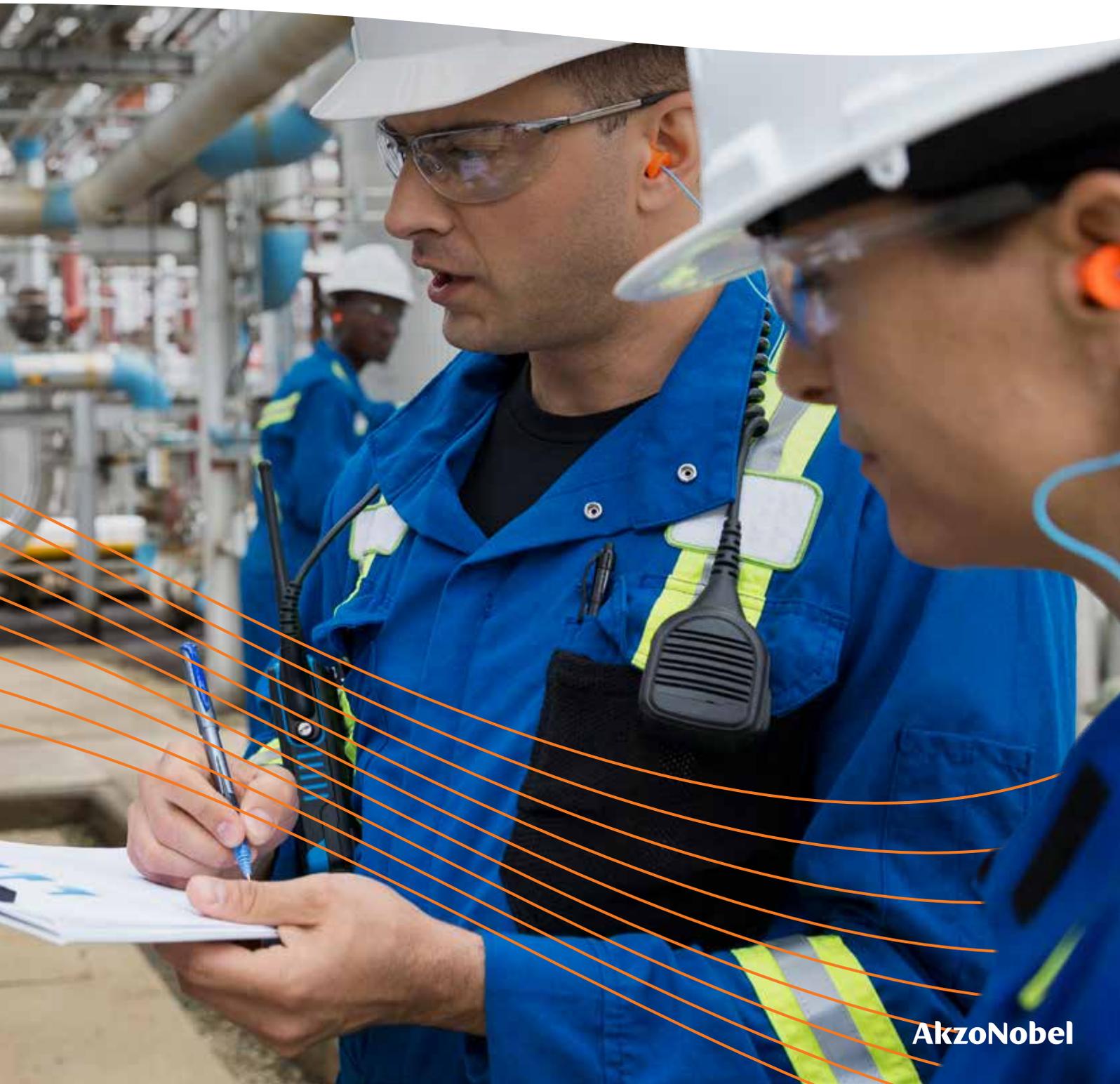
