

# Cargo handling equipment

Trusted protective coatings



# Up to the challenge

The Cargo handling equipment faces many challenges to protecting assets in some of the world's harshest environments.

At Hempel we have over 100 years experience in Marine and Protective coatings and understand these complex needs. We offer tailored anti-corrosion solutions that provide reliable, long-term protection for every aspect of your business, whether upstream or downstream, offshore or onshore, new build or maintenance.

Our extensive product range offers advanced protection for all primary asset elements within the Cargo handling equipment. From structural steel in new build construction to internal operating and process equipment, and extending beyond that to ongoing maintenance solutions - we protect your assets for a lifetime.

## Hempel delivers trusted solutions for the Cargo handling equipment.

- Proven performance** >

Our coating systems use proven technology to give advanced protection for all your assets, and are extensively tested to current standards including ISO 12944 and NORSOK M-501.
- Global service** >

We give you the right products on site, on time, every time, with the support of our 26 manufacturing plants and over 350 stock points worldwide.
- Professional support** >

Our multinational coordination teams and over 450 FROSIO/NACE certified coating advisors are on hand to ensure that your coating project runs smoothly from start to finish and beyond.
- Innovative solutions** >

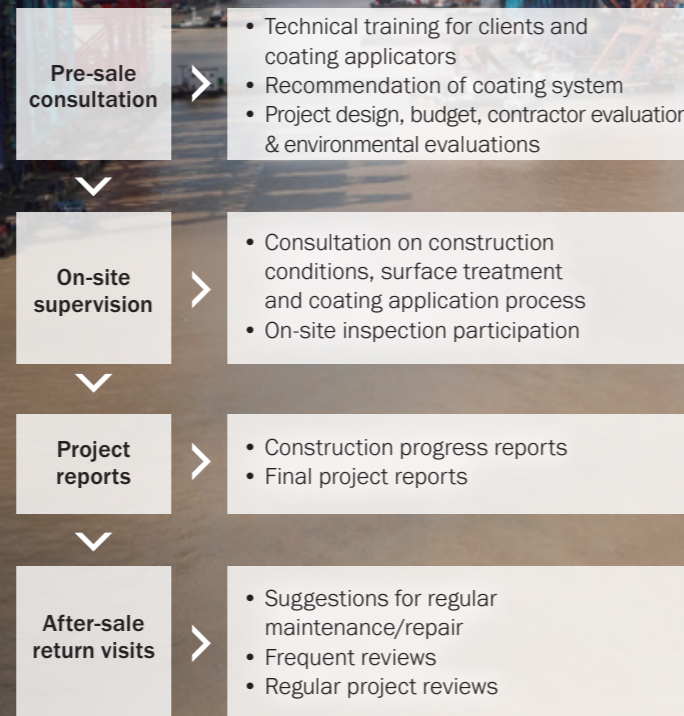
With 17 global research and development facilities, we work locally with you to provide the right solution for your project, ensuring environmental responsibilities are met.



# A structured approach

Our structured approach towards technical service ensures that clients are supported in the best way possible throughout the application process. Our state-of-the-art technical service process offers our clients support and advice prior to application.

During the application, Hempel can offer on-site supervision and consultation and documentation on progress and results. Finally, our after-sale support package offers follow-up visits to inspect coating systems and suggest repair and maintenance actions.



# Hempel CraneCare

## Our Solution for Cranes Maintenance

Intelligent Condition Survey	
Detailed visual corrosion and coating inspection supported by	<ul style="list-style-type: none"> <li>• Advanced UAV</li> <li>• Anomaly assessment</li> <li>• Dropped object assessment</li> <li>• Conventional NDT such as DPI / MPI</li> </ul>
Personnel	<ul style="list-style-type: none"> <li>• Coating and integrity inspection specialists with FROSIO / NACE / ASME / API certifications and familiarity with port cranes</li> </ul>
Deliverable	<ul style="list-style-type: none"> <li>• Risk-based inspection report, detailing corrosion and coating condition in specific areas mapped to GA drawings</li> </ul>
Benefits	
<ul style="list-style-type: none"> <li>• Accurate assessment of external mechanical and coating condition, in specific areas mapped to GA drawings of cranes</li> <li>• Risk-based prioritisation of needed maintenance &amp; repair</li> </ul>	

