# Hull Efficiency

## Impact of a hull coating upgrade on a steam turbine LNG vessel

- an owner's perspective

Steam turbine LNG

# The case for high-performance hull coating

One of the most effective ways to enhance a vessel's performance is by increasing the efficiency of its hull. And upgrading to a high-performance hull coating is among the simplest and most impactful methods to achieve this.

In this paper, we'll illustrate the effects of such an upgrade on a 78000 DWT Steam Turbine LNG carrier built in 2003.

We'll highlight the power offset part of the speed improvements you can expect, showing how these enhancements can partially offset speed limitations imposed by EEXI – ensuring that your steam turbine vessels remain competitive.

By the end of this paper, you'll have the opportunity to book an assessment for any of your specific LNG vessels, determining your potential benefits of a high-performance hull coating upgrade.

## Contents

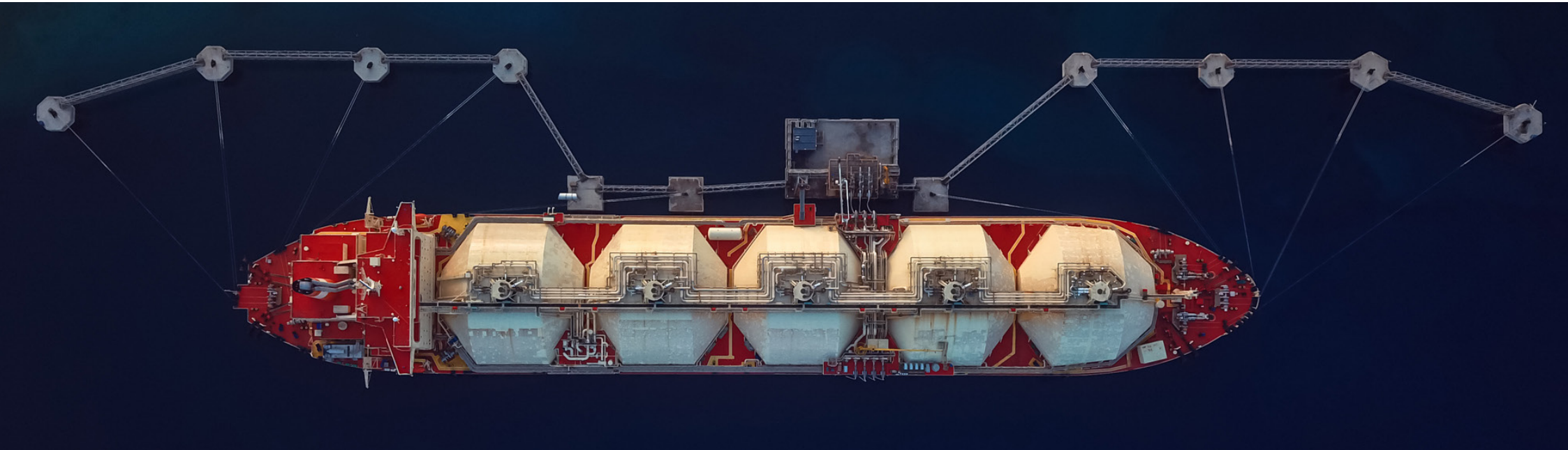


# A proven way to energy efficiency

Our Hempaguard high-performance hull coating is a tried-and-tested, off-the-shelf technology, available at nearly every dry dock worldwide. Its efficacy is validated through both towing tank tests and more than 3,000 real-life applications on various types of vessels, including LNG – trading in all kinds of waters.

## Lloyd's List survey: Shipowners want hull coating

Most recently a Lloyd's List special report on decarbonisation showed that more than half of shipowners, charterers, and operators, 59%, identified hull appendages and coatings as the most likely energy-efficiency measures they will use.



# High-performance hull coating compared to a market average solution

To help charterers and shipowners make a more informed decision on how to generally improve the energy efficiency of a vessel through hull efficiency, Hempel Marine has developed a ship-specific framework for evaluating options.

