International

Oil, Gas and Chemical Processing Track Record

Proven performance for oil and gas assets



AkzoNobel

What does ‘track record’ mean to you?

To us, a comprehensive and wide reaching track record means ‘trust’.

- **Trust** that you are in partnership with the world’s largest coatings supplier, a company with more than 35 years of experience in the market
- **Trust** that our products and systems perform over and over again thanks to our continuous investment in R&D and testing
- **Trust** that our people are trained to the highest standards and, with access to a dedicated network of global expertise, continue to deliver the same high standards and problem solving solutions regardless of project location.

Trust is about delivering solutions that work, whatever the environment whatever the location.

Trust International with your coating needs.

A COMPLETE RANGE OF SOLUTIONS

Our goal is to provide our customers with solutions to all of their coating needs. From passive fire protection to high heat and linings, we offer a complete range of quality coating solutions.

- Our Chartek® brand provides market leading epoxy passive fire protection
- Our Intertherm® range delivers temperature resistant solutions for insulated and non-insulated steelwork
- Our Interline®, Enviroline® and Ceilcote® brands mean we can offer linings solutions for a wide range of cargos and secondary containment areas.

SUSTAINABILITY

As part of AkzoNobel, we are committed to sustainability and are ranked as one of the chemical industry leaders in the Dow Jones Sustainability Index, demonstrating our commitment to improving our environmental and social performance.

We will work with you to help ensure that your coating specification meets your overall sustainable design credentials.

GLOBAL ORGANISATION

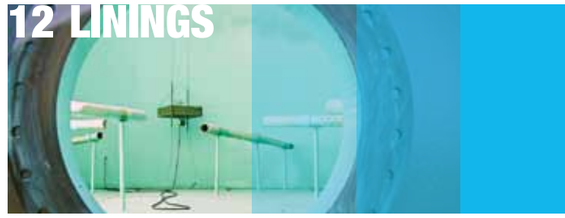
Whether it is worldwide maintenance specifications, new build projects spanning the globe or local expansion and refurbishment work, our globally available product range, supported by local distribution and manufacturing sites, helps reduce complexity and ensure quality. For us this means one product one datasheet regardless of location, with local support teams providing expert advice when and where you need it.

From three global state of the art R&D facilities in the UK, USA and China, we are developing the coatings of tomorrow for your business. Our design and development, manufacturing, marketing, technical and commercial support are accredited to the ISO 9001:2000 Quality Management System which means you can have absolute confidence in our products and services.

Contents













Passive Fire Protection

Epoxy Passive Fire Protection Improves Plant Safety

CAN CEMENTITIOUS FIRE PROTECTION STAND THE HEAT?

Our Chartek range of epoxy passive fire protection (PFP) products provides premium quality fire protection to areas as diverse as pipe racks, vessels, spheres and even GRP pipes typically found on a range of oil, gas and chemical processing assets.

Chartek provides a durable, higher performance alternative to traditional cementitious materials, as discovered by Mexico's national oil company PEMEX.



On Sunday 25th June, 2006 a fire occurred at the PEMEX Miguel Hidalgo Refinery, Tula, Mexico, located in the region of Valle del Mezquital, 80 km from Mexico City. The fire lasted from Sunday evening until the next morning, when it was brought under control by the fire services. Fortunately, no lives were lost in the incident due to the excellent response and work of the PEMEX rescue teams, however the facility suffered significant damage.

CEMENTITIOUS PFP

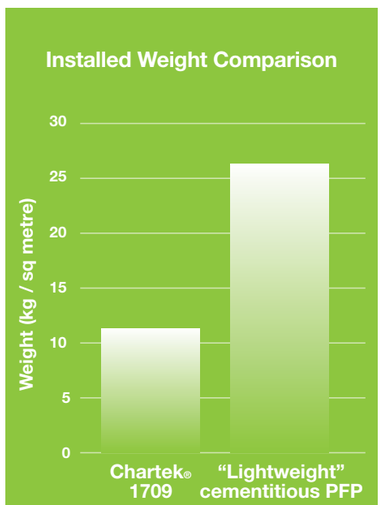
During the fire, the emergency services battling the flames described seeing big pieces of cementitious PFP falling from the steelwork, badly damaging the facility.

As a low cost form of fire protection, cementitious PFP can be very bulky, offers limited corrosion protection and can be mechanically weak, making it prone to damage. Following the fire, we were invited to make a technical inspection of the remaining cementitious PFP in the plant area.

The majority of the cement based product, only four years old, showed severe degradation and was coming away from the substrate. Recognising that the cementitious product had failed, PEMEX decided to specify the use of Chartek® 1709 as the chosen PFP product for this area.

"Because of their knowledge and experience of fire proofing projects in the oil and gas industry, we chose to invite International Paint to discuss our PFP systems following the fire at the Tula refinery", said Lucio Fuentes, civil engineering superintendent. Fuentes continued, "Chartek 1709 was specified because it delivers improved performance and a number of value added benefits."





IMPROVING PLANT SAFETY

Chartek 1709 is specifically designed for use in the onshore hydrocarbon and chemical processing industry, providing structural fire protection for periods up to four hours. Chartek 1709 is robust, fast curing and easy to apply by spray or trowel techniques. This makes it perfect for retro-fit applications to replace aged or failing PFP regimes, such as the cement based systems in the Miguel Hidalgo refinery.

Following a national tender on September 28th 2006, PEMEX installed a two hour fire rating Chartek 1709 system. Chartek has so far been applied to two PEMEX refineries, Tula and Salamanca and two other petrochemical plants in Coatzacoalcos, PTQ Morelos and PTQ Cangrejera.

CHARTEK 7

Where there is a need for jet fire protection, the extensively tested Chartek 7 can be used alongside Chartek 1709. Indeed, Chartek 7 is the preferred product for the fire protection of vessels. By correctly specifying these two products we can cater for all onshore passive fire protection needs.



Track Records



Area: LPG Gas Spheres
Location: Germany
Product: Chartek 7
Year: 2009



Area: Vessel Skirts
Location: Baytown, USA
Product: Chartek 1709
Year: 2006



Area: Slug Catchers
Location: Norway
Product: Chartek 7
Year: 2005



Area: Structural Steel
Location: Germany
Product: Chartek 7
Year: 2009

Project	Owner	Location	Area	Product	Year
Milford Haven Refinery	Gulf Oil	UK	Vessels & Spheres	Chartek 59	1980
Torrance Refinery	Mobil	USA	Vessels & Spheres	Chartek 59	1980
Yorktown Refinery	Amoco	USA	Vessels & Spheres	Chartek 59	1980
Baton Rouge Plant	Allied Chemical	USA	Vessels & Spheres	Chartek 59	1980
Pasadena Plant	Ethyl Corp	USA	Vessels & Spheres	Chartek 59	1980
Wyandotte Facility	BASF	USA	Vessels & Spheres	Chartek 59	1980
Ras Tanura	Saudi Aramco	Saudi Arabia	Vessels & Spheres	Chartek 59	1981
La Porte Facility	PPG Chemical Division	USA	Vessels & Spheres	Chartek 59	1981
Yanbu Refinery	Petromin/Mobil	Saudi Arabia	Vessels	Chartek 59	1988
Ludwigshafen Plant	BASF	Germany	LPG Spheres	Chartek 59	1989
Antwerp Plant	BASF	Belgium	LPG Spheres	Chartek 3	1991
Grangemouth Refinery	BP	UK	LPG Spheres	Chartek 3	1992
Chocques Plant	ICI	France	LPG Sphere	Chartek 3	1992
Ingolstadt Refinery	RVI	Germany	LPG Spheres	Chartek 3	1993
Lingen Refinery	ERE	Germany	LPG Spheres	Chartek 3	1994
Yanbu Refinery	Saudi Aramco	Saudi Arabia	Vessels & Spheres	Chartek 3	1995
Tjeldbergodden Plant	Statoil	Norway	Vessels & Spheres	Chartek 7	1995
Wesseling Plant	Basell Polyolefins	Germany	LPG Spheres	Chartek 7	1995
Barry Plant	Dow Chemical	UK	Vessels & Spheres	Chartek 7	1996
EC Dormagen Plant	BP/Bayer	Germany	LPG Spheres	Chartek 7	1996
Gelsenkirchen Plant	Condea	Germany	LPG Spheres	Chartek 7	1997
Balan Plant	Elf Atochem	France	LPG Spheres	Chartek 7	1997
Terni Plant	Montell	Italy	LPG Spheres	Chartek 7	1999
Gravenchon Plant	Elf Atochem	France	Bullet Tanks	Chartek 7	1999
Marghera Plant	Enichem	Italy	LPG Spheres	Chartek 7	2000
BRC Refinery	Petroplus	Belgium	LPG Spheres	Chartek 7	2001
Gelsenkirchen Refinery	Veba	Germany	LPG Spheres	Chartek 7	2003
Gravenchon Refinery	Esso	France	LPG Sphere	Chartek 7	2003
Scanraff Refinery	Preem	Sweden	Vessels & Spheres	Chartek 7	2003
Brindisi Plant	Enichem	Italy	LPG Spheres	Chartek 7	2003
Knapsack Chemical Site	LyondellBasell	Germany	Vessels & Spheres	Chartek 7	2003
Tessenderlo Plant	Tessenderlo Chemie	Belgium	LPG Spheres	Chartek 7	2003
Carson Refinery	BP	USA	Structural Steel	Chartek 1709	2004
Geelong Refinery	Shell Australia	Australia	Pipe Racks	Chartek 1709	2004
Porvoo Refinery	Fortum	Finland	Structural Steel	Chartek 1709	2005
Sarpom Trecate Refinery	Esso	Italy	LPG Spheres	Chartek 4	2005
Tenerife Refinery	CEPSA	Spain	Gas Spheres	Chartek 7	2005
Yabulu Refinery	QNI	Australia	Lift Shaft	Chartek 1709	2005
Hammerfest LNG Plant	Statoil	Norway	Slug Catchers	Chartek 7	2005
Tessenderlo Plant	LVM	Belgium	LPG Spheres	Chartek 4	2005
Bayport Complex	LyondellBasell	USA	Structural Steel	Chartek 1709	2005
Stenungsund Plant	Borealis	Sweden	Structural Steel	Chartek 1709	2005
Cadereyta Refinery	Pemex	Mexico	Structural Steel	Chartek 1709	2006
Lytton Refinery	Caltex Refineries (Qld.) Ltd.	Australia	CCTV Towers	Chartek 1709	2006
Pulau Bukom Refinery	Shell	Singapore	Sphere Legs	Chartek 1709	2006
Miguel Hidalgo Refinery	Pemex	Mexico	Structural Steel	Chartek 1709	2006
Freeport LNG	ConocoPhillips	USA	Structural Steel	Chartek 1709	2006
Kollsnes Gas Facility	Statoil	Norway	Structural Steel	Chartek 7	2006
South Hook LNG Terminal	South Hook LNG	UK	LNG Modules	Chartek 1709	2006
Corpus Christi Facility	Oxychem	USA	Structural Steel	Chartek 1709	2006
Deer Park Complex	Equistar / LyondellBassell	USA	Vessel Skirts	Chartek 1709	2006
Victoria Plant	Equistar	USA	Structural Steel	Chartek 1709	2006
TPT Petrochemicals PTA Facility	Indorama Petrochem	Thailand	Structural Steel	Chartek 1709	2006
Zhangjiagang Silicon Plant	Dow Corning	China	Structural Steel	Chartek 1709	2006
Godforf Refinery	Shell	Germany	Structural Steel	Chartek 1709	2007
Houston Refinery	Sunoco	USA	Structural Steel	Chartek 1709	2007
Ingolstadt Refinery	Esso	Germay	Container	Chartek 7	2007
Kalundborg Refinery	Statoil	Denmark	Structural Steel	Chartek 7	2007
Kansas Refinery Expansion	Frontier Refining Inc	USA	Structural Steel	Chartek 1709	2007
Kurnell Refinery	Caltex Refineries (NSW) Ltd.	Australia	Gas Sphere Legs	Chartek 1709	2007
Lake Charles Refinery	ConocoPhillips	USA	Structural Steel	Chartek 1709	2007
Petrobrazi Refinery	Petrom SA	Romania	Gasoil Treating Unit	Chartek 7	2007
Ploiesti Refinery	Rompetrol	Romania	Hydrodesulphurisation Plant	Chartek 7	2007
Recap Refinery	Petrobras	Brazil	Pipe Racks	Chartek 7	2007
Revap Refinery	Petrobras	Brazil	Pipe Rack Module	Chartek 1709	2007
Texas City Refinery	BP	USA	FCC Unit Addition	Chartek 1709	2007
WRG Refinery	ConocoPhillips	Germany	LPG Vessel	Chartek 7	2007
Aguada Pichana Plant	Total	Argentina	Pipe Racks	Chartek 7	2007

