



# CASE STUDY

**Intersleek 1100SR shows excellent performance after long static periods**

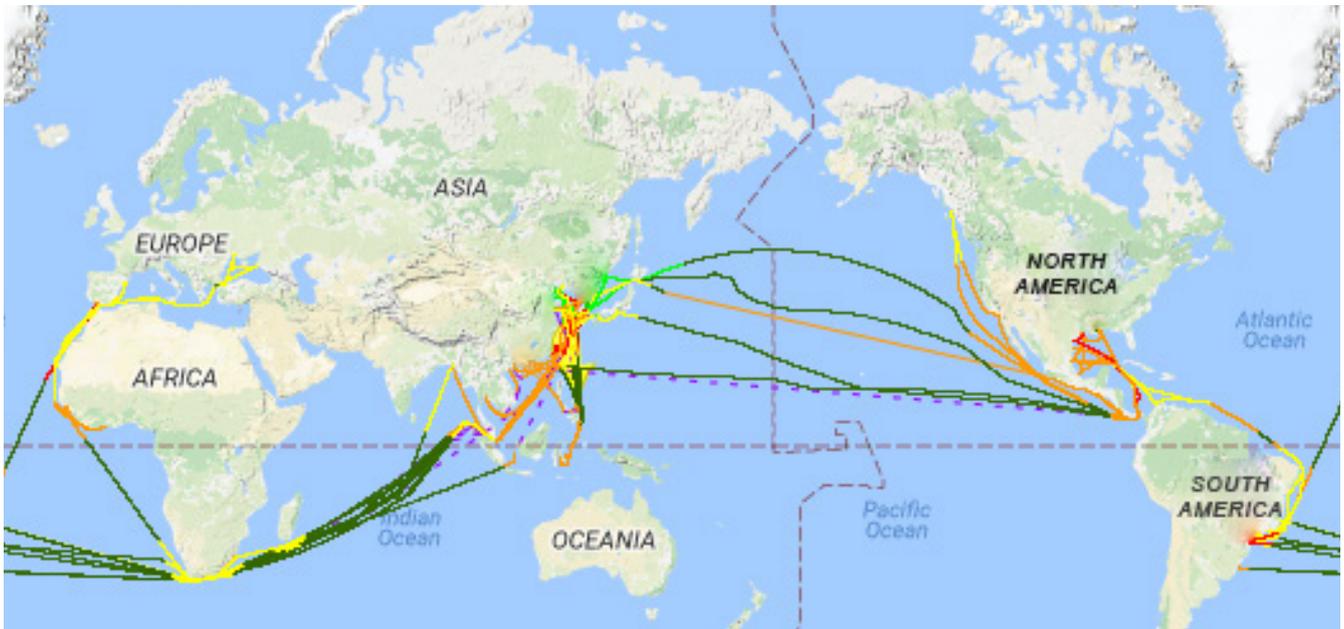
## Summary

Bulk carriers are commercial vessels carrying a range of cargoes, such as edible stuff, coal, metal ores, and cement in their cargo holds. These vessels can be divided into various classes based on their size and trading routes they can operate in. They can range from very large ore carriers (> 300,000 DWT) to small coastal trading vessels (< 5,000 DWT).

The key considerations for bulk carrier operators include maintaining vessel speed and meeting schedules which can allow them to have maximum trading

route flexibility. Minimised fuel consumption for long term charters and reduced off-hire maintenance times are also of high importance.

Because bulk cargo can take a long time to discharge, bulkers often spend more time in port than other ships. These static periods coupled with the low speed of bulkers presents a big challenge for hull coatings. Another consideration is the environmental impact of hull coatings.



▲ Global trading routes of a typical bulk carrier

## Challenges

Bulk carriers generally trade globally in very high fouling challenge regions with heavy loads. Furthermore, they normally have frequent stops due to the loading and discharging of cargoes. The longer time required for discharging cargo which is due to health and safety considerations as well as logistics, means increased frequency of static periods which presents significant challenges to underwater hull coatings, to maintain hull efficiency during vessel operations.



# How We Made It Possible

These two charts have shown that hull efficiencies have been improved on bulk carriers through the application of Intersleek 1100SR. For both ships, over 10% fuel saving has been achieved, in comparison to previous antifouling coatings, after Intersleek 1100SR has been applied. This has also been maintained with negligible degradation rate.

Intersleek 1100SR is designed to release slime after frequent long static periods due to its patented advanced fluoropolymer slime release technology. This fits bulkers' operational profile very well.