In this LNG-specific assessment we evaluate one of the most obvious and simple measures to improve energy efficiency and reference speed through hull coating:

- A full blasted high-performance coating solution

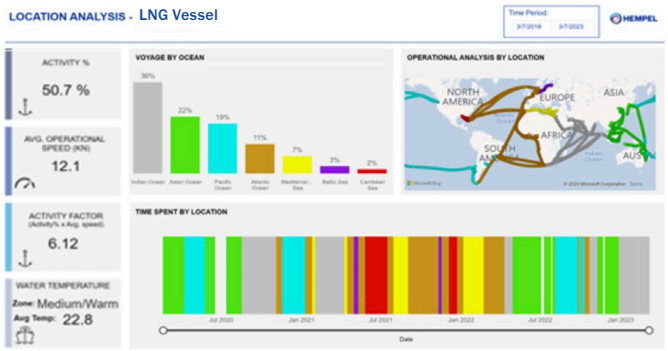
*compared to*

- A market average solution

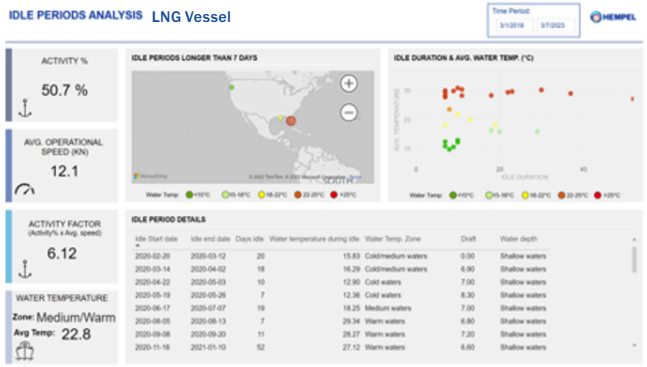
# Detailed operational analysis behind the comparison

The validity of the impact assessment is assured through a comprehensive analysis of the vessel's operation. It not only takes speed, activity, and water temperature into account, it also looks at how these factors are interrelated, and how they develop over time.

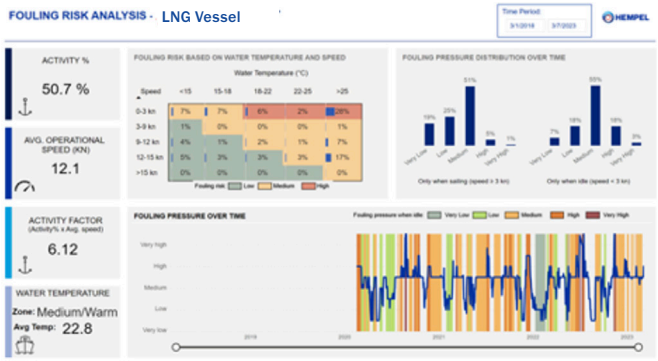
The analysis includes: A recommended paint system specification for the vessel type in question, LNG Vessel, defined for standardised trade routes. It's based on an investigation of the operational flexibility requirement (i.e. variations in speed, idle periods and time spent in warm waters), the risk of fouling and the risk of mechanical damages due to frequency of canal transits, ice trading, ship to ship operations and berth conditions.




**Trade Pattern Analysis**
Assesses if the coating specification (i.e. product per hull area, number of coats, dry film thickness) is aligned with the ship-specific trade.




**Idle Periods Analysis**
Examines the number of idle days in specific water temperatures during the previous service period.




**Fouling Risk Analysis**
Fouling risk based on coating in use, AIS data (location, idle periods, speeds) fouling pressure at any time and hull event history including cleanings.

# Impact on reference speed (Vref)

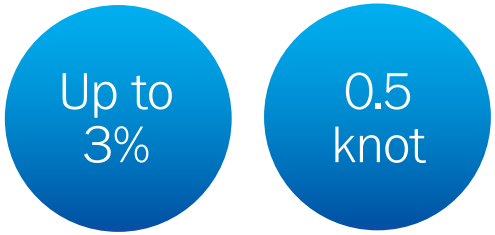
## of a high-performance hull coating upgrade

Due to the out-of-dock performance improvement as a result of the very smooth Hempaguard hull, it becomes possible to partially offset the speed reduction from the ShaPoLi implemented to attain the required EEXI. This can enhance your vessel's reference speed Vref with up to 3%.