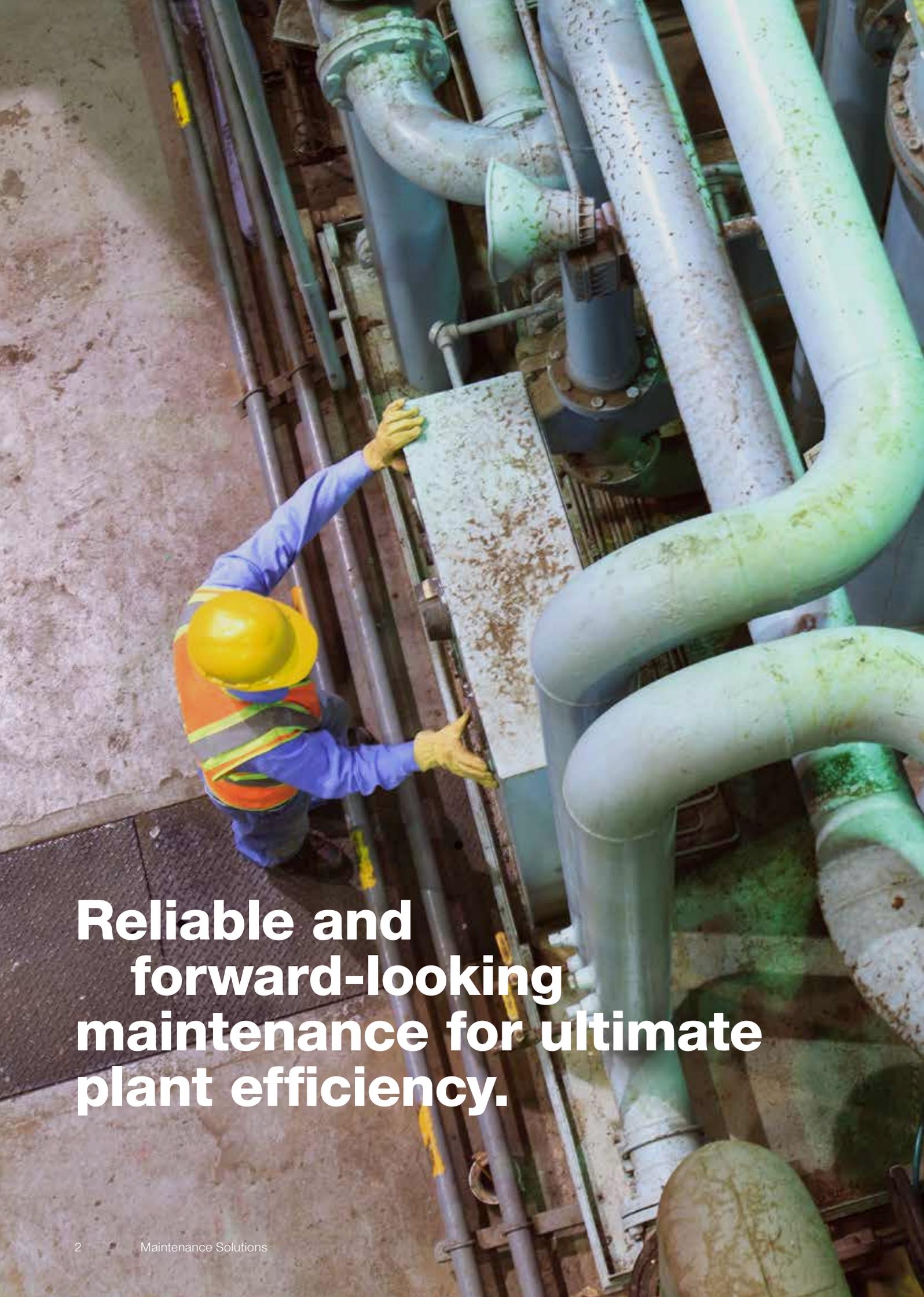


