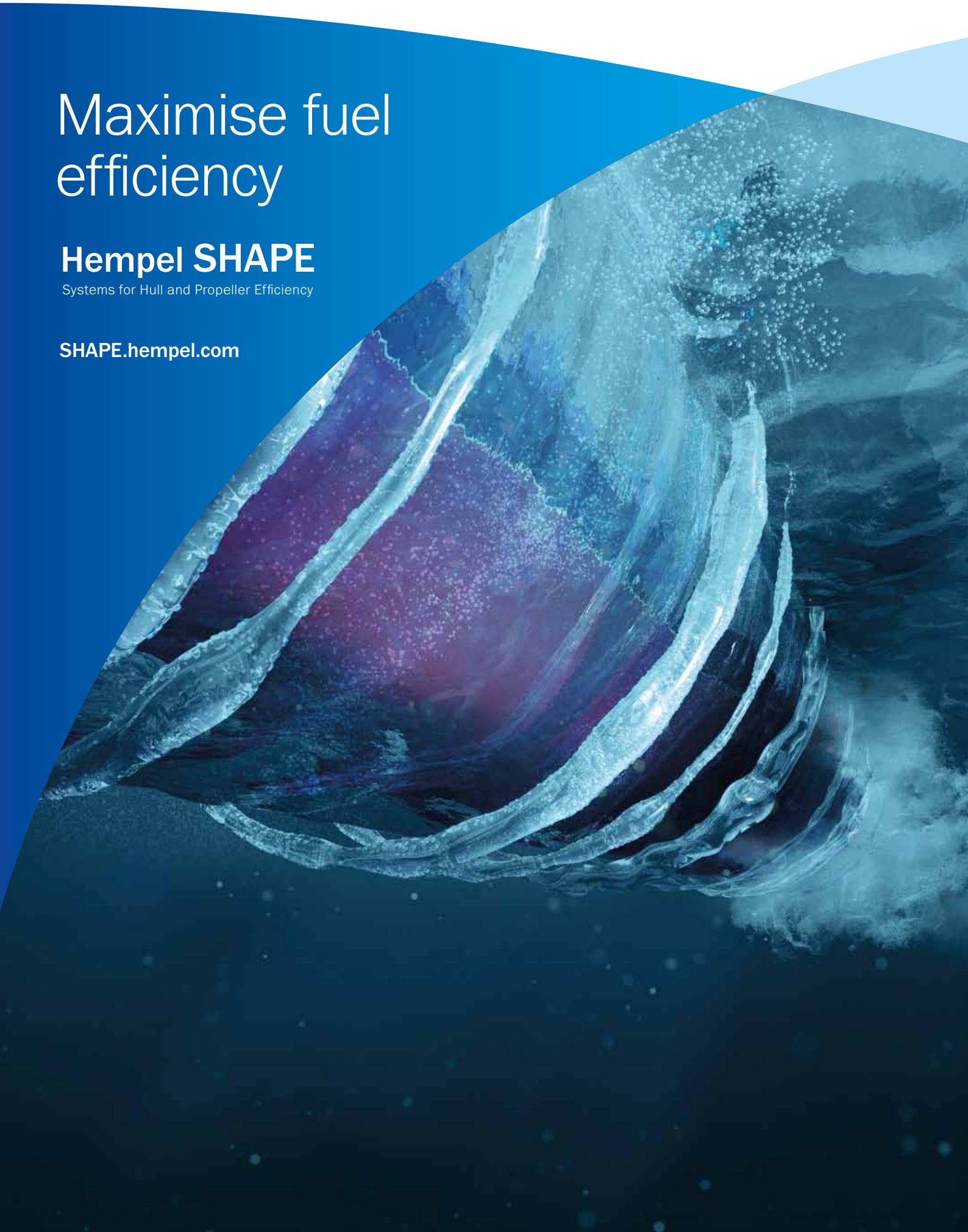


# Maximise fuel efficiency

## **Hempel SHAPE**

Systems for Hull and Propeller Efficiency

[SHAPE.hempel.com](http://SHAPE.hempel.com)





Fouling can  
increase the engine  
power your vessel needs  
by up to  
**20%**

## Fuel efficiency We shape the future

The global shipping industry is focused on fuel efficiency.

Now, building on hull performance monitoring standard ISO 19030 and Hempel's world class coatings expertise, we are partnering with fleet operators to become their leading source of efficiency knowledge and solutions.

Today, approximately 15 per cent of the world's fleet can comply with ISO 19030 part 2. Hempel SHAPE brings transparent ISO 19030 based performance monitoring and analysis to the many, not just the few.

Working as your partner, SHAPE and our leading hull coatings can deliver ISO quality documented savings in fuel and a programme of continuous improvement, documenting the savings of your hull coating choice to make you more efficient and more competitive in an evolving marine world.

