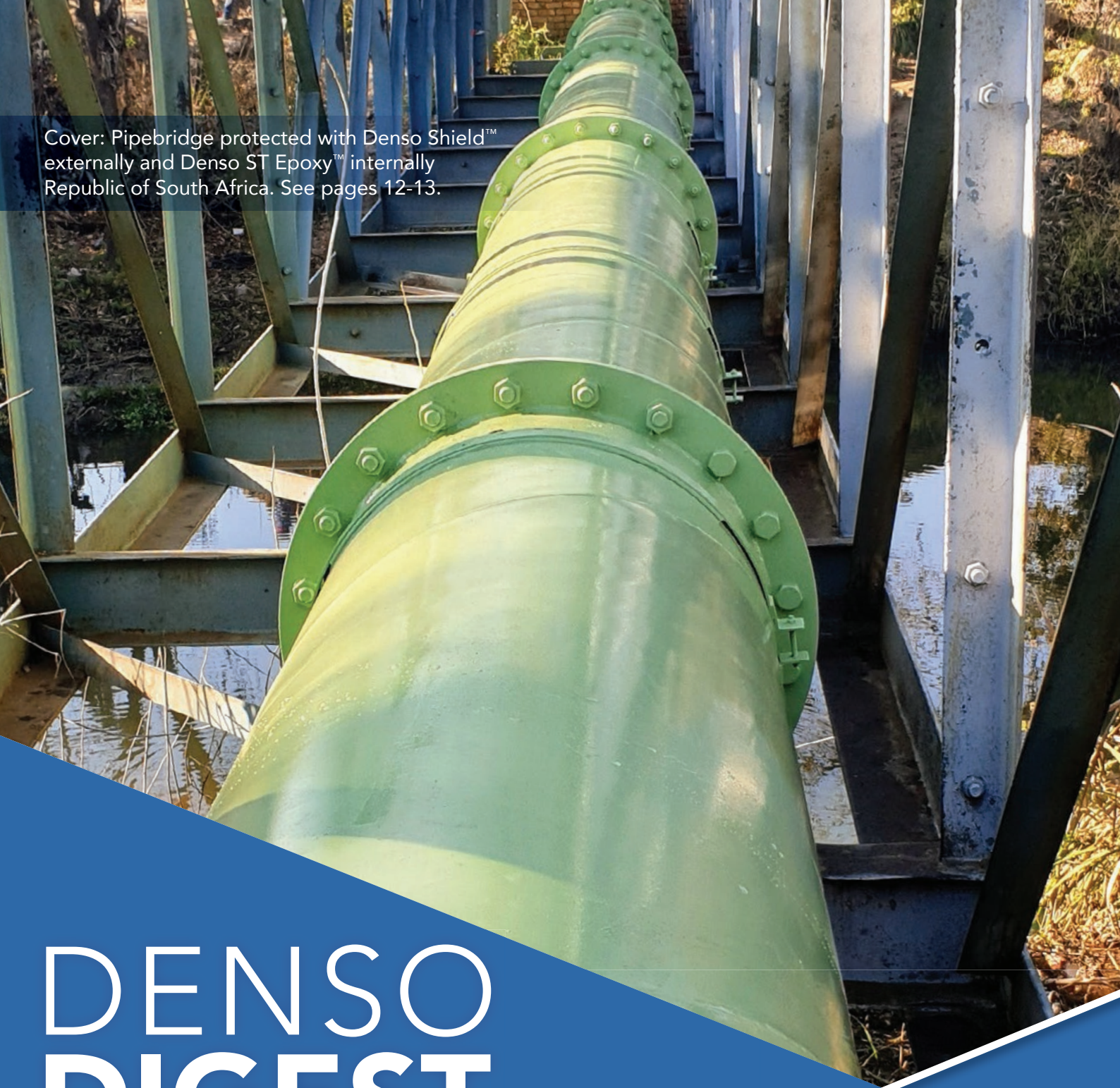

Cover: Pipebridge protected with Denso Shield™ externally and Denso ST Epoxy™ internally Republic of South Africa. See pages 12-13.