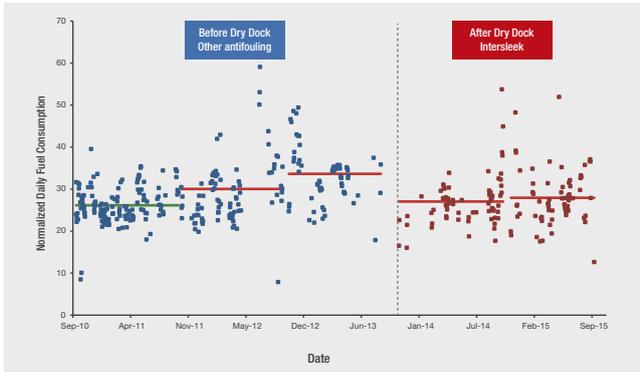


Chart 1. Normalized Daily Fuel Consumption for a typical bulker (DWT 58,655)

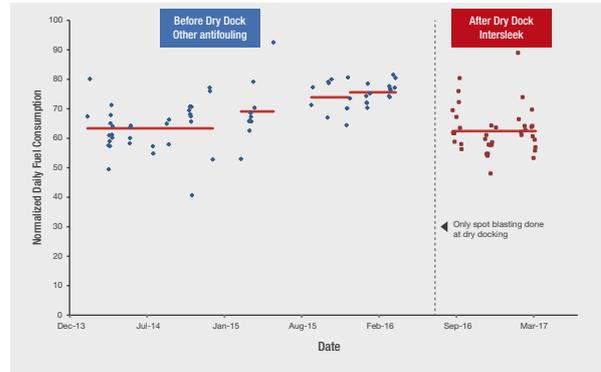


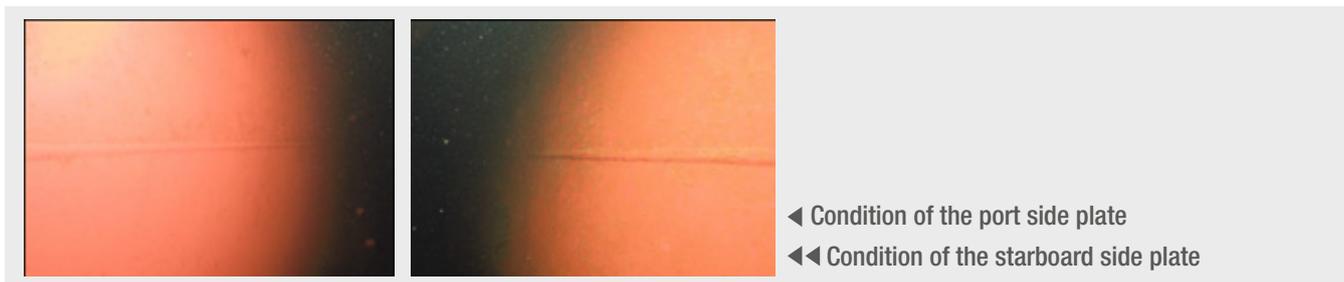
Chart 2. Normalized Daily Fuel Consumption for a typical bulker (DWT 293,239)

# Results, Return on Investment and Future Plans

Over 300 successful applications of Intersleek have been completed on bulk carriers.

Intersleek 1100SR has demonstrated excellent slime release properties after long static periods. This allows customers to access foul release technology with reduced hull maintenance compared with other antifouling offerings. Thus, it gives a financial and environmental benefit to customers.

The picture below shows the hull performance of Intersleek 1100SR after a 45-day static period in the high fouling challenge of Indonesia on a bulker named Wooyang Banders (DWT 73,700). This vessel was coated with Intersleek 1100SR in November 2013. From the pictures, negligible level of slime can be observed after the long static period during April – May 2017.



The two pictures on the right hand side show the excellent slime release properties of Intersleek 1100SR after 30 months in-service on bulk carriers. Its innovative advanced fluoropolymer technology and extremely low hull roughness lead to minimal macro and micro fouling observed on vessels, which gives significant benefit to vessel operators.



# Myth-buster

## Is Intersleek difficult to repair?

We have a 21 year track record of successful Intersleek repairs. We provide practical repair schemes to fit the different types of damages which may occur and to efficiently utilize the time spent in dock. Two examples are shown below.

### Repair when anticorrosive is exposed

|                              |                              |                              |
|------------------------------|------------------------------|------------------------------|
| Intersleek® Finish (150 µm)  | Intersleek® Finish (150 µm)  | Intersleek® Finish (150 µm)  |
| Intersleek® Tiecoat (100 µm) | Intersleek® Tiecoat (100 µm) | Intersleek® Tiecoat (100 µm) |
|                              | Intershield® 300 (125 µm)    |                              |
| Anticorrosive (125 µm)       |                              |                              |
| Anticorrosive (125 µm)       |                              |                              |
| Steel substrate              |                              |                              |



### Repair when steel substrate is exposed

|                              |                              |                              |
|------------------------------|------------------------------|------------------------------|
| Intersleek® Finish (150 µm)  | Intersleek® Finish (150 µm)  | Intersleek® Finish (150 µm)  |
| Intersleek® Tiecoat (100 µm) | Intersleek® Tiecoat (100 µm) | Intersleek® Tiecoat (100 µm) |
| Anticorrosive (125 µm)       | Intershield® 300 (125 µm)    | Anticorrosive (125 µm)       |
| Anticorrosive (125 µm)       | Intershield® 300 (125 µm)    | Anticorrosive (125 µm)       |
| Steel substrate              |                              |                              |



Note: Numbers stated in () are Dry Film Thickness

#### Important Notes:

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