Project	Owner	Location	Area	Product	Year
Arun LNG Plant	ExxonMobil	Indonesia	Structural Steel	Chartek 1709	2007
Canaport LNG Terminal	Canaport LNG Ltd	Canada	Steel Pipework	Chartek 1709	2007
Pluto LNG	Woodside Energy	Australia	Piping & Equipment	Chartek 7	2007
Ras Laffan Gas Plant	Dolphin Energy	Qatar	Vessel Skirt	Chartek 7	2007
Woodside LNG	Woodside Energy	Australia	Process Modules	Chartek 7	2007
Kollsnes Gas Facility	Statoil	Norway	Extension - Modification	Chartek 7	2007
Nam Con Son Gas Terminal	BP	Vietnam	Structural Steel	Chartek 4	2007
Sakhalin II LNG	Sakhalin Energy	Russia	LNG Module	Chartek 7	2007
Beaumont Facility	Rubicon Chem	USA	Structural Steel	Chartek 1709	2007
Channelview Complex	Equistar / LyondellBassell	USA	Structural Steel	Chartek 1709	2007
Deer Park Complex	Equistar / LyondellBassell	USA	Structural Steel	Chartek 1709	2007
Markum Complex	LyondellBasell	USA	General Plant Maintenance	Chartek 1709	2007
Wesseling Plant	Shell	Germany	Skirts	Chartek 7, 1709	2007
Moerdijk Facility	Shell	The Netherlands	Structural Steel	Chartek 1709	2007
Hannibal Plant	BG Group	Tunisia	Structural Steel	Chartek 1709	2007
Aruba Refinery	Valero	Aruba	Structural Steel	Chartek 1709	2008
Cedar Bayou Complex	Chevron Phillips Chemical	USA	Structural Steel	Chartek 1709	2008
Clyde Refinery	Shell	Australia	Vessel Supports	Chartek 7, 1709	2008
Faro Refinery	BP	Portugal	Gas Spheres	Chartek 7	2008
Jamnagar Refinery	Reliance Industries	India	Jetty Trustle	Chartek 7	2008
Kansas Refinery	Frontier Refining Inc	USA	Cracker Addition	Chartek 1709	2008
Neustadt Refinery	Bayernoil	Germany	Structural Steel	Chartek 7	2008
Ploiesti Refinery	Rompetrol	Romania	Catalytic Cracking Unit	Chartek 7	2008
Port Arthur Refinery	Shell Motiva	USA	Sphere Legs	Chartek 1709	2008
Rabigh Refinery	Saudi Aramco	Saudi Arabia	Structural Steel	Chartek 1709	2008
Texas City Refinery	Valero Energy	USA	Structural Steel	Chartek 1709	2008
Schwechat Refinery TGU	OMV	Austria	Vessels	Chartek 7	2008
Kupe Gas Station	Origin Energy	New Zealand	Structural Steel	Chartek 7, 8	2008
Shell Hong Kong LPG	Shell	Hong Kong	LPG Vessel	Chartek 1709	2008
Slugcatcher	Malaysia LNG	Malaysia	Pipe Supports	Chartek 7	2008
Yemen LNG	Yemen LNG	Yemen	Platform & Pipe Racks	Chartek 1709	2008
In Salah gas	BP/Sonatrach	Algeria	Vessels	Chartek 7	2008
Deer Park Plant	OxyVinyl	USA	Supports & Structural Steel	Chartek 1709	2008
Deer Park Refinery	Shell	USA	CUUSA	Chartek 1709	2008
Stenungsund Plant	Borealis	Sweden	Sphere Legs	Chartek 1709	2008
Gelsenkirchen Facility	SABIC	Germany	Structural Steel	Chartek 1709	2008
Ludwigshafen Plant	BASF	Germany	Structural Steel	Chartek 7	2008
Schkopau Plant	Dow Chemical	Germany	Vessel Skirt	Chartek 1709	2008
Wesseling Plant	LyondellBassell	Germany	Structural Steel	Chartek 7	2008
Third Pillar Phase 1	Dow Corning	China	Steel Columns	Chartek 1709	2008
Baytown Plant	Chevron Phillips Chemical	USA	Tank Skirt	Chartek 1709	2008
Kakinada Refinery	Reliance Industries	India	Equipment Supports	Chartek 7	2009
La Rabida Refinery	CEPSA	Spain	Gas Sphere Legs	Chartek 7	2009
Pulau Bukom Refinery	Shell	Singapore	Process Steel Structure	Chartek 1709	2009
Recap Refinery	Petrobras	Brazil	Stuctural Steel	Chartek 1709	2009
Reduc Refinery	Petrobras	Brazil	Stuctural Steel	Chartek 1709	2009
Pluto LNG	Woodside Energy	Australia	Module Structures	Chartek 7	2009
Skikda LNG Train	Sonatrach	Algeria	Vessel	Chartek 1709	2009
Theddlethorpe Gas Terminal	ConocoPhillips	UK	Vessel Skirt	Chartek 1709	2009
Igrinskaya	Gazprom	Russia	Vessels	Chartek 7	2009
Wilton Facility	SABIC	UK	Vessel Supports	Chartek 1709	2009
Shell ECC	Shell	Singapore	Vessels & Supports	Chartek 7	2009
SPT Olefins Furnaces Project	ExxonMobil	Singapore	Structural Steel	Chartek 1709	2009
Zhangjiagang Silicon	Dow Corning	China	Structural Steel	Chartek 1709	2009
Cartagena Refinery	Ecopetrol	Colombia	Structural Steel	Chartek 1709	2010
Rpbc Refinery	Petrobras	Brazil	Stuctural Steel	Chartek 1709	2010
Toledo Refinery	BP	USA	Reformer Unit	Chartek 1709	2010
Whiting Refinery	BP	USA	Vessels	Chartek 7	2010
Sakhalin 1 ODOPTU Development	Exxon Neftegas (ENL)	Russia	Structural Steel & Piling	Chartek 7	2010
Gbaran Ubie Gas Processing	Shell	Nigeria	Vessels	Chartek 7	2010
Hemlock Facility	Dow Corning/Hemlock	USA	Structural Steel	Chartek 1709	2010
SPE II	Siam Polyethylene Co. Ltd	Thailand	Vessel Legs	Chartek 1709	2010
Gorgon LNG Plant	Chevron	Australia	LNG Module	Chartek 1709	2011
Geelong Refinery	Shell	Australia	Structural Steel	Chartek 1709	2011
BP Curtis Bay	BP	USA	Bullet Tanks	Chartek 1709	2011
BP Toledo	BP	USA	Pipe racks	Chartek 1709	2011

Temperature Resistance

High Temperature Corrosion Protection

THE COLD SPRAY ANSWER TO THE BILLION DOLLAR QUESTION



Valves, heat exchangers, pipework and vessels are just some of the areas in an oil, gas or chemical processing facility which may be subject to high heat operation.

We have a range of products under our Intertherm brand designed to offer temperature and corrosion protection to high heat steelwork. Whether subject to cycling temperatures, under insulation or in need of colour, we can provide solutions to protect your steelwork and piping.

One of the most challenging and corrosive environments encountered on a chemical or petrochemical plant is that found beneath insulation. The problem of corrosion under insulation, or CUI, costs the petrochemical and chemical industry billions of dollars every year. This is mostly incurred through corrosion going unchecked, accelerated by the damp and warm conditions at the interface between the steel and the insulation. In the majority of cases, the impact of CUI results in major, unexpected and unscheduled maintenance.

INTERTHERM CSA - THE OBVIOUS CHOICE

Asset owners often turn to thermally sprayed aluminium (TSA) to mitigate against CUI. While an effective solution to the problem, TSA has an extremely high applied cost and is difficult to apply, repair and maintain onsite. We recognised this problem and in 2006 introduced “Intertherm CSA”, an innovative alternative temperature-resistant coating.

CSA (Cold Spray Aluminium) is based upon titanium modified inorganic copolymer technology and is the result of extensive research into and development of high temperature corrosion mechanisms.

Applied by conventional methods, Intertherm CSA offers outstanding corrosion protection for piping and vessels under insulation.



Performance benchmarked by third party laboratory testing, Intertherm CSA has been shown to provide comparable protection to TSA in accelerated testing and to outperform alternative CUI coatings currently on the market.



APPLICATION TO HOT SUBSTRATES

Intertherm CSA has the added benefit of withstanding application to substrates operating at temperatures up to 120ºC (248ºF), particularly useful in maintenance situations where equipment cannot be taken offline. This feature proved invaluable on a recent project at a German refinery. The owner did not want to spend valuable shutdown time painting various insulated pipes which were suffering from CUI. They therefore applied Intertherm CSA to the pipes while still in service at 100°C (212ºF). The maintenance team was then able to undertake more critical tasks during their next planned outage.

Application to hot operating equipment means Intertherm CSA offers increased flexibility to facilities requiring maintenance work, reducing shut downs and allowing paint crews more efficient use of time whilst on site.

PROVEN PERFORMANCE

After 12 months in service this propane treater unit displays the excellent performance of Intertherm CSA when used under insulation. Applied on site during a maintenance outage Intertherm CSA offers long term corrosion protection against the effects of temperature cycling and CUI.



REFINING, CHEMICAL AND PETROCHEMICAL INDUSTRIES

It has been estimated that the total annual direct cost of corrosion in these industries is around US$5.4 billion with more than US$3.2 billion of that incurred in maintenance related expenses and vessel turnaround costs.