DENSO DIGEST

Winn & Coales International Ltd

Volume 35, Number 4

Celebrating 90 Years of Corrosion Prevention Products

1929 - 2019

Denso®

WINN & COALES INTERNATIONAL

For further information on our products and their suitability for your particular project, please contact any of the Denso companies listed below:

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England
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Fax: +44 (0) 20 8761 2456
Email: mail@denso.net
Website: www.denso.net

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United States of America
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Website: www.denso.co.za

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In Loving Memory of David Winn OBE 1940 - 2020

It is with profound sadness that we share the news that Company Chairman of Winn & Coales International Ltd, Mr David Winn OBE, passed away on the 21st of September 2020.

David Winn, the grandson of founder Paul Winn, joined the company 55 years ago in 1965. He had a long and distinguished career at Winn & Coales, serving as Deputy Chairman from 1968-1991 and Managing Director from 1988-1995. When Frank Coales passed away in 1991, he became Chairman of the company and held this position for 29 years until his passing in September 2020.

During his time as Chairman of Winn & Coales International, the Group grew substantially with seven subsidiaries around the world and a network of dedicated distributors and agents. In the last decade, the Group won three Queen's Awards for Enterprise in International Trade, recognising its growth in world sales. These notable successes were achieved in 2010, 2015 and 2017.

David Winn had many wonderful and notable qualities, one that shone through was his charitable nature. He was awarded an OBE on the 12th of May, 1995 by His Royal Highness The Prince of Wales for being a Governor of West Norwood College for 24 years and for successful fund raising for Eastbourne College.

He was also Chairman of the Trustees of the National Missing Persons Helpline for many years. David Winn hosted a variety of fundraisers at his residence in Twickenham, London for The Missing Persons Helpline and contributed a great amount of his time and resources to the Charity.

One of his passions was for his old school, Eastbourne College. He served as College Governor from 1982-2015, College Vice-President from 2016-2020, Chairman of the OEA from 1980-2001, President of the OEA from 2002-2012, and President of the Eastbournian Society from 2012-2020. He remains one of the College's greatest benefactors and recently had a building on campus named after him in 2019. The Winn Building is a new, purpose-built facility featuring an array of state-of-the-art amenities.

David Winn had a large, joyful and generous personality with a fantastic sense of humour. He made the time for everyone in the company and enriched the lives of all who knew him. He was a truly remarkable man who leaves behind a great legacy and his much loved children and grandchildren. He will be deeply missed by his colleagues, friends and family.

Winn & Coales International has only had three Chairman since it was established in 1883, quite remarkable for a company that has been trading for 137 years. It remains a private, family owned company and the family are fully committed to ensuring his memory will live on through the business as they continue to follow his lead and take the company from strength to strength.

Denso™ Tape Protects Oyster Farm Tractor Engines

Oyster harvesting in progress.

Corrosion vulnerable and water sensitive areas of the tractor engines are protected with Denso™ Tape.

Woodstown Bay Shellfish (WBS) Ltd, based in the South East of Ireland, run one of Ireland's largest oyster growing and exporting companies. The family owned business uses several tractors on an intertidal area of Woodstown Beach where the oysters are farmed in the 'A' class waters of the Waterford Estuary. The oysters are harvested by the tractors and trailers and transported back to the WBS factory in Dunmore East Harbour for processing.

In order to protect critical parts of the machinery from the corrosive marine environment, and to make sensitive electronics watertight, WBS Ltd have found that Denso™ Tape performs better than anything else they have tried over more than 20 years. Its versatile nature, along with being long-lasting and easy-to-apply in less than ideal application conditions, makes it an extremely reliable and cost-effective solution to WBS Ltd's problems.

Winn and Coales (Denso) Ltd are leaders in corrosion prevention and sealing technologies and have been supplying Denso Tape for 90 years. This application demonstrates how effective Denso Tape is when used in harsh environments and in unusual application situations.