\*UAV = Unmanned Aerial Vehicle (i.e. flying drones); NDT = Non-Destructive Testing; DPI = Dye Penetrant Inspection (a form of NDT); MPI = Magnetic Particle Inspection (a form of NDT), GA = General Arrangement (Drawing)

### Bespoke Maintenance & Repair

Project Management	<ul style="list-style-type: none"> <li>• Full management and coordination throughout the entire project to ensure excellent surface preparation and application, minimum resource use and faster project completion</li> <li>• Pre-project inspection, including specification verification, staff training and equipment/coating preparation</li> <li>• Ongoing quality checks</li> <li>• Selection of most appropriate coating and maintenance solutions</li> <li>• Working with selected application partners</li> </ul>
Personnel	<ul style="list-style-type: none"> <li>• Full-time and dedicated project manager(s) to be stationed on-site</li> </ul>
Deliverable	<ul style="list-style-type: none"> <li>• Daily progress reports</li> <li>• A full report at the end of the project</li> </ul>

### Benefits

- Maintenance & Repair which is tailored to specific issues identified during inspections
- Project managed by Hempel so customers can focus on their core business
- Reduced annual maintenance-related spending on steel replacement, labour and coating
- Reduction of materials waste and emissions

# Avantguard®

## Challenging the standard for corrosion protection

When it comes to protecting assets in harsh environments, you need a high-performance anti-corrosion system that will last, whatever nature or industry throws at it. You need Avantguard technology with Triple Activation.

Avantguard outperforms equivalent zinc-rich epoxies in almost every area of application. Its superior performance allows a reduction in typical system dry film thicknesses to achieve the required protection. Challenging the standard for corrosion protection in tough environments, our Avantguard activated zinc epoxy primers protect assets for longer and with less maintenance.

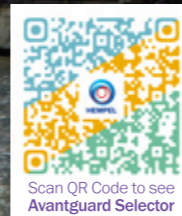
Avantguard coatings are better during application, too. You get unbeatable ease of application, even in high ambient temperatures and humidity, and the shortest overcoating intervals on the market. The result? Your production moves faster, your maintenance work is quicker and coating quality is more consistent.

**Increase asset longevity** with longer corrosion protection in the toughest conditions

**Reduce application and construction costs** with lower paint consumption and faster application

**Reduce maintenance costs** with longer maintenance intervals and less rework































**Improve sustainability** with less maintenance and fewer emissions



# C5 H

## Take your corrosion protection to a higher level

In industrial areas of high humidity and aggressive atmosphere and inshore areas of high salinity. Coating systems using Avantguard outperform conventional zinc epoxy systems in terms of Sustainability, Productivity and Durability.

Focus Area	System Comparison*	Reference 60-140-60	Avantguard 750 40-120-60	Avantguard 750 60-0-200
 <b>Environmental Impact</b> Reduced environmental impact resulting from less consumption, reduced solid waste and fewer emissions.	CO2 Emission - Embodied [g CO2e / m <sup>2</sup> . year]	 209-125	 148-85	 169-101
	VOC Emission [g / m <sup>2</sup> ]	 128	 110	 99
	Paint Consumption [%]	 100	 85	 79
 <b>Application Time</b> Fast track construction with faster drying times and fewer coats.	Application Time [hours]	 9	 6.45	 1.45
	Number of layers	 3	 3	 2
	Total DFT [µm]	 260	 220	 260
 <b>Coating Maintenance</b> Reduce frequency of maintenance with longer maintenance intervals and less work.	Effective Durability [years]	 15-25	 15-25	 18-30
	Corrosion Creep	 Medium	 Low	 Very Low
	Mechanical Resistance	 Better	 Excellent	 Excellent

\* The "Benchmark system" is calculated as the average of 5 zinc-rich epoxies; a pool that includes one Hempel and four other standard market primers.

For more information, please visit [www.hempel.com](http://www.hempel.com) or contact your local Hempel representative.