Track Records



Area: Pipework
Location: Ontario, Canada
Product: Intertherm CSA
Year: 2009



Area: Reactor
Location: Germany
Product: Intertherm CSA
Year: 2008



Area: Heat Exchanger
Location: UK
Product: Intertherm CSA
Year: 2007



Area: Insulated piping and equipment
Location: Jiangxi, China
Product: Intertherm CSA
Year: 2008

Project	Owner	Location	Area	Product	Year
Schering Plough MPP	Schering Plough Corp	Singapore	Pipework	Intertherm 875	2001
Motiva Norco	Shell Motiva	USA	Spheres	Intertherm 228	2002
NPC, Ma Ta Phut	PTT Chemicals	Thailand	Pipework	Intertherm 50	2002
UBC Chemicals USA	UBC Chemicals	USA	Pumps	Intertherm 50	2002
Asphalt Storage Tank	Alliance Refining Co	Thailand	Pipework	Intertherm 50	2002
Petkim NSC Project	Petkim	Turkey	Piping	Intertherm 181	2003
Slovay Brussels	Solvay Chemicals	Belgium	Vessels	Intertherm 228	2003
Umicore Belgium	Umicore	Belgium	Structural Steel	Intertherm 50	2003
MLNG Tiga	MLNG Tiga	Malaysia	Pipework	Intertherm 875	2003
ATC Debottlenecking	Aromatics (Thailand) Public Co.	Thailand	Pipework	Intertherm 875	2003
MRR Project	Petronas	Malaysia	Pipework	Intertherm 228	2003
Tessenderlo Chemie Ham	Tessenderlo Chemie nv	Belgium	Flare Stack	Intertherm 181	2004
Geelong Refinery	Shell	Australia	Pipework	Intertherm 228	2004
Pipeline, Mina Al Ahmadi	Arabi Enertech	Kuwait	Pipework	Intertherm 228	2004
PFK Mod Project	Petronas Fertilizer sdn Bhd	Malaysia	Pipes & Vessels	Intertherm 50	2004
Tessenderlo Chemie Ham	Tessenderlo Chemie nv	Belgium	Structural Steel	Intertherm 50	2004
InterOil Facility	InterOil	Papua New Guinea	Pipework	Intertherm 50	2004
Sohar Refinery	Oman Refinery Company	Oman	Structural Steel	Intertherm 50	2004
Songkhla GSP-1	PTT Chemicals	Thailand	Pipework	Intertherm 50	2004
Minas Gerais Site	Petrobras	Brazil	Pressure Vessel	Intertherm 715	2004
FCFC Aroma III	Neuman & Essor	Thailand	Pressure Vessels	Intertherm 875	2004
Newfoundland Oil Refinery	North Atlantic Refining Co	Canada	Tank Externals	Intertherm 875	2004
Deer Park Refinery	Shell	USA	Gas Dryer Units	Intertherm CSA	2004
Suva Refinery	Shell	Fiji	Pipework	Intertherm 198	2005
Kurnell Refinery	Caltex	Australia	Tank Externals	Intertherm 228	2005
Channelview Facility	LyondelBassell Industries	USA	Structural Steel	Intertherm 228	2005
Daiken Chemical Store Bintulu	Daiken Sarawak	Malaysia	Chimney	Intertherm 50	2005
Changshou Chongquing Facility	Yangtze River Acetyls Company Limited	China	Pipework	Intertherm 715	2005
Pasadena Site	NOVA Chemicals	USA	Pumps & Valves	Intertherm 715	2005
Third Transmission Line	PTT Chemicals	Thailand	Pipework	Intertherm 875	2005
Shell Johor	Shell	Malaysia	Tank Externals	Intertherm 891	2005
Port Bonython Plant	Santos	Australia	Propane Treater Units	Intertherm CSA	2005
Fife Ethylene Plant	Exxon Chemical	UK	Structural Steel	Intertherm 181	2006
Channelview Plant	Lyondell Chemicals	USA	Tank Externals	Intertherm 228	2006
Cubatao Site	Carbocloro	Brazil	Insulated Tank	Intertherm 228	2006
Shuaiba Facility	Petrochemical Industries Co	Kuwait	Stacks & Vessels	Intertherm 715	2006
Ethlyne Oxide Piping	Lyondell Chemical	USA	Pipework	Intertherm CSA	2006
Deer Park Refinery	Shell	USA	Process Vessels	Intertherm CSA	2006
El Wastani Gas Field Development	El Wastani Petroleum Co.	Egypt	Pipework	Intertherm CSA	2006
Generators Chevron Pacific	Chevron	Indonesia	Generators	Intertherm 875	2006
SGP Project	Shell	Malaysia	Structural Steel	Intertherm 875	2006
Calvert City Refinery	Noveon Chemical	USA	Incinerator	Intertherm CSA	2006
Convent Refinery	Motiva	USA	CDHDS - Cold Separator	Intertherm CSA	2006
Mongstad Refinery	Statoil	Norway	Insulated Pipes & Vessels	Intertherm CSA	2006
MapTaPhut Gas Separation Plant	PTT Chemicals	Thailand	Piping	Intertherm CSA	2006
Ruwais	Gasco	UAE	Gas Processing Pipes	Intertherm CSA	2006
Houston Site	Lyondell	USA	Ethylene Oxide Piping	Intertherm CSA	2006
ABK	Total	UAE	Amine Reboilers	Intertherm CSA	2006
Pluto LNG Packages	Woodside Energy	Thailand	Pipework	Intertherm 228	2007
Ineos Grangemouth	Ineos	UK	Flare	Intertherm 715	2007
Ar-Razi Plant-V Methanol Project	SABIC	Mexico	Structural Sreel	Intertherm 715	2007
Pasadena Site	Lyondell Chemicals	USA	Stacks & Vessels	Intertherm CSA	2007
Lyondell Botlek	Lyondell Chemicals Nederland bv	The Netherlands	Pipework	Intertherm CSA	2007
Guangzhou Nansha Site	Titan Petrochemicals Group Limited	China	Tank Externals	Intertherm 875	2007
British Sugar Project	Inter Ocean Services	UK	Structural Steel	Intertherm 890	2007
Donges Refinery	Total	France	Oven	Intertherm CSA	2007
Fawley Refinery	Exxon	UK	Chimney Stacks	Intertherm CSA	2007
Ingolstadt Refinery	Esso	Germay	Insulated Piping	Intertherm CSA	2007
Kalundborg Refinery	Statoil	Denmark	Piping & Vessels	Intertherm CSA	2007
La Coruna Refinery	Repsol YPF	Spain	Filters	Intertherm CSA	2007

Project	Owner	Location	Area	Product	Year
Stanlow	Shell	UK	Heat Exchangers	Intertherm CSA	2007
BUHASA	GASCO	UAE	Treater Lines	Intertherm CSA	2007
Ellesmere Port	Ineos Chlor	UK	Sulphur Tank Roofs	Intertherm CSA	2007
Pasadena Facility	Gulf Port Chemicals L.P	USA	Boiler Plant	Intertherm 228	2008
Manatee Facility	Trans Montaigne	USA	Tank Externals	Intertherm 228	2008
Rayong Facility	PTT Chem	Thailand	Pipework	Intertherm 228	2008
HMC PP Project Line 3	HMC Polymers Co. Ltd.	Thailand	Pipework	Intertherm 50	2008
BP Dimlington PSN Project	BP	UK	Structural Steel	Intertherm 50	2008
Shell Pearl GTL	Shell	Qatar	Structural Steel	Intertherm 50	2008
IOCL Residue Upgrade	IOCL	India	Tank Externals	Intertherm 50	2008
ITT China Project	Frontier Drilling ASA	Thailand	Stack	Intertherm 50	2008
MOC Cracker Project	Samsung Engineering	Thailand	Structural Steel	Intertherm 50	2008
Basell Clyde Polypropylene Site	Basell Clyde	Australia	Heat Exchanger	Intertherm CSA	2008
Rose Hill Site	Basell Polyolefins	Australia	Vessels	Intertherm CSA	2008
QUATTOR ABC Site	Quattor	Brazil	Heat Exchanger	Intertherm CSA	2008
VCM Plant Kerteh	Inter Ocean Services	Malaysia	Pipework	Intertherm CSA	2008
Flotta Oil Terminal	Talisman Energy	UK	Flare Box	Intertherm CSA	2008
Clyde refinery	Shell	Australia	Pipework	Intertherm CSA	2008
BST Ma Ta Phut Plant	BST Elastomers	Thailand	Pipework	Intertherm CSA	2008
Rayong Debottlenecking	PTT Chemicals	Thailand	Structural Steel	Intertherm 875	2008
PTTPE LDPE PLANT	PTT Chemicals	Thailand	Pressure Vessels	Intertherm 875	2008
Oseberg Field	Statoil	Norway	Tank	Intertherm CSA	2008
Trecate Refinery	Exxon	Italy	Pipework	Intertherm CSA	2008
Elm Project	SembCorp Utilities	UK	Pipework	Intertherm CSA	2008
Karsto Gas Plant	Statoil	Norway	Insulated Pipes & Vessels	Intertherm CSA	2008
Tjeldbergodden	Statoil	Norway	Insulated Pipes & Vessels	Intertherm CSA	2008
Terneuzen Plant	Dow	The Netherlands	Vessel	Intertherm CSA	2008
Ludwigshafen Plant	BASF	Germany	Hot Application to Vessel	Intertherm CSA	2008
Antwerp Plant	Bayer	Belgium	Pipework	Intertherm CSA	2008
El Merk CPF	Vatana Phaisal Engineering	Thailand	Heat Exchangers	Intertherm 181	2009
Deepak Fertilizers, Pune	Deepak Fertilizers	India	Boiler Plant	Intertherm 228	2009
Pluto LNG	Woodside Energy	Australia	Tank Externals	Intertherm 228	2009
EDI Baghouse	Downer EDI Works	Australia	Bag House	Intertherm 228	2009
Hydrogen Plant	Technip	Thailand	Pipework	Intertherm 50	2009
Malaysia Refinery	Esso	Malaysia	Structural Steel	Intertherm 715	2009
Linden Refinery	ConocoPhillips	USA	SCR	Intertherm 875	2009
TD Plant	QERL	Australia	Insulated Steelwork	Intertherm CSA	2009
Dow Chemical Thailand	Dow Chemical	Thailand	Process Vesels	Intertherm CSA	2009
Sture Terminal	Statoil	Norway	Ring on Top of Tank	Intertherm CSA	2009
Lindsey Oil Refinery	Total	UK	Small Valves & Pipe Spools	Intertherm CSA	2009
Mongstad Refinery	Statoil	Norway	Insulated Pipes & Vessels	Intertherm CSA	2009
Ras Tanura	Saudi Aramco	Saudi Arabia	Chimney Stacks	Intertherm CSA	2009
SASREF	SASREF	Saudi Arabia	Pipework	Intertherm CSA	2009
Sweeny Refinery	ConocoPhillips	USA	Butane Storage	Intertherm CSA	2009
Tarragona Refinery	Repsol	Spain	Cyclic Gas Pipe	Intertherm CSA	2009
Seal Sands	BP	UK	Insulated Equipment	Intertherm CSA	2009
Shell ECC	Shell	Singapore	Insulated Tank	Intertherm CSA	2009
Botlek Plant	AkzoNobel	The Netherlands	Pipework	Intertherm CSA	2009
Leuna Site	Dow	Germany	Pipework	Intertherm CSA	2009
Paradip Oil Refinery	IOC	India	Tank Externals	Intertherm 228	2010
Rotterdam Terminal	Shell	The Netherlands	Structural Steel	Intertherm 50	2010
Sonatrach Heat Exchangers	Sonatrach	Thailand	Heat Exchanger	Intertherm 875	2010
Botlek plant	LyondellBasell	The Netherlands	Pipework	Intertherm CSA	2011
Maasvlakte plant	LyondellBasell	The Netherlands	Towers	Intertherm CSA	2011
Gate LNG Terminal	Nederlandse Gasunie	The Netherlands	Pipework	Intertherm CSA	2011
Botlek Plant	ShinEtsu	The Netherlands	Oxychlorine Reactor	Intertherm CSA	2011
Mongstad Refinery	Statoil	Norway	Heat exchanger	Intertherm CSA	2011
Karsto Gas Plant	Statoil	Norway	Pipework	Intertherm CSA	2011
Hemlock Semiconductor	Dow	USA	Vessels	Intertherm CSA	2011
Sulphur Re-Melting Plant	Tengizchevroil	Kazakhstan	Pipework	Intertherm CSA	2011