Maximizing plant performance

Maintenance Solutions for Downstream Oil & Gas





Reliable and forward-looking maintenance for ultimate plant efficiency.

Plant owners in the Downstream Oil & Gas industry need the confidence that their assets are safe, and that maintenance time and costs are under control.

Through the International® brand, AkzoNobel offers the coating systems, knowledge and experience for reliable and forward-looking maintenance.

Now you can efficiently maximize plant performance, while shortening turnaround times and eliminating unplanned shutdowns.

Coating intelligence.

Our solutions

- **CUI & Cyclic Temperature Solutions**
- **Petroleum Tank Linings**
- **Passive Fire Protection**
- **Damp Surface Solutions**
- **Chemical Resistant Linings**
- **Reliability Assessment Services**
- **Atmospheric Corrosion Solutions**
- **Concrete Repair & Protection**

CUI & Cyclic Temperature Solutions

Advanced Corrosion Protection

Damage caused by Corrosion Under Insulation and cyclic high temperatures is a common and ongoing threat to asset integrity in Oil & Gas facilities. That's why our maintenance coatings provide reliable long-term resistance against these challenging conditions – as part of ongoing maintenance operations.

- **Achieve confidence in the safety of your asset**
- **Reduce downtime through efficient application**
- **Preempt the leading cause of asset corrosion**



Proof of Performance: Motiva Convent

Products	Intertherm® 751 CSA @75-100µm (2-4 mils) DFT
Location	Louisiana, US
Type of project	Refining
Project owner	Motiva
Applicator	Basic Industries
Area coated	4.6m (15ft) diameter × 14.6m (48ft) length bullet tanks

Area inspected 1

After three years, less than 10cm² (4inch²) of breakdown was found on this uninsulated vessel. The product successfully used was Intertherm 751 CSA at 75-100µm (3-4 mils) DFT.

Area inspected 2

The insulated bullet tank was also coated with Intertherm 751 CSA at 75-100µm DFT (3-4 mils) with service temperatures at 48°C (119°F) to 114°C (238°F). On-site application of Intertherm 751 CSA is specifically designed to provide a corrosion resistant barrier to steelwork in both atmospheric service and under insulation operating in thermal cyclical conditions between -50°C (-58°F) and up to 400°C (752°F).

Petroleum Tank Linings

Service Lifetime Secured

With proven performance in protecting hydrocarbon storage tanks, our petroleum tank linings deliver reliable corrosion resistance for the full length of each tank's maintenance interval of up to 20 years. Efficient application properties also minimize return to service times, letting you get the most out of your storage tanks.

Proof of Performance: High Temperature Resistant, Fibre Reinforced Lining

Products	Envioline 376F-60
Location	UK
Equipment	Venezuelan Crude Oil Storage Tank at 85°C (185°F)

Quick Application

Envioline 376F-60 can be quickly applied in one coat of 1250µm including reinforcement.

High Heat Resistance

Envioline 376F-60 can withstand continuous immersion in crude oil up to 90°C (194°F).

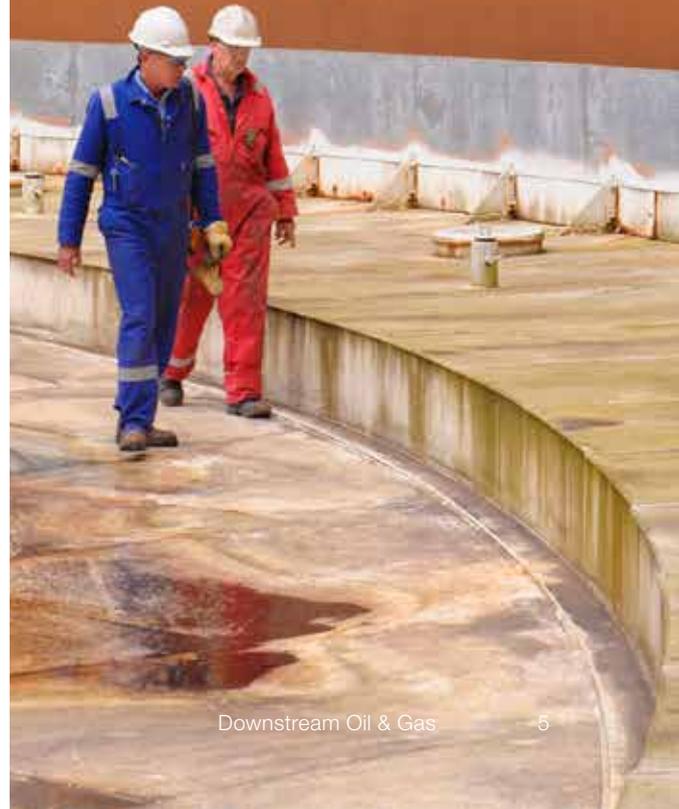
Fast Cure

After 14 hours cure at 23°C (73°F) the tank can be returned to service due to the rapid cure of Envioline 376F-60.

Low VOC coatings with long service life reduce frequency of re-lining and the occurrence of H&S issues

Single-layer coatings with timely, low-temperature cure shortens the duration of shutdowns

Included flake and fibre reinforcement enhances protection against tank leakage



Passive Fire Protection

Versatile PFP Solutions

Our Chartek range includes the most widely used Passive Fire Protection coatings in the world, with proven performance and the versatility to meet a wide range of certifications, application climates and operating conditions. This versatility is ideal for maintenance, delivering advanced fire protection suitable for any asset or timeframe.

