

SIGMASHIELD™ 1200

The ultimate protection for vessels operating in extreme ice-going conditions

Case study



The Customer

Bore Ltd., Finland

The Location

The SEAGARD Container vessel operates mainly in the Gulf of Finland, Baltic Sea and North Sea

The Challenge

To provide a reliable, efficient coating system that can perform in heavy ice conditions on a vessel operating through ice with a thickness of typically 60 cm (23.6 in.)

The Solution

SIGMASHIELD 1200 solvent-free, abrasion-resistant phenolic epoxy ice coating

The Benefits

Long-lasting durability of the underwater hull protection despite the heavy ice conditions

The Result

The underwater hull is still in perfect condition even after two winters operating under heavy ice conditions

The Customer

Bore has long traditions in shipping, dating back to 1897, when Bore was founded. Today, Bore offers industrial shipping services with a highly maintained fleet, consisting of vessels that have year-round service and Ice Class 1A or 1A Super, suitable for sailing in first year thin and medium ice. Bore's fleet is composed of RoRo and General Cargo vessels operating under both Finnish and Dutch flags.

The Challenge

The SEAGARD is a Ro-Ro Container vessel operating all year round in the Gulf of Finland, Baltic Sea and North Sea.

During winter, the vessel regularly encounters heavy ice conditions. In order to navigate safely in such an environment, the SEAGARD was built with extra features required to face the ice conditions encountered in the Baltic area. In addition to these construction improvements, an abrasion-resistant ice coating was required to protect the hull from the ice impact and gouging occurring on the ice belt and flat bottom. The use of such a coating is vital to minimize damage, maintain vessel safety and reduce subsequent repair costs on the hull.



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The Solution

PPG offers two abrasion-resistant, ice coatings (SIGMASHIELD 460 and SIGMASHIELD 1200), selected based on the anticipated ice conditions during service life. For SEAGARD, regularly sailing in heavy ice conditions during the harsh Baltic winters, the highly resilient SIGMASHIELD 1200 coating was recommended to provide it with optimal underwater hull protection.

The SIGMASHIELD 1200 coating is based on a very hard filler composition, providing excellent anti-abrasion properties, and on a highly cross-linked phenolic epoxy technology, further extending the service life of the coating by tremendously increasing the creep resistance.

The Benefits

Ice is undoubtedly the worst nightmare for an outer shell coating! The SIGMASHIELD 1200 coating addresses this situation by combining these key attributes:

- Excellent application properties for a smooth and glossy surface, using standard spraying equipment
- Outstanding anti-abrasion resistance, extending fuel savings provided by the smooth, freshly applied surface
- Excellent creep resistance, reducing the size (and hence cost) of the repair areas

The SIGMASHIELD 1200 coating is the ice solution that provides easy application, optimal abrasion resistance and damage propagation control.

SIGMASHIELD 1200 benefits:

- Outstanding impact- and abrasion resistance
- Excellent cathodic protection and creep resistance
- Standard- and low-temperature version for enhanced curing performances
- Application also possible in winter conditions
- Single-coat application using standard equipment
- Easy maintenance and repair
- Recognized by Lloyd's Register as an abrasion-resistant ice coating
- Recognized by Aker as a low-friction surface coating for ice-breaking ships
- Independent test certification

The SIGMASHIELD 1200 product's excellent performance has been confirmed by Aker Arctic Technology, a major independent testing institution, which specializes in low-temperature testing at the limits of ice-going conditions.

The Results

Following close inspection in dry dock, the SEAGARD's underwater hull is still in perfect condition, which is an excellent result for a vessel operating in harsh conditions through ice.

Mathias Sundberg, Technical Superintendent of Bore Ltd. stated: "On inspection, after two winters operating in heavy ice conditions, the underwater hull is still in perfect condition. The SIGMASHIELD 1200 coating is performing very well, as expected from a PPG product."



Image: After two winters operating in heavy ice conditions the underwater hull of the SEAGARD is still in perfect condition.

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