## The new standard in performance monitoring ISO 19030

ISO 19030 outlines important principles for the measurement of changes in hull and propeller performance and defines a set of performance indicators for hull and propeller maintenance, repair and retrofit activities.

Hempel's SHAPE solution is based on ISO 19030 methodology to develop the industry's most sophisticated efficiency analysis solution.



# Hempel SHAPE

## The right solution for every operator

Hempel SHAPE digital analysing tool, based on the ISO 19030 framework, combines all the elements of efficiency optimisation. This includes high quality data gathering, expert analysis, decisive advice and world class hull coatings, whatever the age, size and operating patterns of your vessel.

This is much more than performance monitoring.  
**This is fuel efficiency intelligence.**



**Tailored hull performance programme**  
with a dedicated Hempel performance analyst



**Expert data analysis**  
from our team of chemists, physicists and hydrodynamicists



**Key performance indicators**  
based on speed loss measurements to track performance gains over time



**Monitoring and guaranteed fuel savings**  
applicable for hull coatings specified up to 60 months dry docking intervals



**Transparent cost-effective performance monitoring**  
following ISO 19030 methodology



**World leading friction-reducing coatings**  
based on more than 100 years of Hempel expertise





# Turning data into decisions SHAPE in action

Shaped by the guidelines of ISO 19030, we have created a rigorous, transparent SHAPE process based on maximising the quality of your performance data and delivering the expert analysis that optimises the ROI of your decisions.

“Hempel’s fuel monitoring system is enabling us to accurately determine the performance of our propulsion systems, including the propeller and hull coating. This gives us complete insight into our return on investment. But more importantly, it also enables us to work closely with Hempel and so improve long-term efficiency.”  
**Theodore Mavraidis**, Fleet Technical Manager, Euronav Ship Management (Hellas) Ltd

**1**

Establish your individual speed power reference curves

**2**

Collect in-service data

**3**

Cleanse and purify the data

- ▼ Eliminate extreme operating conditions
- ▼ Subtract the effects of environmental factors

**4**

Perform your precise speed loss calculations

**5**

Calculate your Four Key Performance Indicators

- ▼ **Dry docking performance** Calculate changes in hull and propeller performance over drydocking periods
- ▼ **In service performance** Calculate the effectiveness of your hull and propeller solutions
- ▼ **Maintenance trigger** Calculate the change in hull and propeller performance in a given period between drydocking and in-service use
- ▼ **Maintenance effect** Calculate the change in hull and propeller performance before and after a maintenance event

**6**

Advise you on the decisions that will impact your fuel efficiency





## Real performance data - an example

The example below (figure 1) shows actual performance data for a 9300 TEU container vessel - the calculated speed loss and power increase values for a set of measured data points.

The data consists of noon reports, and the analysis is done following the ISO 19030 standard procedures on performance monitoring.

SHAPE will not only provide you with the insight of how speed loss develops over time per default, but can also reveal the resulting power increase (based on the 3:1 relation between power and speed).