PROJECT SUMMARY

Product type:
Coatings for Exposed Steel

Country:	Ireland
Object:	Tractor engines
Problem:	Waterproofing / Sealing
Product Solution:	Denso™ Tape

The oyster harvesting tractors and trailers on Woodstown Beach.

SeaShield™ Protection For Tiree Pierhead

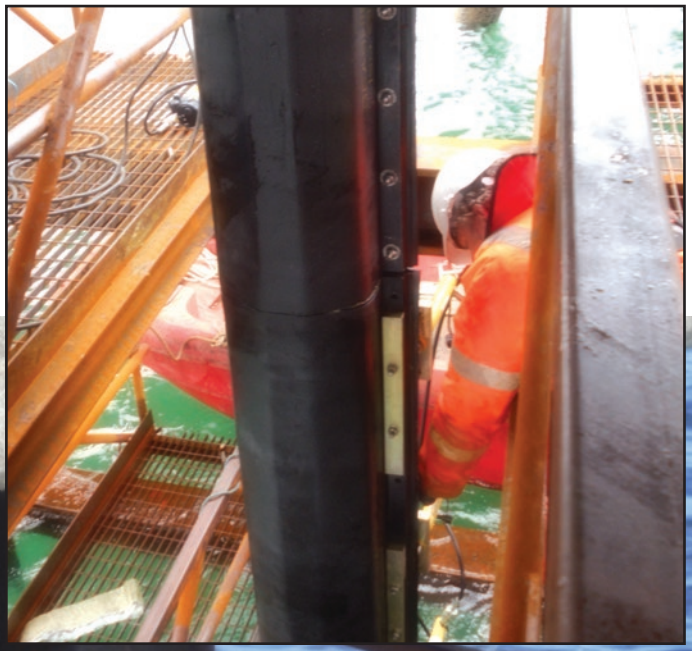
Applying the Denso Paste S105™ to a jetty pile.

Application of the Denso Marine Piling Tape™.

George Leslie Ltd were recently awarded the contract for refurbishment works on the Tiree Pierhead on the Island of Tiree. Due to the awkward shape of some of the jetty piles, the required surface preparation needed for a protective liquid coating system was not possible. They therefore discussed an alternative method for providing corrosion prevention to the jetty piles with Winn and Coales (Denso) Ltd.

Winn and Coales (Denso) Ltd proposed the use of the Denso SeaShield 2000FD™ System with additional fillet pieces to accommodate the awkward shape of the piles. The Denso SeaShield 2000FD system, which had been used on a similar application previously, provides long term corrosion prevention without the need for intensive surface preparation, thus providing an effective solution for use on the piles in their exposed environment.

Applying the SeaShield 2000FD Jacket which completes the system.



PROJECT SUMMARY

Product type:
Subsea Splash Zone Coating

Country:	Island of Tiree, Scotland
Object:	Jetty Piles
Problem:	Corrosion prevention
Product Solution:	SeaShield 2000FD™

Protal 7200™ Protection For Block Valves

The Coastal GasLink pipeline is a key component of a $40-billion LNG Canada export terminal in Kitimat, B.C. designed to ship natural gas to international markets. Coastal GasLink is creating an extraordinary legacy of safety and respect for communities and the environment in Canada. Approximately 670 kilometres (416 miles) in length, this pipeline project will safely deliver natural gas across northern B.C to a facility in Kitimat B.C. where LNG Canada will prepare it for export to global markets by converting the gas to a liquefied state – also known as Liquid Natural Gas (LNG). The pipeline project is divided into eight construction sections. Each is being completed by highly qualified prime contractors.

The block valves are first abrasive blasted to SSPC-SP10 / Nace 2.

It is in Edmonton, Alberta where an approved Protal 7200™ spray application company is coating the Main Line Block Valve Assemblies for this project. The interesting part is that these block valves are huge! The valves themselves weigh up to 60,000 lbs (27,000 kgs) which created a difficult scenario for application companies that do not have the crane capacity to move them.