# A coating system with a global track record



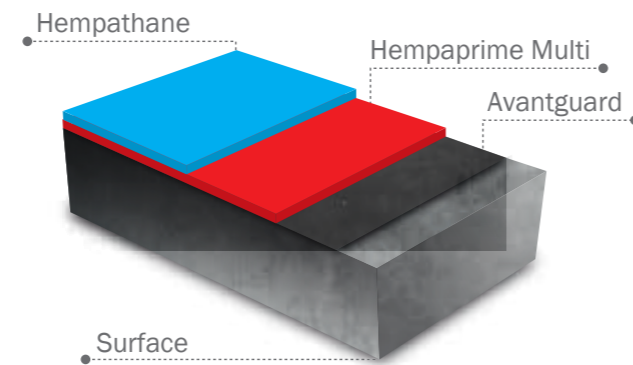
We have been supplying heavy-duty coating solutions for cargo handling equipment in coastal areas for many years. Our recommended coating systems has a proven track record globally.

The three-coat system for new build consists of a zinc rich epoxy primer, a high build epoxy intermediate, and a strong polyurethane topcoat. It has proven to be ideal for ship-to-shore, quay and yard cranes as well as ship loaders/unloaders, and spreaders. This system offers our customers optimal corrosion protection in a strong system that withstands highly corrosive coastal environments.

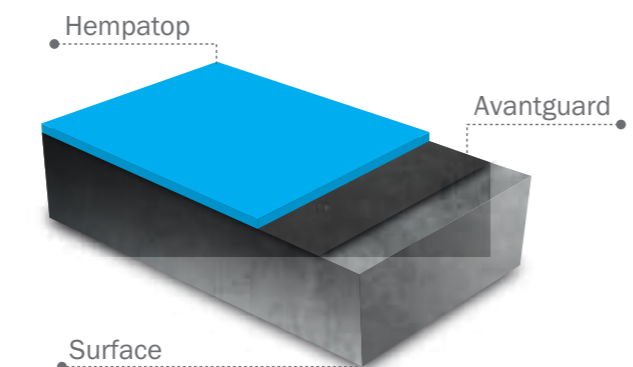
The two-coat system for maintenance consists of a zinc rich epoxy primer, and a strong Hempatop topcoat. This system offers our customers optimal corrosion protection with easy application properties.

With our latest advancements in zinc epoxy primers throughout the Hempadur Avantguard range, our recommended coating systems gives an even stronger all-round performance.

Recommended system	
Primer	Avantguard
Intermediate	Hempaprime Multi
Topcoat	Hempathane



Recommended system - maintenance	
Primer	Avantguard
Topcoat	Hempatop



# ZPMC makes the shift to Avantguard

ZPMC is the world's largest manufacturer of cargo handling equipment, from cranes and bulk handling machinery to steel bridges and offshore products.

## The challenge

Port terminal cranes are used for loading and unloading containers onto carrier vessels at the side of the dock. They need a heavy-duty anti-corrosive coating system to protect them from the harsh saltwater atmosphere and heavy impacts that come with the job. When ZPMC was asked to produce four super-post-Panamax container cranes for delivery in Europe, they chose Hempadur Avantguard 750 for proven superior protection against corrosion<sup>2</sup>.

## The solution

Our technical service team in China worked closely with ZPMC when the super-post-Panamax container cranes were coated at the start of 2015.

ZPMC's applicators were particularly pleased with the ability of the Avantguard coating to tolerate high dry film thicknesses without cracking or blistering, which ensures they remain easy to apply even if application conditions are not ideal. ZPMC customers will also benefit from a longer lasting coating.

Avantguard is fast drying with best-in-class<sup>3</sup> overcoating intervals. The products are easy to apply, even in high temperatures and humidity as shown in exposure tests. There is less rework due to cracking, as the coating is more tolerant, even with high DFTs. By shifting to Hempadur Avantguard activated zinc primers, the world's largest producer of cargo handling equipment expects to benefit from superior corrosion protection and improved application properties.



# Our coatings travel the world

Specialist coatings for the container industry

As one of the world's leading suppliers of protective coatings for containers, our coatings can be found around the globe on containers of all types, protecting them from harsh environments and rough treatment.