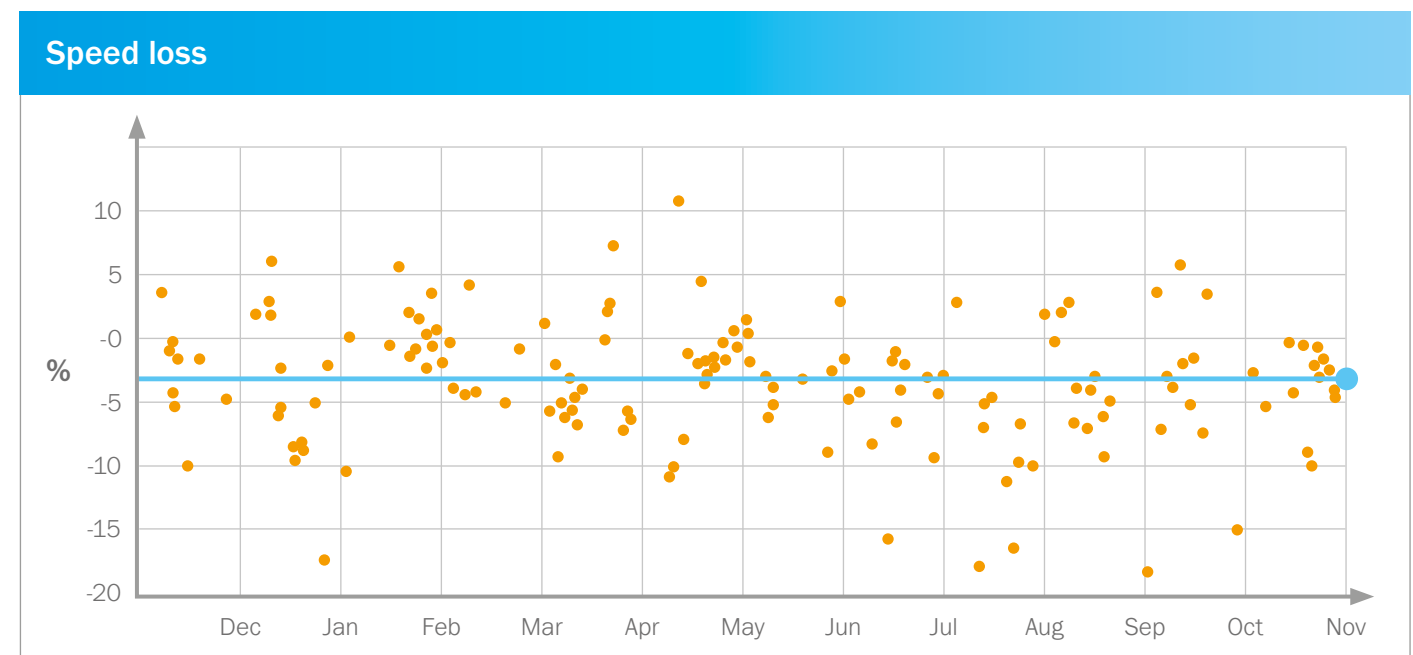
## Why hull performance matters

Hull performance remains a crucial element in understanding fuel performance, regardless of vessel type.

Vessels may have longer voyages with higher speed and activity, or less predictable patterns with slower speed and more idling. In both cases, hull performance has a big impact on fuel.

Through the ISO methodology, SHAPE is able both to monitor long term trends via the In Service performance KPI, and also short term trends through the Maintenance Trigger KPI.

This adds real value to vessels with low activity, generating data to understand how much the hull is affected by long idle times, allowing you to take fact-based decisions.



**Figure 1:** Actual speed loss values (upper) and power increase values (upper) for a 9300 TEU container vessel during a one-year period. Orange dots are data points while blue lines show average values during the period.





Hempaguard X7:  
**1.4%**  
guaranteed maximum  
speed loss over  
5 years

## Powerful reasons to talk to Hempel

Hempel SHAPE launches a range of transparent, cost-effective solutions that bring savings to every operator, no matter what the age, size and operating patterns of your vessels. We'll work with you to make savings in fuel, and then keep improving your efficiency, year after year.

## Speed loss The key to efficiency

Speed loss is a critical measure for understanding vessel performance and fuel efficiency, since power increase and speed loss are directly related.

At a given power output, we can accurately measure the speed by establishing new speed and power curves and compare them to the reference speed and power curves.

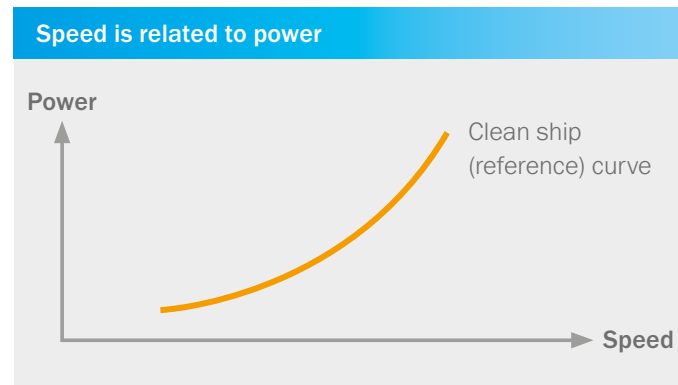


Figure 2: Speed and power relation for clean ship

## What's holding you back?

“We're not interested in performance monitoring; it's difficult and costly”

Technology has matured. Autologging systems can be acquired at lower cost. Optimized noon reports can be a good starting point.

“Performance monitoring is not transparent in filtering and analysing the data”

ISO 19030 creates total transparency and removes uncertainties from intellectual property rights from monitoring companies.

“It's an old vessel. We won't gain anything from performance monitoring”

Premium hull coatings can bring documented benefits to older vessels. It can be one of the most cost effective ways to improve fuel performance of an older vessel.

“If we want to understand speed loss, we just do an open water speed trial”

A speed loss simulation makes comparisons impossible. The data sample will be too small and will not take account of prevailing conditions (wind, waves, current).



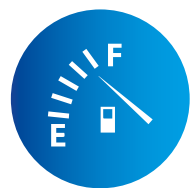
Fouling



Increased friction



Increased power to maintain a given speed



Increased fuel consumption and emissions

Contact us to find out more

Since 1915 Hempel has been a world-leading coatings specialist, providing protection and inspiration to the world around us. Today we have over 5,500 people in 80 countries delivering trusted solutions in the protective, decorative, marine, container, industrial and yacht markets. This includes many recognised brands like Crown Paints, Schaepman and Jones-Blair.

Hempel is proudly owned by the Hempel Foundation, which supports cultural, humanitarian and scientific causes across the world.

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