The valves were delivered to the approved application company on large trailers where they were abrasive blasted to a near white finish (SSPC-SP10, Nace 2) and then coated with Denso Protal 7200 at a minimum 25 mils DFT. This was all completed with the valve still on the trailer before the valve was shipped back to the fabricator for installation of weld-on assemblies. It is there that large rough terrain cranes were used to move the assembled units so the approved application company could complete the final coating in the field.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

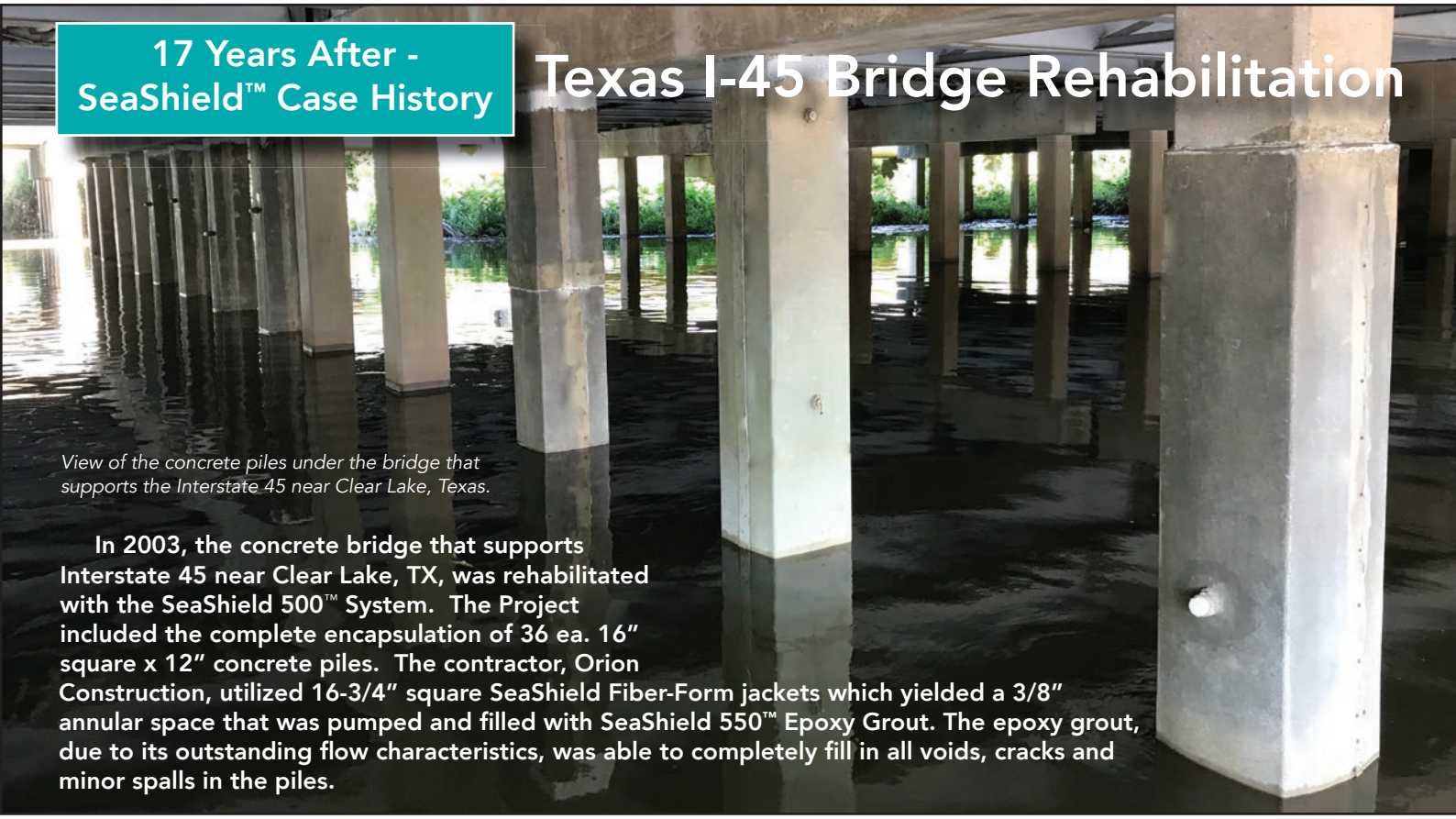
Country:	Canada
Object:	Block valves
Problem:	Corrosion prevention
Product Solution:	Denso Protal 7200™

