

SIGMASHIELD™ System

Highly resilient protective system for high-impact and abrasive cargo operations

Case study



The Customer

Baggermaatschappij Boskalis B.V.

The Location

Shipyard Boer at Sliedrecht, The Netherlands

The Challenge

To protect the steel in the hopper of a dredger due to wear and tear caused by sand and stones

The Solution

A durable system comprising SIGMASHIELD™ 1090 as an under layer and SIGMASHIELD 1200 as a topcoat

The Benefits

Minimized steel reduction caused by damage from sand and stones resulting in maintenance cost savings

The Result

Outstanding protection of the steel due to the excellent resistance against abrasion and impact

The Customer

Baggermaatschappij Boskalis B.V. (Boskalis) is a leading global maritime services company operating in the dredging, offshore energy and inland infrastructure sectors and is committed to the sustainable design and execution of its solutions around the globe.

The organization has more than 11,000 employees, including partner companies and operates in over 75 countries across six continents, with a versatile fleet of over 1,100 vessels and equipment.

Boskalis is active in the energy, ports and infrastructure markets, with a wide range of clients including oil companies, port operators, governments, shipping companies, international project developers, insurance companies, and mining companies.

The Challenge

The Causeway, the company's new hopper dredger, will be involved in handling large amounts of highly abrasive, heavy materials.



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The challenge was to find a coating that would withstand the persistent abrasion to the steel surfaces due to the constant loading and discharging of sand and stones. Essentially, the coating would have to act as a barrier to absorb the considerable impact caused by the wear and tear from these damaging cargoes, thereby protecting the steel in the dredger hopper.

The Solution

PPG convinced Boskalis, after 2 years of extensive testing both in-house and externally, that SIGMASHIELD products would provide the most durable coating solution for cargo holds.

PPG applied a system comprising the SIGMASHIELD 1090 product as an under layer with the SIGMASHIELD 1200 coating as a finish layer on top to the Causeway at the Shipyard Boer, Sliedrecht, The Netherlands.

The SIGMASHIELD 1090 product is a two-component, solvent-free polyamine-cured epoxy compound. After blasting the total area, one layer of SIGMASHIELD 1090 was applied.

Following this, to obtain a very smooth surface, the SIGMASHIELD 1200 coating was applied on top of the SIGMASHIELD 1090 product. The SIGMASHIELD 1200 product is a two-component, abrasion-resistant, solvent-free, phenolic epoxy coating that gives the system additional abrasion- and impact resistance. As a result of its smooth finished surface, the sand and mud will discharge faster and therefore less cargo will remain in the hopper.

The Benefits

The combination of the SIGMASHIELD 1090 and SIGMASHIELD 1200 coatings produces a hard-wearing, smooth surface ideally suited to areas that are subject to heavy impact and abrasion from a variety of damaging cargoes.

The key benefit for the owner on this vessel is that abrasion of the steel will be reduced and the steel thickness will therefore remain intact for a prolonged period, which is a significant financial benefit as steel renewal is a costly investment for the owner.

Main Benefits:

SIGMASHIELD 1200

- Excellent resistance to heavy impact and abrasion
- Smooth surface reduces damage from cargo handling
- Solvent-free technology – no VOC emissions
- Reduced explosion risk and fire hazard
- Can be applied by heavy duty, single-feed airless equipment
- Suitable for new-build, and maintenance and repair

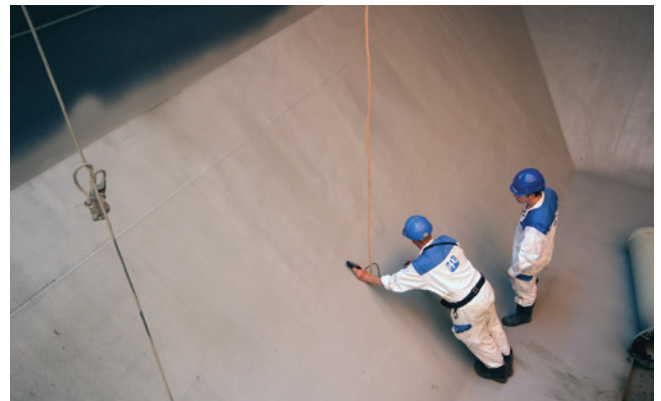
SIGMASHIELD 1090

- Exceptional protection against heavy impact and abrasion
- Seamless, water-impermeable layer with excellent anticorrosive properties
- Can be exposed to water after 30 minutes
- Excellent adhesion under wet- or dry exposure
- Solvent-free technology – no VOC emissions
- Suitable for decks exposed to heavy impact and abrasion

The Result

Following the success of this project, Boskalis has awarded PPG the task of applying the same coating system for the Strandway, another hopper dredger, currently being built at the Partner Shipyard in Szczecin, Poland.

PPG will monitor this vessel with the owner to record and quantify the long-term benefits and cost reduction resulting from the application of the SIGMASHIELD products.



Images: Measuring the thickness of the SIGMASHIELD system

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Asia Pacific ☎ +86-21-6025-2688 ✉ ppgpmc.ap@ppg.com | Europe, Middle East and Africa ☎ +32-3-3606-311 ✉ customers@ppg.com
Latin America ☎ +57-1-8764242 ext. 201 ✉ ppgpmcandean-ca@ppg.com | North America (US & Canada) ☎ +1-888-9PPGPMC ✉ PMCMarketing@ppg.com

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