Linings

A linings supplier that will give you inner confidence

INTERLINE, ENVIROLINE, CEILCOTE

Oil, gas and chemical processing facilities present many varied challenges to a linings manufacturer. With a wide range of cargos, concentrations and temperatures as well as fast turnaround demands and secondary containment requirements, a supplier needs a comprehensive product offer to support this sector.



At International Paint, we have built a single source linings range which means that we can quickly and easily supply products suitable for almost any linings application. Through our Interline, Enviroline and Ceilcote brands we can specify the lining that is right for your project. But we don't stop there, our renowned global technical service teams support applicators and owners to ensure products perform as specified, a service which the team coating the Seliyarovo Oil Plant in Siberia made full use of.

The Seliyarovo Oil Plant selected the Interline® 984 glass reinforced laminate tank lining system to protect the internal steelwork of storage tanks from corrosion and the stored cargo from contamination.

Categorised as a heavy duty lining, the Interline 984 system has a proven track record in reducing facility downtime resulting from damaged tanks requiring maintenance.

The applicators coating the Seliyarovo Plant with the Interline 984 system were given training and an application demonstration at the facility which was fully supervised by our technical service team.

Offering such training to applicators helps them to fully understand how to apply the lining system in accordance with the product's application procedures, thus improving quality standards for the asset owner. The training programme contributes to reducing overall project costs and ensures project deadlines are met.

With a long and successful track record in the tank lining market, our global network of technical service representatives can provide owners and applicators with linings technical knowledge and expertise no matter where the projects are located around the world. Technical service reports provide an excellent project reference that can be used by owners to develop future inspections and build accurate case histories.

THE IMPORTANCE OF APPLICATION

If surface preparation is compromised the coating system may not adhere to the substrate, which can lead to premature coating failure. Accurate surface preparation is key to ensuring coating longevity while in service, protecting assets for longer and maintaining plant efficiency.

I WOULD LIKE MY TANK BACK IN SERVICE QUICKER

With our single coat 100% solids Enviroline range, tanks which operate under various temperature and chemical conditions have been put back into service a full two weeks faster than the nearest coatings competitor.

DO YOU PROVIDE SECONDARY CONTAINMENT?

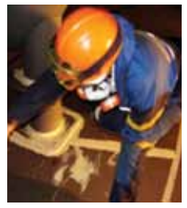
Our Ceilcote range is designed to provide protection against aggressive chemicals such as sulphuric acid. Alleviate your environmental concerns by choosing Ceilcote for both secondary containment and lining applications. Reinforced systems and crack bridging schemes are standard for this technology.

A 30 YEAR UPGRADE FOR A TANK LINING SYSTEM



Originally constructed in 1979 and lined with the Interline 984 mat reinforced system, tank #4 at Enterprise's Texas City Terminal had been storing crude oil for 30 years without any failures. As part of a proactive maintenance program the tank was inspected in 2009 and the Interline 984 system was found to be in excellent condition. Replacement of the top 'gel' coat was recommended to extend the life of the lining for another 30 years, with the majority of the mat reinforced system still in great condition.





Track Records



Cargo: Fuel Storage
Location: Malaysia
Product: Interline 850
Year: 2008



Cargo: Elevated Temperature Crude Oil
Location: California, USA
Product: Enviroline 405HT
Year: 2009



Cargo: Fuel Storage
Location: USA
Product: Enviroline 125LV
Year: 2009



Cargo: Crude Oil
Location: Houston TX, USA
Product: Ceilcote 662 Flakeline
Year: 2009

Project	Owner	Location	Cargo	Product	Year
Batangas Refinery	Caltex	The Phillippines	Refined Products	Ceilcote	1987
Port Dickson	Esso	USA	Refined Products	Ceilcote	1988
Plymouth Storage Facility	Esso	UK	Diesel	Interline	1988
Alborg Refinery	Statoil	Denmark	Crude Oil	Interline	1989
Augusta Refinery	Esso	Italy	Crude Oil	Interline	1989
Shell Haven	Shell	UK	LPG	Interline	1989
Gatwick Airport	Monarch Airways	UK	De-Icing Fluid	Interline	1989
Alborg Refinery	Shell	Denmark	Crude Oil	Interline	1990
Dunkirk Refinery	Total	France	Crude Oil	Interline	1990
Trecate Refinery	Esso	Italy	Crude Oil	Interline	1990
Chocolate Bayou Plant	BP Amoco	USA	Secondary Containment	Ceilcote	1991
Channelview Plant	Lyondell Chemical Co	USA	Sodium Sulfate	Ceilcote	1991
Charleston Plant	Olin Chemical	USA	Caustic	Ceilcote	1991
Kalamazoo Plant	Upjohn Company	USA	Sodium Hydroxide	Ceilcote	1991
SRC	SRC (Singapore Refining Co)	Singapore	Caustic	Ceilcote	1992
Sriracha Refinery	Esso	Thailand	Crude Oil	Ceilcote	1992
Laporte Site	Dupont	USA	Sulfuric Acid	Ceilcote	1992
Pittsburg CA Facility	Dow Chemical	USA	Acid	Ceilcote	1992
Augusta Plant	Olin Chemical	USA	Brine	Ceilcote	1992
Shell Pugent Sound Refinery	Shell	USA	Secondary Containment	Ceilcote	1993
Rahway Facility	Merck & Co.	USA	Brine	Ceilcote	1993
Whitegates Refinery	ConocoPhillips	Ireland	Kerosene	Interline	1994
Teesside Facility	Dupont	UK	Demin Water	Interline	1994
Coryton Refinery	Mobil	UK	Crude Oil	Interline	1995
SRC	SRC (Singapore Refining Co)	Singapore	Kerosene	Interline	1995
Grand Island, NE	Bosselman, Inc. / Fuel System	USA	Gasoline, Diesel, Aviation Fuel	Enviroline	1995
Bonnyville, AB	Amoco Canada Petroleum Co.	USA	Crude Oil	Enviroline	1996
Russian Facilities	FSI International	Russia	Oil, Brine, Water	Enviroline	1996
Bonnyville	Koch Exploration	USA	Salt Water, Clean Oil	Enviroline	1996
Bear Trap	CNRL	USA	Heavy Oil	Enviroline	1997
Elk Point	CNRL	USA	Heavy Oil	Enviroline	1997
Bonnyville & Swan Hills, AB	Devcon	USA	Kerosene, Toluene, Salt Water	Enviroline	1997
Pembroke Refinery	Texaco	UK	Crude Oil	Interline	1998
Greenville Plant	BASF	USA	Solvent	Ceilcote	1998
Fort McMurray Project	JACO / Japan Oil Company	USA	Heavy Oil	Enviroline	1998
Texas to Rhode Island Facilities	Motiva Enterprises LLC	USA	Methanol/Ethanol Blends	Enviroline	1998
Port Talbot Facility	BOC	UK	Water/Air	Interline	1999
Queen Creek Facility	Arch Chemical	USA	Acid	Ceilcote	1999
PTA Plant	Samsung Petrochemical Co Ltd	Korea	Acid	Ceilcote	1999
Tranmere Terminal	Shell	UK	Crude Oil	Interline	1999
Middlesbrough Facility	BOC	UK	Water/Air	Interline	2000
Foster Creek Facility	EnCana / AEC	USA	Salt Water, Petroleum Products	Enviroline	2000
BP Amoco Refinery	BP Amoco	USA	Petroleum Products	Enviroline	2001
Citgo Refineries	Citgo Refinery	USA	Spent Caustic, Cyclohexane	Enviroline	2001
Port Everglades Terminal,	Motiva Enterprises, LLC	USA	Petroleum Products	Enviroline	2001
Dalmeny Tank Farm	BP	UK	Crude Oil	Interzone	2001
Gosport Base	Ministry of Defence	UK	Naphtha	Interline	2001
Tor Point Base	Ministry of Defence	UK	Diesel	Interline	2001
Edmonton	Petro-Canada Products Ltd.	Canada	Jet Fuel	Interline	2002
Paulinia Refinery (REPLAN)	Petrobras	Brazil	Fuel	Interline	2002
Slagen Refinery	Esso	Norway	Crude Oil	Interline	2002
Charleston Plant	Arch Chemical	USA	Brine	Ceilcote	2002
Buncefield	BP	UK	Aviation Fuel	Interline	2002
Heathrow	Esso	UK	Aviation Fuel	Interline	2002
Aruba Refinery	Valero Energy	Aruba	Aviation Fuel	Interline	2003
Coryton Refinery	BP	UK	Crude Oil	Interline	2003
Rotterdam-Europoort	Texaco Exxon Aramco Co	The Netherlands	Crude Oil	Interline	2003
Alliance Refinery	ConocoPhillips	USA	Process Water	Interline	2004
Carson Refinery	BP	USA	Oil and Water	Enviroline	2004
Kingston Refinery	Petrojam	Jamaica	Gasoline	Interline	2004
Meraux Refinery	Murphy Oil	USA	Diesel	Interline	2004
Whitegates Refinery	ConocoPhillips	Ireland	Crude Oil	Interline	2004
Vuda Point Facility	Mobil Oil	Fiji	Aviation Fuel	Interline	2004
La Mede	Total	France	Crude Oil	Interline	2005
Paulinia Refinery (REPLAN)	Petrobras	Brazil	Process Fuel	Interline	2005
Puertollano Refinery	Repsol YPF	Spain	Crude Oil	Interline	2005
Dalmeny Tank Farm	BP	UK	Crude Oil	Interline	2005