Once completed, each unit can weigh over 100,000 lbs (45,000 kgs). In total there are 31 large 48" valves and valve assemblies coated with Protal 7200 Spray Grade. Protal 7200 is predominately used by application companies in Western Canada as their coating of choice.

The valve is finally coated with Denso Protal 7200™.

17 Years After - SeaShield™ Case History

Texas I-45 Bridge Rehabilitation



View of the concrete piles under the bridge that supports the Interstate 45 near Clear Lake, Texas.

In 2003, the concrete bridge that supports Interstate 45 near Clear Lake, TX, was rehabilitated with the SeaShield 500™ System. The Project included the complete encapsulation of 36 ea. 16" square x 12" concrete piles. The contractor, Orion Construction, utilized 16-3/4" square SeaShield Fiber-Form jackets which yielded a 3/8" annular space that was pumped and filled with SeaShield 550™ Epoxy Grout. The epoxy grout, due to its outstanding flow characteristics, was able to completely fill in all voids, cracks and minor spalls in the piles.

A recent inspection in early 2020 revealed that the Series 500 System was performing as designed after 17 years in service. Furthermore, the system was able to provide additional abrasion and impact resistance that protected the piles from major Hurricane's Rita and Ike in 2007 and 2008. Tidal surges from these storms brought in destructive flotsam and debris that impacted many of the piles along the I-45 corridor from Galveston to Houston, however this bridge withstood any damage due to the robust Series 500 System.

Along with the outstanding mechanical protection that the system adds, it also provides excellent compressive, flexural and tensile strength, as well as outstanding bond strength to the concrete piles. The Texas Department of Transportation can rest assured that the SeaShield Series 500 System will provide many more years of additional service life to these concrete piles.

PROJECT SUMMARY

Product type:
Sub Sea Splash Zone Coating

Country:	United States of America
Object:	Concrete bridge support piles
Problem:	Corrosion prevention
Product Solution:	SeaShield 500™ System

Opposite: The SeaShield Series 500 System performing well as expected after 17 years in service.

Denso™ Protects Parmelia DN350 Gas Line

Denso Australia was approached by APA, Perth, Western Australia to provide a suitable quick turn-around solution to re-coat a damaged section of pipe, DN350 (14 inches) gas-line that suffered some minor mechanical damage.

The Protal 7300™ and Denso Butyl Tape System were applied to repair a damaged section of the Parmelia gas pipeline exposed to permanent wet conditions located near a water canal. APA owns and operates the 416km Parmelia pipeline, which transports gas from Perth Basin gas fields near Dongara (south of Geraldton), the Carnarvon Basin (via the Dampier to Bunbury Natural Gas Pipeline) and APA's Mondarra gas storage facility, to customers in the Perth area and the south west of Western Australia.

The stand-off sleeve after being welded into place was filled with a liquid epoxy.

A coat of Denso Protal 7300™ was applied to a dft of 750 microns.

APA's elected repair method was a 'stand-off' sleeve, which was welded into place and the annulus filled with a liquid epoxy. Once completed, the exposed section of the pipeline was abrasively blasted to Sa2½ with a 50-70 micron surface profile and coated with Denso Protal 7300 to a DFT of 750 microns. For added protection and 'peace of mind' the decision was made to also overwrap the cured Protal 7300 with Denso S43/R23 self-amalgamating butyl tape system.