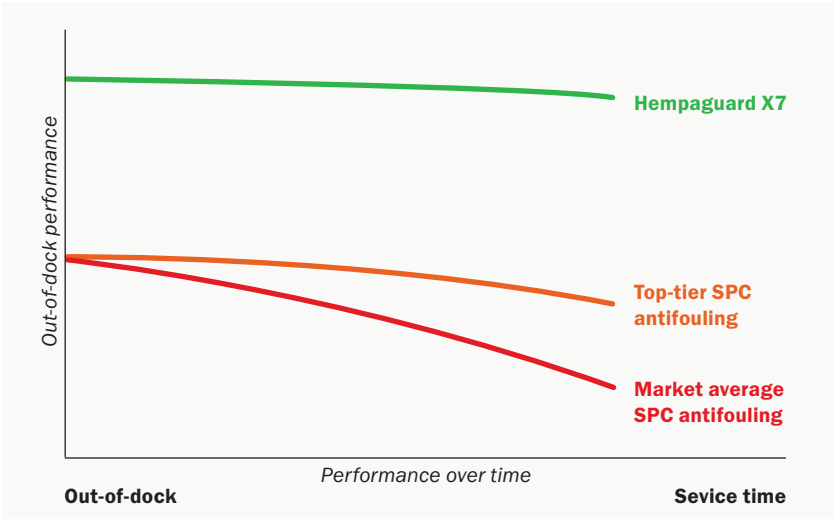
Furthermore, thanks to Hempaguard your vessel will experience a very minimal average speed loss in the years to come – down to as little as 1.2 per cent – even if your vessel undergoes extensive idle periods, changes trading patterns or steams slowly

All in all the result is a predictable performance and a sustained commercial attractiveness – that will ultimately empower you to fulfil your contract obligations even forv steam turbine vessels in the decarbonisation era.

Immediate out-of-dock speed increase:




Hull coating performance impact:




Impact comparison:

| | Average out-of-dock power gain | Reference speed (Vref) improvement |
|---|---|---|
| Hempaguard Max | 8% | 2.7% speed increase vs. any NB antifouling |
| Hempaguard 7 | 6% | 2.0% speed increase vs. any NB antifouling |
| Conventional top-tier antifouling | 0% | No impact |
| Market average antifouling | 0% | No impact |

# Costs and benefits overview

The advantages of a high-performance hull coating are substantial. While the initial expenses for paint and repair yard services, including rent and surface preparation, may exceed those associated with an average market solution, the long-term benefits outweigh these upfront costs.

Over a 5-year period between mandatory dockings for instance, you can expect virtually zero cleanings. This results in uninterrupted trading operations, eliminating the potential for off-hire costs, and ensuring continuous vessel availability for service.

Moreover, your steam turbine LNG vessels will gain commercial appeal and meet the expectations outlined in your charter contracts – achieved through the exceptionally smooth hull attained and the resulting impressive vessel speed increase.

| | High performance hull coating (Hempaguard) | Market average SPC antifouling |
|---|---|---|
| Paint cost | Higher | Lower |
| Repair yard costs | Higher | Lower |
| Cleaning needed between dockings | Virtually Zero | Yes |
| Cleaning costs | Very low | High |
| Off hire cost while cleaning | Very low | High |
| Speed increase compared to market average SPC | 2-3% | 0% |
| Speed loss in 5 year period between dockings | Down to 1.2% | Up to 5.9% |
| Fouling-free idle period guarantee | 120 days | Less than 21 days |

# Get an impact assessment for your specific LNG vessels

We hope you have found this introduction to the effect of a high-performance hull coating upgrade useful.

Please don't hesitate to contact us for an assessment of your specific steam turbine LNG vessels.

The assessment will provide you with:

- Immediate out-of-dock speed-increase
- Total cost analysis (TCO)
- Effect on EU ETS cost
- Impact on CII

**Book a vessel specific assessment »**

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