Project	Owner	Location	Cargo	Product	Year
Isle of Grain Terminal	BP	UK	Aviation Fuel	Interline	2005
Touliki Terminal	BP	Tonga	Gasoline	Interline	2005
Fos sur Mer	SPSE	France	Crude Oil	Interline	2005
Isle of Grain Terminal	BP	UK	Unleaded Fuel	Interline	2005
Baytown Refinery	ExxonMobil	USA	Gasoline	Interline	2006
Canton Refinery	Marathon Oil	USA	Processed Gas	Enviroline	2006
Immingham Refinery	ConocoPhillips	UK	Crude Oil	Interline	2006
Lavera	Total	France	Crude Oil	Interline	2006
Terminal Honolulu	Chevron	USA	Ethanol	Enviroline	2006
West Virginia Facility	Kinder Morgan LLC	USA	Gasoline	Enviroline	2006
Saskatoon	Petro-Canada	Canada	Gasoline	Interline	2006
Port Botany	Terminals Pty Ltd	Australia	Caustic	Interline	2006
Fauna Tank Farm	Citgo Petroleum	USA	Crude Oil	Interline	2006
Altona Refinery	ExxonMobil	Australia	Crude Oil	Interline	2007
Cartagena	Repsol YPF	Spain	Diesel	Interline	2007
Fawley Refinery	Exxon	UK	Cetane	Interline	2007
Sarroch Refinery	SARAS Refinery	Italy	Crude Oil	Interline	2007
Tarragona	Repsol YPF	Spain	Crude Oil	Interline	2007
Shuaiba to Burgen Pipeline	KOC	Kuwait	Gas Pipeline	Interline	2007
Sabryah	KOC	Kuwait	Gas Pipeline	Interline	2007
Korat Ethanol Plant	T.P.K. Ethanol	Thailand	Ethanol	Interline	2007
Tuvalu Facility	BP	Fiji	Gasoline	Interline	2007
Dongguan Lisha Tank Farm	CNOOC	China	Oil	Interline	2007
Carteret, NJ Terminal	Kinder Morgan LLC	USA	Fuel Oil	Interline	2007
Staten Island, NY	Kinder Morgan LLC	USA	Gasoline	Interline	2007
Perth Amboy, NJ	Kinder Morgan LLC	USA	Fuel Oil	Interline	2007
Port Everglades	Port Consolidated	USA	Various Oil Mixes	Enviroline	2007
Bronx, NY	Transmontaigne	USA	Fuel Oil	Interline	2007
Norfolk Terminal	Transmontaigne	USA	Gasoline	Interline	2007
Richmond, VA	Transmontaigne	USA	Fuel Oil	Interline	2007
Purvis Terminal	Transmontaigne	USA	Gasoline	Interline	2007
Winnipeg Terminal	Imperial Oil Distribution	Canada	Jet Fuel	Interline	2007
Port Botany	Vopak	Australia	Diesel	Interline	2007
Lyttelton Terminal	Mobil Oil	New Zealand	Gasoline	Interline	2007
Woolston Terminal	Mobil Oil	New Zealand	Gasoline	Interline	2007
Seaview Terminal	Mobil Oil	New Zealand	Gasoline	Interline	2007
Napier Terminal	Shell	New Zealand	Gasoline	Interline	2007
Birmingham Airport	Esso	UK	Aviation Fuel	Interline	2007
Baytown Refinery	ExxonMobil	USA	Aviation Fuel	Enviroline	2008
Jamnagar Refinery	Reliance Industries	India	Caustic	Interline	2008
Kurnell Refinery	Caltex Refineries (NSW) Ltd.	Australia	Crude Oil	Interline	2008
Lytton Refinery	Caltex Refineries (Qld.) Ltd.	Australia	Process Fuel	Interline	2008
Chocolate Bayou Polymer Plant	LyondellBassell	USA	Diesel	Interline	2008
Port Allen, Louisiana	B&H Distributors	USA	Ethanol	Enviroline	2008
Imperial, CA	Kinder Morgan LLC	USA	Processed Gas	Enviroline	2008
Phoenix Terminal	Kinder Morgan LLC	USA	Gasoline	Enviroline	2008
Yarraville Terminal	Mobil	Australia	Gasoline	Interline	2008
Rayong Facility	Thai Tank Terminal Co	Thailand	Gasoline	Interline	2008
Brisbane Facility	BP	Australia	2-Ethylhexyl Nitrate	Interline	2008
L.P. Malvern Terminal	Buckeye Partners	USA	Ethanol	Interline	2008
Pensacola Terminal	Transmontaigne	USA	Fuel Oil	Interline	2008
Tonga Storage Tanks	BP	Tonga	Aviation Fuel	Interline	2008
Bangchak Refinery	Bangchak Petroleum	Thailand	Crude Oil	Interline	2009
La Rabida Refinery	CEPSA	Spain	Aviation Fuel	Interline	2009
Newport Refinery	Caltex Refinery	Australia	Crude Oil	Interline	2009
Shuaba Refinery	Ministry of Oil	Iraq	Refined Products	Interzone	2009
Mobile, AL	Transmontaigne	USA	Diesel	Interline	2009
New Windsor	Warex Terminals	USA	Fuel Oil	Interline	2009
Bayonne, NJ	Hess Corporation	USA	Fuel Oil	Interline	2009
Groton, CT	Hess Corporation	USA	Fuel Oil	Interline	2009
Roseton, NY	Hess Corporation	USA	Fuel Oil	Interline	2009
Collins Terminal	Transmontaigne	USA	Gasoline	Interline	2009
Owensboro, KY	Transmontaigne	USA	Gasoline	Interline	2010
Vopak Oil Rotterdam	Vopak	The Netherlands	Crude Oil	Interline	2010
Kurnell Refinery	Caltex	Australia	Gasoline	Enviroline	2011
Geelong Refinery	Shell	Australia	Crude Oil	Interline	2011
Buckeye Lima Terminal	Buckeye Partners	USA	Crude Oil	Interline	2011
Catertet Terminal	Kinder Morgan	USA	Crude Oil	Interline	2011

Oil Refineries

Providing Total Asset Protection

ASSET PROTECTION IS ONE OF THE TOUGHEST CHALLENGES FACING THE OIL & GAS INDUSTRY

For refineries processing vast amounts of crude oil every day, an unplanned shutdown means a major impact upon profitability.

Ukraine's leading refinery JSC Naftokhimik Pricarpatiya (Nadvirna Refinery Plant), located in Nadvirna, Western Ukraine processes around 39,000 barrels of oil per day.

Corrosion in a refinery like Nadvirna can lead to:

- Steel metal loss
- High maintenance costs
- Reduced asset design life
- Revenue loss
- Catastrophic failure

With this in mind, it is vitally important that coating and lining systems are correctly specified and applied at new construction and properly maintained throughout the lifetime of the asset.

A recent project at the Nadvirna Refinery Plant involved the protection of 247,000 cubic metres





(8,722,700 cubic feet) of tank storage capacity including 11 newly constructed storage tanks and maintenance painting of nine existing tanks.

COATING SYSTEM

In order to reduce complexity, minimise waste and reduce the chance of the incorrect coating being applied, the customer required a specification which included as few products as possible. Its excellent versatility and extensive track record meant that Interseal 670HS was able to provide corrosion protection to both the internals and externals of the new and existing tanks. Interthane 990, an acrylic polyurethane topcoat, was then applied to the tank external to provide improved aesthetic performance. This meant that the whole project was completed using only two products, fully satisfying the customer's requirements.



REFINERY EXPANSION PROJECT CALLS ON CHARTEK

The Jamnagar Refinery, owned by Reliance Industries Limited (RIL) is India's largest greenfield refinery. As part of an expansion project to increase refining capacity, Reliance used Chartek® 7 to provide one hour fire protection for modifications to steel structures in the marine terminal and riser platform areas.

Jamnagar was first commissioned in 1999 and had an installed production capacity of 661,000 barrels of crude oil per day. After undergoing an expansion, capacity doubled to 1.2 million barrels per day, making Reliance Jamnagar the biggest single site refinery in the world.

The expansion project included modification of the refinery's offshore jetty. Due to the harsh environment found in jetty areas and the risk of both pool and jet fires, a passive fire protection system was required which offered the specified fire resistance as well as protection against corrosion.

Reliance, in consultation with Bechtel and Tecon (consultants), chose our Chartek® 7 epoxy intumescent passive fire protection as the product to protect their asset. Chartek 7 is ideal for providing a tough, durable, yet lightweight coating for some of the most corrosive environments around.

Intergard® 269 was used together with Chartek to offer Reliance the best corrosion protection and high performance solution for their project.





Track Records



Area: Vessel Skirts
Location: Norway
Product: Chartek 7 & Chartek 1709
Year: 2008



Area: Refinery Storage Tank Externals
Location: Germany
Product: Interplus 356, Interseal 670HS & Interthane 990
Year: 2009



Area: Structural Steel and Piping
Location: China
Product: Intertherm 228, Interzinc 22, Intertherm 50
Year: 2009



Area: Refinery Storage Tank Externals
Location: Australia
Product: Interfine 1080
Year: 2010