PROJECT SUMMARY

Product type:
Coatings for Exposed Steel

Region:	Australia
Object:	Gas pipleline
Problem:	Repair and corrosion prevention
Product Solution:	Denso Protal 7300™ and the Denso S43/R23™ Butyl Tape System

The S43/R23 self-amalgamating butyl tape system was applied spirally under tension with a 55% overlap, giving an added 2500 microns of corrosion and mechanical protection. Profiling of the step-down areas had first been completed with using butyl mastic strip to ensure there was no bridging of the subsequent tape wrap, which would have left void areas under the completed system. This was then followed with the brush application of Butyl Primer, which was used to promote adhesion to the underlying coating. Protal 7300 was the preferred liquid coating as it is specially formulated to coat dry, damp or wet surfaces. It is VOC free; a 100 per cent epoxy high-build liquid coating that can be applied by an applicator pad, brush or roller in one coat

All the works were performed by Petroleum and Mining Engineering in the allocated time frame to the satisfaction of the client.

Above and below: For added protection the cured Protal 7300™ was overwrapped with the Denso S43/R23™ Self-amalgamating Butyl Tape System.

SeaShield™ Protects Al-Zour LNG Import Facility

The Liquefied Natural Gas Import Facility (LNGI) project is the first of its kind in the State of Kuwait and has been established to meet Kuwait's growing need for the cleanest fuel (natural gas) to generate electricity, as well as meet the needs of other natural gas consumers, such as oil refineries and petrochemical industries.

The LNGI project is the world's largest capacity LNG storage & regasification green field project, and is the first permanent LNG import terminal in Kuwait. The area of each LNGI tank (being 6,644 m²) is 1.04 times the size of Jaber Al-Ahmad Stadium's Pitch (6,400 m²).

The SeaShield 2000FD™ System was selected for the long-term protection of all 671 jetty piles within the tidal splash zone, based on its success with numerous similar projects around the world. The protection provided per pile ranges from 4 to 4.5 meters high with pile diameters ranging from 1,016mm to 1,321mm in diameter.

The components of the SeaShield 2000FD™ System are Denso Paste S105™, Denso Marine Piling Tape™ and Seashield HDPE Jackets which are bolted together using 316 stainless steel fasteners.

Below: The applicaton of Denso Marine Piling Tape.

Below: The SeaShield™ Jackets are fitted and bolted together.

PROJECT SUMMARY

Product type:
Subsea Splash Zone Coating

Country:	Kuwait
Object:	Jetty Piles
Problem:	Corrosion prevention
Product Solution:	SeaShield 2000FD™

Below: A SeaShield 2000FD™ protected pile.
Inset shows the simple yellow pass/fail guage being used to show if there is enough tension on the jacket by measuring the amount of bolt thread that protrudes on each bolt after fastening.

Denso™ Protection for Waste Water Pipeline

The internal surface of the pipebridge was protected with Denso ST Epoxy™ and the external surface was protected with Denso Shield™.

KD Civils, a popular Construction company from the North West, were contracted to install an estimated 700 M x 610 mm OD exposed waste water pipeline, next to the Bronkhorstspruit River, which is approximately 2km outside the town of Bronkhorstspruit.

PROJECT SUMMARY

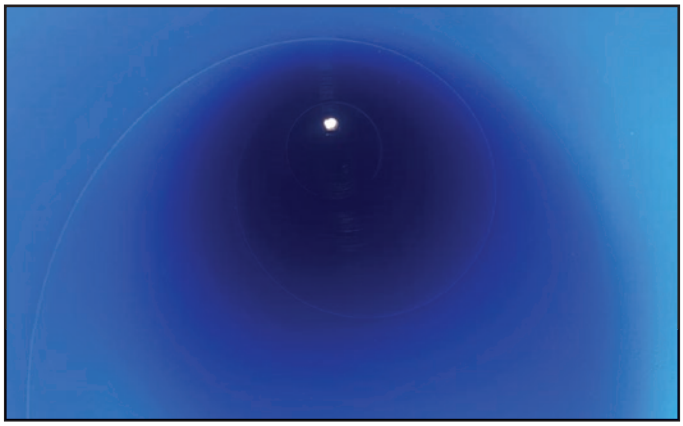
Product type:
Coatings for Exposed Steel