As well as coatings for new containers, we also have a range of coatings for repair and maintenance work, and can work closely with you to help streamline your application lines or maintenance intervals.



# Designed for the toughest environments

Tailored solutions for mining and metal processing

We have a protective coating range specifically tailored to withstand the harsh conditions found in the mining and mineral processing industry.

We protect infrastructure, buildings and equipment against corrosion for many processing plants around the world, prolonging lifetimes and reducing maintenance requirements with our durable protective coatings.



Recommended system	
Primer	Hempaprime Multi
Topcoat	Hempathane HS

# Reference list 2022

Project Name	Owner	Region	Type	Quantity
DPW Belgium Antwerp	DPW	Belgium	STS	3
DPW London Gateway	DPW	UK	STS	2
TiL Italy MCT	TiL	Italy	STS	3
TiL Togo Lome	TiL	Togo	STS	2
USA New Jersey GCT Port	GCT Port Authority	US	STS	4
MTL Shenzhen Da Chan Bay	MTL	China	RTG	5
Brazil Itapoa	Itapoa	Brazil	RMG	5
PSA Canada Halifax	PSA International	Canada	STS	2
Hainan Zhenxin 3600t Full Slewing Crane	Hainan Zhenxin	China	Slewing Crane	1
FL Everglades	Floridian Port Authority	US	STS	3
Maersk Brazil Santos	Maersk	Brazil	STS	2
Maersk Morocco Tangier	Maersk	Morocco	STS	8
Maersk India GTI	Maersk	India	STS+RTG	6+3
Maersk Ghana Tema	Maersk	Ghana	STS+RTG	3+12
Maersk Los Angeles	Maersk	US	STS	4
Nine Dragons Paper ship unloaders	Nine Dragons Paper	China	Ship unloaders	5
Siwertell ship unloaders	Siwertell	China	Ship unloaders	6
Eddy River portal cranes	Eddy River portal cranes	China	Portal cranes	1
Overboard portal cranes	Overboard portal cranes	China	Portal cranes	1
Guangxi steel portal cranes	Guangxi steel portal cranes	China	Portal cranes	8
Rizhao portal cranes	Rizhao portal cranes	China	Portal cranes	4
Xiuyu portal cranes	Xiuyu portal cranes	China	Portal cranes	1
Putou portal cranes	Putou portal cranes	China	Portal cranes	2
Full swing cranes	Full swing cranes	China	Cranes	1
Chile Port	Kone cranes	China	RMG	3
London portal cranes	Kone cranes	China	Port cranes	8
Shenzhen MTL Da Chan Bay Project	MTL	China	STS	2
Weifang Port Project	Weifang Port	China	RMG	2
Taiwan Kaohsiung Port	Kaohsiung Port	Taiwan	STS	2
Henan Weihua Port Machinery Project	Indonesia Port	China	Crane	9
Guangzhou Shipbuilding International 100-ton gantry crane	GSI	China	Cranes	1
CCCC Taicang Base 3,000-ton multi-purpose port	Jiangsu Taicang Port	China	Corrosion protection	1
Qinzhou Port Ji Yun Storage port equipment maintenance	Qinzhou Port	China	Maintenance	2

As a world-leading supplier of trusted coating solutions, Hempel is a global company with strong values, working with customers in the decorative, marine, infrastructure and energy industries. Hempel factories, R&D centres and stock points are established in every region.

Across the globe, Hempel's paints and coatings can be found in almost every country of the world. They protect and beautify buildings, infrastructure and other assets, and play an essential role in our customers' businesses. They help minimise maintenance costs, improve aesthetics and increase energy efficiency.

At Hempel, our purpose is to shape a brighter future with sustainable coating solutions. We firmly believe that we will succeed as a business only if we place sustainability at our heart. Not only is it the right thing to do, it will strengthen our competitive position, make ourselves more resilient and reduce our risk.

Hempel was founded in Copenhagen, Denmark in 1915. It is proudly owned by the Hempel Foundation, which ensures a solid economic base for the Hempel Group and supports cultural, social, humanitarian and scientific purposes around the world.

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