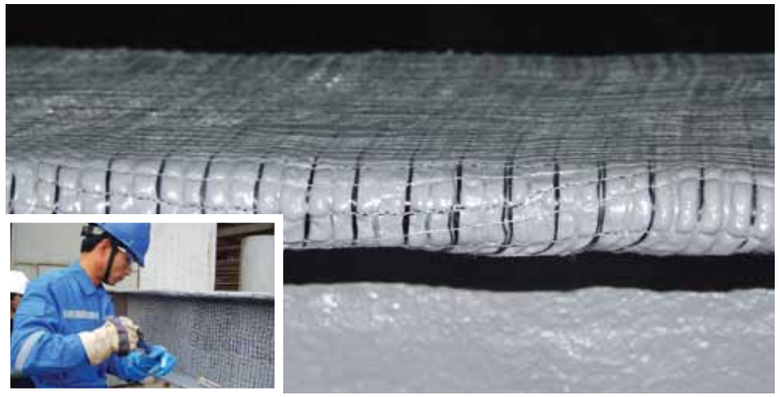
Refinery	Owner	Location	Year
Milford Haven Refinery	Gulf Oil	UK	1980
Torrance Refinery	Mobil	USA	1980
Yorktown Refinery	Amoco	USA	1980
Ras Tanura	Saudi Aramco	Saudi Arabia	1981
Batangas Refinery	Caltex	The Philippines	1987
Port Dickson	Esso	USA	1988
Yanbu Refinery	Petromin/Mobil	Saudi Arabia	1988
Alborg Refinery	Statoil	Denmark	1989
Augusta Refinery	Esso	Italy	1989
Alborg Refinery	Shell	Denmark	1990
Porto Refinery	Petrogal	Portugal	1990
Trecate Refinery	Esso	Italy	1990
Grangemouth refinery	BP	UK	1992
SRC	SRC (Singapore Refining Co)	Singapore	1992
Sriracha Refinery	Esso	Thailand	1992
Shell Pugent Sound Refinery	Shell	USA	1993
Lingen Refinery	ERE	Germany	1994
Whitegates Refinery	ConocoPhillips	Ireland	1994
Coryton Refinery	Mobil	UK	1995
SRC	SRC (Singapore Refining Co)	Singapore	1995
Yanbu Refinery	Saudi Aramco	Saudi Arabia	1995
El Segundo Refinery	Chevron	USA	1996
Pembroke Refinery	Texaco	UK	1998
Linden Refinery	ConocoPhillips	USA	2000
BP Amoco Refinery	BP Amoco	USA	2001
BRC Refinery	Petroplus	Belgium	2001
Kochi Refinery	Bharat Petroleum (BPCL)	India	2001
Edmonton	Petro-Canada Products Ltd.	Canada	2002
Kertih Refinery	Petronas Penapisan	Malaysia	2002
Lytton Refinery	Caltex Refineries (Qld.) Ltd.	Australia	2002
Paulinia Refinery (REPLAN)	Petrobras	Brazil	2002
Slagen Refinery	Esso	Norway	2002
STAR Refinery	ARC (Alliance Refining Co.)	Thailand	2002
Vizag	Hindustan Petroleum Corp	India	2002
Aruba Refinery	Valero Energy	Aruba	2003
Coryton Refinery	BP	UK	2003
Gelsenkirchen Refinery	Veba	Germany	2003
Gravenchon Refinery	Esso	France	2003
Puertollano Refinery	Repsol YPF	Spain	2003
Scanraff Refinery	Preem	Sweden	2003
St Romuald Refinery	Ultramar	Canada	2003
Visakh	Hindustan Petroleum Corp	India	2003
Alliance Refinery	ConocoPhillips	USA	2004
Bangchak Refinery	Bangchak Petroleum	Thailand	2004
Carson Refinery	BP	USA	2004
Dunkirk Refinery	Total	France	2004
Geelong Refinery	Shell Australia	Australia	2004
Kingston Refinery	Petrojam	Jamaica	2004
Meraux Refinery	Murphy Oil	USA	2004
Mumbai Refinery	Reliance Industries	India	2004
North Atlantic Refinery	North Atlantic Refining Ltd	Canada	2004
Port Dickson	Esso	Malaysia	2004
Whitegates Refinery	ConocoPhillips	Ireland	2004
La Coruna Refinery	Repsol YPF	Spain	2005
La Mede	Total	France	2005
Normandy Refinery	Total	France	2005
Paulinia Refinery (REPLAN)	Petrobras	Brazil	2005
Porvoo Refinery	Fortum	Finland	2005
Puertollano Refinery	Repsol YPF	Spain	2005
Sarpom Trecate Refinery	Esso	Italy	2005
Sines Refinery	Petrogal	Portugal	2005
Tenerife Refinery	CEPSA	Spain	2005
Yabulu Refinery	QNI	Australia	2005
Cadereyta Refinery	Pemex	Mexico	2006
Calvert City Refinery	Noveon Chemical	USA	2006
Canton Refinery	Marathon Oil	USA	2006
Convent Refinery	Motiva	USA	2006
Flanders Refinery	Total	France	2006
Immingham Refinery	Conoco	UK	2006
La Mede	Total	France	2006
Lavera	Total	France	2006

Project	Owner	Location	Year
Lytton Refinery	Caltex Refineries (Qld.) Ltd.	Australia	2006
Melaka Refinery	Petronas Penapisan	Malaysia	2006
Pulau Bukom Refinery	Shell	Singapore	2006
Salamanca Refinery	Pemex	Mexico	2006
Valero Houston Refinery	Valero Refining Co.	USA	2006
Altona Refinery	ExxonMobil	Australia	2007
Cartagena	Repsol YPF	Spain	2007
Donges Refinery	Total	France	2007
Dung Quat Refinery	Petro Vietnam	Vietnam	2007
Fawley Refinery	Exxon	UK	2007
Godforf Refinery	Shell	Germany	2007
Hazira Refinery	Esso	India	2007
Humber refinery	ConocoPhillips	UK	2007
Ingolstadt Refinery	Esso	Germay	2007
Kalundborg Refinery	Statoil	Denmark	2007
Kansas Refinery Expansion	Frontier Refining Inc	USA	2007
Kurnell Refinery	Caltex Refineries (NSW) Ltd.	Australia	2007
Lake Charles Refinery	ConocoPhillips	USA	2007
Mahul	Bharat Petroleum (BPCL)	India	2007
Petrobrazi Refinery	Petrom SA	Romania	2007
Ploiesti Refinery	Rompetrol	Romania	2007
Port Arthur Refinery	Shell	USA	2007
Recap Refinery	Petrobras	Brazil	2007
Revap Refinery	Petrobras	Brazil	2007
Sarroch Refinery	SARAS Refinery	Italy	2007
Stanlow	Shell	UK	2007
Tarragona	Repsol YPF	Spain	2007
Texas City Refinery	BP	USA	2007
WRG Refinery	ConocoPhillips	Germany	2007
Aruba Refinery	Valero	Aruba	2008
Baytown Refinery	ExxonMobil	USA	2008
Cedar Bayou Complex	Chevron Phillips Chemical	USA	2008
Clyde Refinery	Shell Refining (Australia) Pty. Ltd.	Australia	2008
Faro Refinery	BP	Portugal	2008
Jamnagar Refinery	Reliance Industries	India	2008
Kansas Refinery	Frontier Refining Inc	USA	2008
Kurnell Refinery	Caltex Refineries (NSW) Ltd.	Australia	2008
Lytton Refinery	Caltex Refineries (Qld.) Ltd.	Australia	2008
Neustadt Refinery	Bayernoil	Germany	2008
Ploiesti Refinery	Rompetrol	Romania	2008
Port Arthur Refinery	Shell Motiva	USA	2008
Port Reading Refinery	Hess	USA	2008
Rabigh Refinery	Saudi Aramco	Saudi Arabia	2008
STAR Refinery	ARC (Alliance Refining Co.)	Thailand	2008
Texas City Refinery	Valero Energy	USA	2008
Trecate Refinery	ExxonMobil	Italy	2008
Schwechat Refinery TGU	OMV	Austria	2008
Bangchak Refinery	Bangchak Petroleum	Thailand	2009
Elefsis Refinery	Hellenic Petroleum	Greece	2009
Grangemouth Refinery	Ineos	UK	2009
Hazira Refinery	Esso	India	2009
Kakinada Refinery	Reliance Industries	India	2009
La Rabida Refinery	CEPSA	Spain	2009
Linden refinery	ConocoPhillips	USA	2009
Lindsey Oil Refinery	Total	UK	2009
Mongstad Refinery	Statoil	Norway	2009
Newport Refinery	Caltex	Australia	2009
Pulau Bukom Refinery	Shell	Singapore	2009
Ras Tanura	Saudi Aramco	Saudi Arabia	2009
Recap Refinery	Petrobras	Brazil	2009
Reduc Refinery	Petrobras	Brazil	2009
SASREF	SASREF (Saudi Aramco Shell Refinery Co)	Saudi Arabia	2009
Shuaiba Refinery	South Oil Company	Iraq	2009
Sweeny Refinery	ConocoPhillips	USA	2009
Tarragona Refinery	Repsol	Spain	2009
Cartagena Refinery	Ecopetrol	Colombia	2010
RPBC Refinery	Petrobras	Brazil	2010
Toledo Refinery	BP	USA	2010
Whiting Refinery	BP	USA	2010
Kurnell Refinery	Caltex	Australia	2011
Geelong Refinery	Shell	Australia	2011
Mongstad Refinery	Statoil	Norway	2011

Chemical Reaction

INTERNATIONAL REACTS TO THE NEEDS OF A GROWING MARKET

On the banks of the Yangtze River in the Jiangsu province of China, sits China's largest state-of-the-art siloxane production facility Zhang Jia Gang. We provided high-tech solutions for the unique challenges the facility faces.



Completed in 2010 the plant manufactures siloxane and fumed silica materials to satisfy the vigorous growth in demand for silicone based products in Asian markets. Total investment for the joint venture project between Dow Corning Corporation and Wacker Chemie AG exceeded US$600 million.

UNIQUE COATING CHALLENGE

The chemical compound, trichlorosilane HCl_3Si, is an important product in the production of silicon based products. When faced with high temperatures the chemical decomposes to produce silicon. However, when combined with water, it rapidly decomposes to produce silicon polymer, while giving off the highly toxic by-products hydrochloric acid and chlorine.

Classified as flammable and highly corrosive by EU standards, the use of trichlorosilane provided a unique challenge for the plant owners. If the plant's trichlorosilane production areas are not adequately protected with a protective coating system, detrimental damage can occur. Such damage can cause facility downtime for maintenance purposes incurring unnecessary costs.

COATING SOLUTION

Working closely with the site's civil engineer, we demonstrated the benefits of Chartek® 1709, Intertherm® 751CSA and the Ceilcote range.

Specifically designed for use on structures in the hydrocarbon and chemical processing industry, the products were chosen to protect the structural steel in all the trichlorosilane production areas.



The chemical reaction trichlorosilane has with water meant water sprinkler fire protection systems could not be used in the trichlorosilane areas. Chartek was therefore specifically chosen to meet this special fire protection requirement. Chartek 1709 is a lightweight intumescent fire protection coating and its low density properties reduce the overall applied weight, compared to cementitious fire protection products. Cementitious based products also commonly use welded pins, which increase installation costs, and the heavy weight of a cementitious system can cause engineering issues, such as increased loadings. Chartek 1709 also provides long term corrosion protection which greatly reduces asset lifetime maintenance costs.

Intertherm 751CSA provided long term, corrosion protection to equipment within the production process, operating at a range of cyclic temperatures as high as 400°C (752°F).

Using one system to cover the entire temperature range reduces application complexity and was one of the reasons the plant owners chose to use Intertherm 751CSA.

In addition, Ceilcote® was applied to the lining of the hydrochloric acid waste water tanks. With a proven track record in protecting against extreme chemical attack, Ceilcote provides a long term solution, minimising the potential need for early repair and is designed to protect against a wide range of chemicals, including inorganic and organic acids, chlorinated solvents, aliphatic solvents and aromatic solvents.

Our complete range of products means we can supply high performance coatings and linings for all environments found on a facility, reducing contract complexity and maximising facility productivity.