- **Long-term, corrosion-resistant PFP**
- **Smooth application, reducing job times**
- **PFP Severity Assessment Services provide informed advice**

Proof of Performance: M320 Module

Location of application	Palmetto, FL, US
Products	Chartek® 1709 epoxy intumescent 7,235 kg (15,950 lbs)
Buying customer	Petrochem Industrial
Influencing customer	Air Products & Chemicals, Inc.
Fixed asset condition	FRP application

The solution

FRP system: Chartek 1709 was applied on the first six story floors, at mid-film thickness, while HK-1 Mesh was embedded/applied into the wet material and rolled thoroughly with lightly dampen solvent. Afterwards applications continued building up with more Chartek 1709 for full thickness layer. Total DFT thickness were between 360-480 mils (9-12 mm).

Chartek rating

A 90 minute rating was required by the owner.



Damp Surface Solutions

Streamlined Maintenance

Damp surfaces adjacent to cooling towers can provide a challenge, as there is the risk of corrosion, but shutting down cooling towers is not an option. Our proven coating solutions can be applied over continuously damp surfaces and during regular operations. The single coat application reduces turnaround time by minimizing surface preparation requirements.

Reduced applicator risk

Up to 50% lower maintenance costs

Surface tolerant coatings

Efficient single coat application



Proof of Performance: KBC 8" pipe maintenance work at Liquid Chemical Berth (LCB)

Location of application	Malaysia
Products	Interzone® 954, Interthane® 990
Project owner	Kemaman Bitumen Company Sdn Bhd (Refinery)
Applicator	Epic Tubex Sdn Bhd
Fabricator	Sumatec Sdn Bhd
ISO12944 environment	C5X
Area coated	380m ² (4,090 sq ft)

Chemical Resistant Linings

Protecting Concrete and Steel

Advanced linings preserve both concrete and steel

Rapid installation minimizes costly downtime

Comprehensive protection against hazardous chemicals

From hydrocarbons to concentrated acids, many industrial chemicals have an aggressive effect on concrete and steel. Our range of chemical resistant linings provide proven protection and improved safety for both employees and the environment.

Reliability Assessment Services

Extending Asset Lifetime

At AkzoNobel, we have an in-depth understanding of the challenges involved in the maintenance cycles of Oil & Gas facilities. Our Interplan™ and Intersure™ services provide on-site support and technical recommendations to develop cost-effective maintenance programs.

- **Extend the lifetime of your Oil & Gas assets**
- **Get the most out of your maintenance budget**
- **Easily keep track of progress and the value of work**

Atmospheric Corrosion Solutions

Resist Corrosion in All Conditions

- **Protect your assets safely and responsibly**
- **Save on the time and cost of application**
- **Extend asset performance and maintenance intervals**

Our range of atmospheric corrosion solutions are optimized to protect your assets against the worst environmental conditions. Ideal for application during both regular operations and planned shutdowns, helping to minimize maintenance costs.

Concrete Repair & Protection

Comprehensive Protection, Minimal Downtime

Aging concrete often requires repair and renewed protection, and our Intercrete™ range is the perfect solution. Minimize downtime and ensure full protection on any areas of concrete, from foundations and channels to secondary containment areas.

100%

**water-based,
free from VOCs**

0

**no lengthy
drying times**

28 h

**products cure
in just 28 hours**

Why us?

The essence of maintenance is achieving maximum plant performance, by making sure that every part of a complex system is working together perfectly.

Through the International brand, AkzoNobel delivers coating systems, knowledge and experience for reliable and forward-looking maintenance. That's what we call Coating Intelligence. We have an extensive track record when it comes to securing the long-term performance of Downstream Oil & Gas facilities.

We help plant owners to minimize the impact of corrosion on operations, reaching optimum plant safety and efficiency.

Our technical expertise and innovative products make us the ideal partner to achieve reliable and forward-looking maintenance solutions for all your assets.

Advanced technologies

We have a broad portfolio of coating solutions, optimized to protect your assets and secure their full specified lifetime. We are constantly innovating to deliver the best protection, the most efficient process and the most environmentally responsible solutions.

Efficient processes

Our products and services are tailored to deliver timely, safe and cost-effective solutions. The result is a streamlined application process and reduced downtime while maintaining the condition of your assets.

Proactive partnership

As a partner, we use our global network of maintenance specialists help you develop and execute the optimal maintenance strategy. Take advantage of our in-depth technical knowledge in a variety of fields to maximize your plant's performance.

Europe

AkzoNobel

Stoneygate Lane, Felling
Gateshead, Tyne and Wear
NE10 0JY
United Kingdom

+44 191 469 6111

North America

AkzoNobel

6001 Antoine Drive
Houston, Texas 77091
United States of America

+1 713 682 1711

Asia

AkzoNobel

3 Neythal Road
Singapore
628570

+65 6261-5033

To discover more about maximizing plant performance, contact us or visit our website:

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Propelled by curiosity