Country:	Republic of South Africa
Object:	Exposed waste water pipe/pipebridge
Problem:	Corrosion prevention
Product Solution:	Denso Shield™ and Denso ST Epoxy™ Denso Steelcoat 100/400™ System

Denso were approached to offer a wrapping system to protect the 60 above ground 610 mm OD Steel VJ couplings, to ensure there would be no corrosion as well as mechanical damage, which may be caused by the surrounding environment. The Denso Steelcoat 100/400™ System was chosen for this application.

As a result of the excellent service and assistance on site, the engineers requested Denso propose a wrapping system to protect 72m for the buried section of pipe for the same project. For this application, Denso CPT 750™ Tape wrap system was chosen as the pipe had already been coated with a bitumen coating and the engineers merely required a "mechanical barrier" with corrosion prevention properties

The internal pipebridge pipe was protected with Denso ST Epoxy™.



Following the success of the flange and pipe wrapping, the engineers asked for another proposal to coat the internal and external of the existing waste water pipeline located on a pipe bridge over a river crossing. Denso ST Epoxy™ was chosen for the internals of the pipe as well as the external flanges which were further overcoated with Denso Shield™.

Denso supplied a complete package of products for this project combining convenient supply with technical back-up, service, and physical presence on site to support and assist the project engineers.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	Republic of South Africa
Object:	Buried waste water pipeline
Problem:	Corrosion prevention
Product Solution:	Denso CPT 750™ Tape

Opposite: A section of pipe protected with CPT 750 Tape prior to burial. Below: One of the VJ couplings protected with the Denso Steelcoat 100/400™ System.

Denso™ Protection For Hydrocarbon Pipeline

Oil India Limited (OIL) is engaged in the business of exploration, development and production of crude oil and natural gas, transportation of crude oil and production of liquid petroleum gas.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

Country:	India
Object:	Hydrocarbon pipeline and valves
Problem:	Corrosion prevention
Product Solution:	Denso™ Petrolatum Tape System

OIL is presently operating 1860km of cross country hydrocarbon pipeline. OIL owns a 1157km long x 18m/14m wide Right-of-way (ROW) from Duliajan, Assam to Barauni, Bihar. Out of the 1860km pipeline, 1415km of the pipeline is very old. Due to natural degradation of the existing coal tar coating on these pipelines over time, the CP system is unable to adequately protect the pipeline system. Moreover, addition of more pipeline in the same ROW has increased the load on the CP system.

Above and below: The pipe is wrapped with Denso Marine Piling Tape™ followed by Denso PVC Self-Adhesive Tape™ for extra mechanical protection.

In order for the refurbishment work to be carried out, the contractors needed to cover the following activities: 1) Removal of existing coal tar coating & re-coating of pipeline. 2) Re-coating of buried block valves.

After continuous engagement with the asset owner and consultant etc, and also after a field trial, OIL awarded the work to Denso. The old line is being rehabilitated with the Denso Petrolatum System, especially in the wet/marshy areas. The system consists of Denso Paste S105™, Denso Marine Piling Tape™ and Denso PVC Self-Adhesive Tape™.

Top and bottom left: The awkward angles and crevices of a block valve are filled and smoothed prior to wrapping with Denso Profiling Mastic.

Above: After profiling with mastic the block valve is wrapped with Denso Marine Piling Tape, followed by Denso PVC Self-Adhesive Tape.

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

SUBSEA & SPLASH ZONE COATINGS

- ☐ Maintenance corrosion protection for steel jetty piles.
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- ☐ Protecting pre-stressing and post tensioning bridge cables and ground anchorages.

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- ☐ Internal linings for tanks, pumps, vessels and pipelines.
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- ☐ Sealing and insulating.
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- ☐ Tanking / waterproofing.
- ☐ Exposed rooftops and parapets.

DIY WEATHERPROOFING

- ☐ Waterproofing and flashing.

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