Track Records



Area: Process Flooring
Location: USA
Product: Ceilcote 232 MR Flakeline
Year: 2009
Volume: 1,000 Litres



Area: Structural and High Heat Steel
Location: China
Product: Intertherm 50, Interseal 670HS, Interthane 990, Interzinc 22, Intergard 475HS, Intertherm 875
Year: 2002
Volume: 1,800,000 Litres



Area: Tank Linings
Location: China
Product: Interline 399, Interline 850, Interline 925
Year: 2003
Volume: 1,670,000 Litres



Area: Structural Steelwork
Location: Russia
Product: Interseal 670HS, Interzone 954, Interthane 990
Year: 2002
Volume: 300,000 Litres

Project	Owner	Location	Year
Baton Rouge Plant	Allied Chemical	USA	1980
Pasadena Plant	Ethyl Corp	USA	1980
Wyandotte Facility	BASF	USA	1980
La Porte Facility	PPG Chemical Division	USA	1981
Ludwigshafen Plant	BASF	Germany	1989
Antwerp Plant	BASF	Belgium	1991
Chocolate Bayou Plant	BP Amoco	USA	1991
Channelview Plant	Lyondell Chemical Co	USA	1991
Charleston Plant	Olin Chemical	USA	1991
Chocques Plant	ICI	France	1992
Laporte Site	Dupont	USA	1992
Pittsburg CA Facility	Dow Chemical	USA	1992
Augusta Plant	Olin Chemical	USA	1992
Rahway Facility	Merck & Co.	USA	1993
Cedar Bayou Plant	Amoco Chemical Company	USA	1993
Tjeldbergodden Plant	Statoil	Norway	1995
Wesseling Plant	Basell Polyolefins	Germany	1995
Barry Plant	Dow Chemical	UK	1996
EC Dormagen Plant	BP/Bayer	Germany	1996
Greenville Plant	BASF	USA	1998
Terni Plant	Montell	Italy	1999
Gravenchon Plant	Elf Atochem	France	1999
Wyee Faciltiy	Yates Fertilizer	Australia	1999
Queen Creek Facility	Arch Chemical	USA	1999
PTA Plant	Samsung Petrochemical Co Ltd	Korea	1999
Marghera Plant	Enichem	Italy	2000
Mesa Complex	Arch Chemical	USA	2000
Beaumont Terminal	Unocal	USA	2001
Rafnes Chlorine Plant	Ineos ChlorVinyls	Norway	2003
Rotterdam-Europoort	Texaco Exxon Aramco Co.	The Netherlands	2003
Brindisi Plant	Enichem	Italy	2003
Uberaba Facility	Bunge	Brazil	2003
Chalmette Refinery	ExxonMobil	USA	2004
Bandirma Sulphuric Acid Plant	Bagfas AS	Turkey	2004
Bangkok Plant	Pacific Plastics (Thailand)	Thailand	2004
Rayong Plant	PTT Chemicals	Thailand	2004
Rayong PTA Plant	Indorama	Thailand	2004
Nan Ya Building Expansion	Nan Ya Plastics	Taiwan	2004
SIUCI Project	SAFCO (Saudi Arabian Fertilizer Co)	Saudi Arabia	2004
Rhodia Pararitos Industrial Complex	Rhodia Phosphate de Mexico	Mexico	2004
Aldwich Plant Project	Aldwich Bhd	Malaysia	2004
Kedah Plant	NPK Fertilizer Sdn (Petronas Fertilizer)	Malaysia	2004
Montreal Plant	Petromont	Canada	2004
Dynea HatYai Project	Dynea International	Thailand	2005
Map Ta Phut	PTT Chemicals	Thailand	2005
Morakot Food Factory	Morakot Industries	Thailand	2005
Plastics Plant	Pacific Plastics (Thailand)	Thailand	2005
Plastics Plant	Vinythai	Thailand	2005
Sohar Fertilizer Plant	Sohar Fertilizer	Oman	2005
Bintulu Plant	ABF (Asean Bintulu Fertilizer)	Malaysia	2005
Caojing Facility - SBR Project	GaoQiao Petrochemical Corp	China	2005
Changshou Chongquing	Yangtze River Acetyls Co.	China	2005
Tessenderlo Plant	LVM	Belgium	2005
Port Bonython Plant	Santos	Australia	2005
Bayport Complex	LyondellBasell	USA	2005
Stenungsund Plant	Borealis	Sweden	2005
Bayport Plant	Equistar Chemicals	USA	2006
Corpus Christi Facility	Oxychem	USA	2006
Deer Park Complex	Equistar / LyondellBassell	USA	2006
Pasadena Plant	Lyondell Chemicals	USA	2006
Victoria Plant	Equistar	USA	2006
Houston Site	Lyondell	USA	2006
Fife Ethylene Plant	Exxon Chemical	UK	2006
ABK	Total	UAE	2006
MCA Plant	Vinythai	Thailand	2006
TPT Petrochemicals PTA Facility	Indorama Petrochem	Thailand	2006
Ballance Agri Plant	Ballance Agri Nutrients	New Zealand	2006
Chemical Plant	AkzoNobel Chemicals	Mexico	2006

Project	Owner	Location	Year
PML MegaMethanol	Petronas	Malaysia	2006
Shuaiba Plant	Petrochemical Industries	Kuwait	2006
CCR Reformer	ENOC (Emirates National Oil Co)	Dubai	2006
Zhangjiagang Silicon Plant	Dow Corning	China	2006
Baytown Plant	Chevron Phillips	USA	2007
Beaumont Facility	Rubicon Chem	USA	2007
Channelview Plant	Lyondell Chemicals	USA	2007
Deer Park Complex	Equistar / LyondellBassell	USA	2007
Houston Plant	BASF	USA	2007
La Porte Plant	Lyondell Chemicals	USA	2007
Ellesmere Port	INEOS Chlor	UK	2007
Ethanol Plant	TPK Ethanol	Thailand	2007
PTT Phenol Plant	PTT Phenol	Thailand	2007
Korat Ethanol Plant	TPK Ethanol	Thailand	2007
Qatar GTL Project	Shell GTL	Qatar	2007
Fertilizer Plant	Proplant Inc	Nigeria	2007
Botlek Plant	Lyondell	The Netherlands	2007
JERP Project	Reliance Industries	India	2007
Wesseling Plant	Shell	Germany	2007
Moerdijk Facility	Shell	The Netherlands	2007
Hannibal Plant	BG Group	Tunisia	2007
Chevron Phillips Chemical	Cedar Bayou Complex	USA	2008
Deer Park Plant	OxyVinyl	USA	2008
Pasadena Plant	Gulf Bayport Chemicals	USA	2008
Deer Park Complex	Rohm & Haas	USA	2008
Chocolate Bayou Polymer Plant	LyondellBassell	USA	2008
Bangchak Biodiesel Plant	Bangchak Petroleum	Thailand	2008
Map Ta Phut Facility	PTT Chemicals	Thailand	2008
Polymer Plant Project - Line 3	HMC Polymers	Thailand	2008
SPE II	Siam Polyethelyne Co	Thailand	2008
Stenungsund Plant	Borealis	Sweden	2008
Singapore Parallel Train Project	ExxonMobil	Singapore	2008
Tjeldbergodden	Statoil	Norway	2008
Terneuzen Plant	Dow	The Netherlands	2008
Kerteh VCM Plant	VCM Malaysia	Malaysia	2008
Hazira Ammonia Plant	KRIBHCO	India	2008
JERP Project	Reliance Industries	India	2008
Gelsenkirchen Facility	SABIC	Germany	2008
Ludwigshafen Plant	BASF	Germany	2008
Schkopau Plant	Dow Chemical	Germany	2008
Wesseling Plant	LyondellBassell	Germany	2008
Third Pillar Phase 1	Dow Corning	China	2008
Santo Andre Plant	Quattor Quimica SA	Brazil	2008
Antwerp Plant	Bayer	Belgium	2008
Clyde Polypropolene Plant	Basell	Australia	2008
Rose Hill Polyolefins Plant	Basell	Australia	2008
Baytown Plant	Chevron Phillips Chemical	USA	2008
Wilton Facility	SABIC	UK	2009
Map Ta Phut Plant	Vinythai	Thailand	2009
Qatar Project	Qatar Petroleum	Thailand	2009
Shell ECC	Shell	Singapore	2009
SPT Olefins Furnaces Project	ExxonMobil	Singapore	2009
Sharq	SABIC	Saudi Arabia	2009
Mumbai Plant	Rashtriya Chemicals & Fertilizers	India	2009
Leuna Site	Dow	Germany	2009
Zhangjiagang Silicon Plant - Phase II	Dow Corning	China	2009
ZRCC METEOR Plant	ZRCC	China	2009
Mejillones Sulphuric Acid Plant	Noracid SA	Chile	2009
Algelia Oman Fertiliser Project	National Iranian Oil Co	Algeria	2009
Hemlock Facility	Dow Corning/Hemlock Semiconductor	USA	2010
SPE II	Siam Polyethylene Co. Ltd	Thailand	2010
Mejillones Sulphuric Acid Plant	Noracid SA	Chile	2010
Usina Sao Martinho	Amyris and Grupo Sao Martinho	Brazil	2011
Botlek Plant	ShinEtsu	The Netherlands	2011
Hemlock Semiconductor	Dow	USA	2011
Sulphur Re-Melting Plant	Tengizchevroil	Kazakhstan	2011
Mejillones Facility	NorAcid	Chile	2011

Innovative Systems For The LNG Industry

SETTING NEW STANDARDS AT THE FREEPORT TERMINAL

The Freeport LNG regasification terminal is located on historic Quintane Island, Texas, 6 miles (9.7km) from open water and next to a ship channel maintained at a depth of 45 feet (14m). It has one of the shortest approaches to any LNG terminal in North America.



When the Freeport facility was constructed, the owners sought to bring a new standard of safety and protection to the project. Particular emphasis was placed on the desire to mitigate any steel damage from a potential LNG spill whilst also providing excellent protection against a subsequent fire. The decision to specify Chartek® 1709 epoxy intumescent fire protection was first championed by Freeport's principal owner, ConocoPhillips, who had experienced Chartek's excellent constructability and durability characteristics on a number of projects in Asia.

With these considerations in mind we proposed a duplex system of Chartek 1709 applied on top of Intertherm 7050, an insulating epoxy syntactic foam. The Chartek provides fire protection while the Intertherm insulates against steel embrittlement resulting from a cryogenic spill.

Extensive test data was submitted to the Federal Energy Regulatory Commission (FERC) who gave unanimous approval for the technology to be used at Freeport, praising the system as a viable alternative to traditional concrete materials.

While improving the safety standards of the facility these materials play a very significant role in saving developers money both during construction and in the long term maintenance life-cycle of the facility.







Ease of application, long term maintenance free performance and good constructability all add significant value to the system.

During the project, we also worked closely with applicators Apache and MPCA to provide technical support where required and ensure quality application.

Complete Coating Solution Wins Pluto LNG Project

Woodside Energy's Pluto gas field development and onshore processing facility in North West Australia called for a wide range of coating solutions. We were able to secure sole supply status by offering high performance products for all areas of the project:

Wharf Piles:	
Interzone® 954	Abrasion Resistant Modified Epoxy
Structural components:	
Interzinc® 52	Metallic Zinc Rich Epoxy Primer
Intergard® 475HS	High Build Epoxy Barrier Coating
Interthane® 990	Acrylic Polyurethane Finsh
Structural Fire Protection:	
Interzinc 52	Metallic Zinc Rich Epoxy Primer
Intergard 269	Epoxy Tie Coat
Chartek® 7	Jet Fire Resistant Epoxy Intumescent
Vessels: For Insulation and Fire Protection	
Intertherm® 7050	Epoxy Syntactic Foam Insulation
Chartek 7	Jet Fire Resistant Epoxy Intumescent
Jackets:	
Interzone 485	Ultra High Build Catalysed Epoxy
Tanks (internal):	
Interline® 975	Heavy Duty Epoxy Tank Lining
Tanks (external):	
Interzinc 52	Metallic Zinc Rich Epoxy Primer
Intergard 475HS	High Build Epoxy Barrier Coating
Interthane 990	Acrylic Polyurethane Finsh
High Temperature Areas:	
Interzinc 22	Inorganic Zinc Rich Ethyl Silicate Primer
Intertherm 50	Temperature Resistant Modified Silicone Coating
Insulated Pipework:	
Intertherm 228	High Temperature Epoxy Phenolic Coating

Track Records



Owner: CNOOC
Location: China
Project: LNG Terminal
Product: Intergard 475HS, Interzone 954, Interseal 670HS, Interthane 990
Year: 2008



Owner: South Hook LNG Terminal Company
Location: UK
Project: South Hook LNG Terminal
Product: Interzinc 52, Intergard 475HS, Interfine 691
Year: 2007



Owner: Statoil
Location: Norway
Project: Hammerfest LNG Plant
Product: Interzinc 22, Intergard 475HS Interfine 979, Chartek 7
Year: 2005



Owner: ConocoPhillips
Location: Theddlethorpe, UK
Project: Vessel Skirt
Product: Intergard 251, Chartek 1709, Interfine 691
Year: 2009

Project	Owner	Location	Year
Shell Haven	Shell	UK	1989
Stanlow	Shell	UK	1994
Port Talbot Facility	BOC	UK	1999
Middlesbrough Facility	BOC	UK	2000
Noumea Storage Spheres	Sogadoc	New Caledonia	2003
Bonny Island LNG	NLNG	Nigeria	2003
Mina Al Ahmadi	Kuwait National Petroleum Co.	Kuwait	2004
Songkhla Gas Separation Plant	Trans Thailand Malaysia	Thailand	2004
Bu Hasa Production Facilty	Adco Power Ltd	UAE	2005
Hammerfest LNG Plant	Statoil	Norway	2005
Songkhla Facility	Caltex Oil (Thailand)	Thailand	2005
Sriracha Facility Upgrade	Thai Paraxylene Co	Thailand	2005
Cactus	Pemex	Mexico	2006
Canton	Marathon	USA	2006
Freeport LNG	ConocoPhillips	USA	2006
El Wastani Gas Field Development	El Wastani Petroleum Co.	Egypt	2006
Khursaniyah Gas Project	Saudi Aramco	Saudi Arabia	2006
Kollsnes Gas Facility	Statoil	Norway	2006
MapTaPhut Gas Separation Plant	PTT Chemicals	Thailand	2006
South Hook LNG Terminal	South Hook LNG	UK	2006
Ruwais	Gasco	UAE	2006
ADGAS Gas Processing	ADGAS	UAE	2007
Aguada Pichana Plant	Total	Argentina	2007
Arun LNG Plant	ExxonMobil	Indonesia	2007
Atlanta	Plantation Pipe Line Co	USA	2007
Canaport LNG Terminal	Canaport LNG Ltd	Canada	2007
Kao Bo Ya LPG Terminal	PTT Oil	Thailand	2007
Pluto LNG	Woodside Energy	Australia	2007
Ras Laffan Gas Plant	Dolphin Energy	Qatar	2007
Sriracha Facility Upgrade	Thai Paraxylene Co	Thailand	2007
Tampa	Murphy Oil	USA	2007
Woodside LNG	Woodside Energy	Australia	2007
BUHASA	GASCO	UAE	2007
Shuaiba to Burgen Gas Pipeline	KOC	Kuwait	2007
Sabryah	KOC	Kuwait	2007
Kollsnes Gas Facility	Statoil	Norway	2007
Nam Con Son Gas Terminal	BP	Vietnam	2007
Sakhalin II LNG	Sakhalin Energy	Russia	2007
Elm Project	SembCorp Utilities	UK	2008
Karsto Gas Plant	Statoil	Norway	2008
Kupe Gas Station	Origin Energy	New Zealand	2008
Pearl GTL	Shell	Qatar	2008
Hong Kong LPG	Shell	Hong Kong	2008
Malaysia LNG	MLNG	Malaysia	2008
Wilmington	Magellan Midstream Partners	USA	2008
Yemen LNG	Yemen LNG	Yemen	2008
In Salah Gas	BP/Sonatrach	Algeria	2008
Pluto LNG	Woodside Energy	Australia	2009
Rayong Gas Separation Plant 6	PTT Chemicals	Thailand	2009
Seal Sands	BP	UK	2009
Skikda LNG Train	Sonatrach	Algeria	2009
Theddlethorpe Gas Terminal	ConocoPhillips	UK	2009
Igrinskaya	Gazprom	Russia	2009
Norfolk Island Gas Terminal	Origin Energy	Australia	2010
Sakhalin 1 ODOPTU Development	Exxon Neftegas (ENL)	Russia	2010
Gbaran Ubie Gas Processing Facility	Shell	Nigeria	2010
Gate LNG Terminal	Nederlandse Gasunie	The Netherlands	2011
Karsto Gas Plant	Statoil	Norway	2011
Gorgon LNG Plant	Chevron	Australia	2011

The Gorgon Project



A Monster Track Record

The Gorgon Gas project located off the North West coast of Australia is the biggest ever natural resource development in Australian history.

The joint venture project between Chevron (47%), Shell (25%) and ExxonMobil (25%) has an estimated capital expenditure of more than US$40 billion and will collect gas from the Greater Gorgon gas field via a network of subsea installations. The gas will then be piped directly to the onshore facilities on Barrow Island where it will be processed by one of the three 5 MTPA (million tons per annum) LNG trains or the domestic gas processing plant. The gas for domestic consumption will be piped to mainland Australia while the liquefied natural gas will be exported by LNG carrier, docking at a purpose built 4km long loading jetty.

A GLOBAL FABRICATION EFFORT

Modular in nature and requiring more than 250,000 tonnes of steel, Gorgon fabrication is taking place right across the world. With packages already spanning four continents, Gorgon is a truly global project.

SINGLE COATINGS SUPPLIER

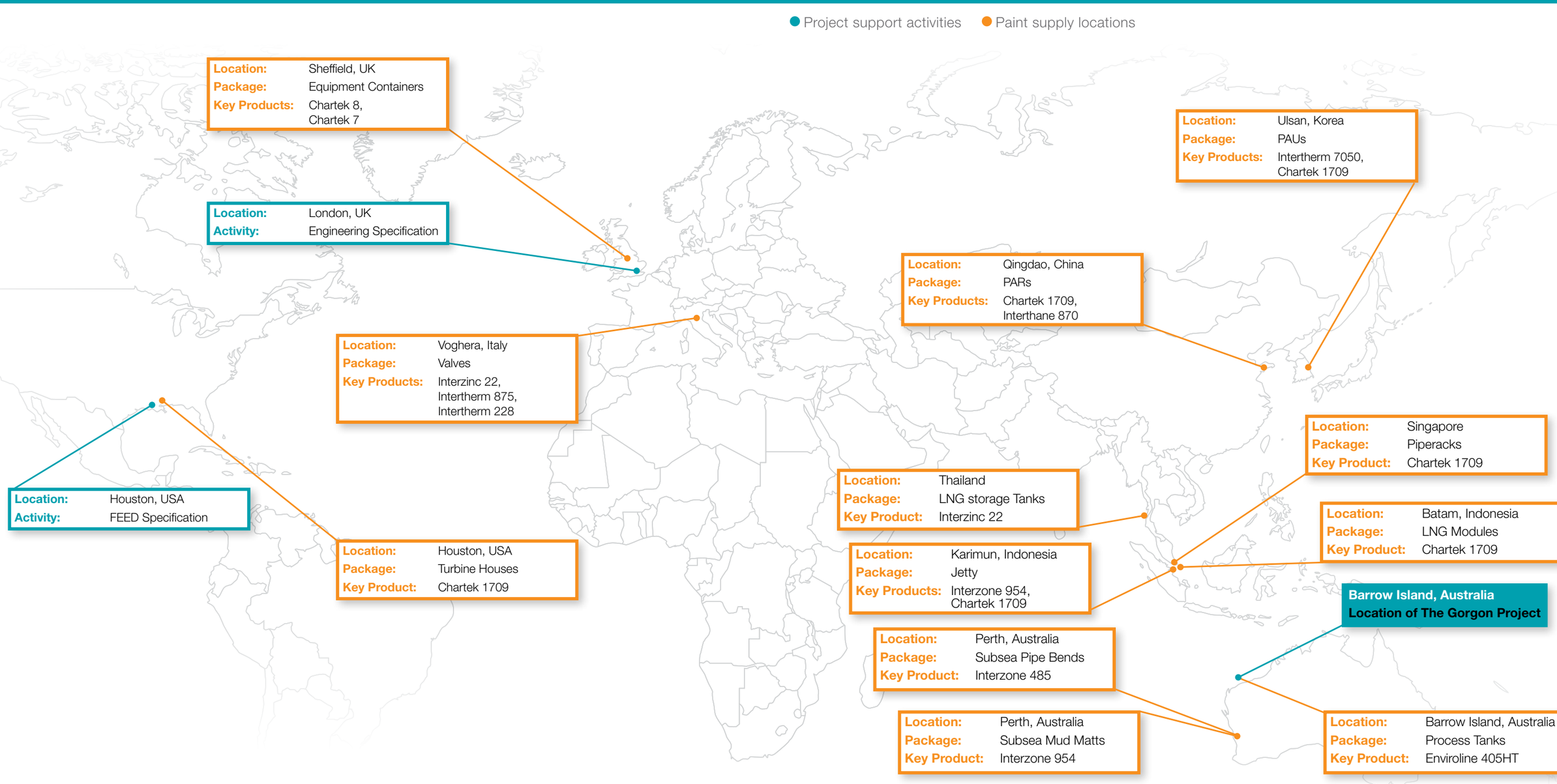
In 2010, after more than five years of working with the project team we were chosen by all parties concerned as the coatings supplier for the Gorgon Project. Having a single coatings and fire protection supplier offers huge benefits to the owners, engineers and throughout the rest of the contract chain:

- Consistent technical service and support worldwide
- Global tracking of coatings applied to Gorgon equipment
- A single, central point of contact for project queries and issues
- Globally available products manufactured to the same high standards
- A simple specification document, offering a reduced number of products
- A global performance guarantee regardless of the location.

The Gorgon Project Team recognised that by selecting a single coatings and fire protection supplier they could help minimise rework, hit deadlines and keep costs down, ultimately achieving a faster return on investment. With more than 20 years experience supplying coatings and fire protection to the LNG and gas processing sector, and operations in 60 countries we were the ideal coatings partner for the project.



The Gorgon Project





THE RIGHT PRODUCTS FOR THE JOB

The wide range of operating conditions found on the facility requires a number of specialist coating systems. These include state-of-the-art fire protection solutions as well as standard and high temperature coating systems.
Our Chartek 1709 is a market leading onshore epoxy passive fire protection product, ideally suited to hydrocarbon processing facilities such as Gorgon. In specifying Chartek 1709 in conjunction with a complete range of other coatings we were able to meet the strict fire safety regulations required while providing long term asset protection to the onshore facility and its jetties.



LOOKING FORWARD

Gorgon is one of several mega LNG projects coming on line in the next few years, all driven by increasing global demand for natural gas. Having secured supply to the Gorgon project, we will continue to support the growth of the LNG industry offering global solutions designed to meet the demanding needs of our customers.

www.international-pc.com
protectivecoatings@akzonobel.com

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