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Passenger Ship TCO Report

An assessment of the benefits, cost and savings of a hull coating upgrade.

Content of this report

1. Methodology and executive summary
2. Economical potential
3. Regulatory compliance

“We guide the maritime industry as a trusted advisor, enabling customers to achieve sustainability and operational excellence through responsible hull performance management”

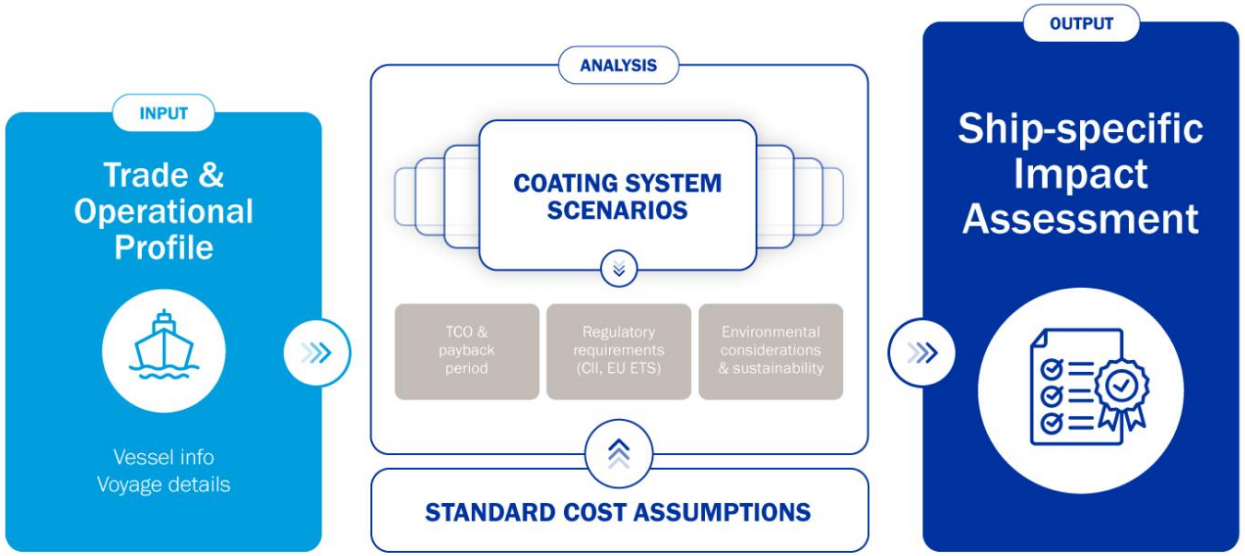
Alexander Enstrom
EVP Hempel Marine

Methodology and executive summary

Impact of a hull coating upgrade

Ship Specific Assessment

A fact-based approach for selecting the optimal solution for your vessel



Comparison of three scenarios

Hull performance scenarios are based on 3 coating solutions

(Premium Silicone, Silicone, SPCs)

Hempaguard X7+
Top Performance System

BootTop	Hempaguard X7+	**Full blast**
Vertical	Hempaguard X7+	Full blast
Flat Bottom	Hempaguard X7+	Full blast

Hempaguard X7
Upgrade System

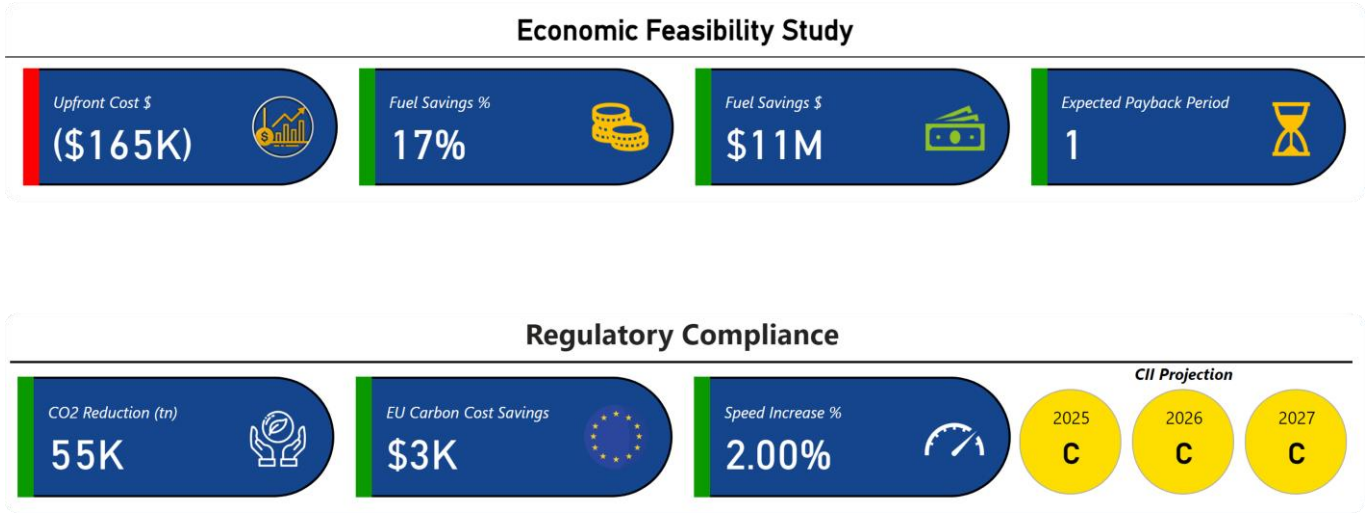
BootTop	Hempaguard X7	**Full blast**
Vertical	Hempaguard X7	Full blast
Flat Bottom	Hempaguard X7	Full blast

Globic 8000
Baseline System

BootTop	Globic 8000	**Spot blast**
Vertical	Globic 8000	Spot blast
Flat Bottom	Globic 8000	Spot blast

Executive summary

Economical benefits and regulatory compliance with premium silicone hull coating

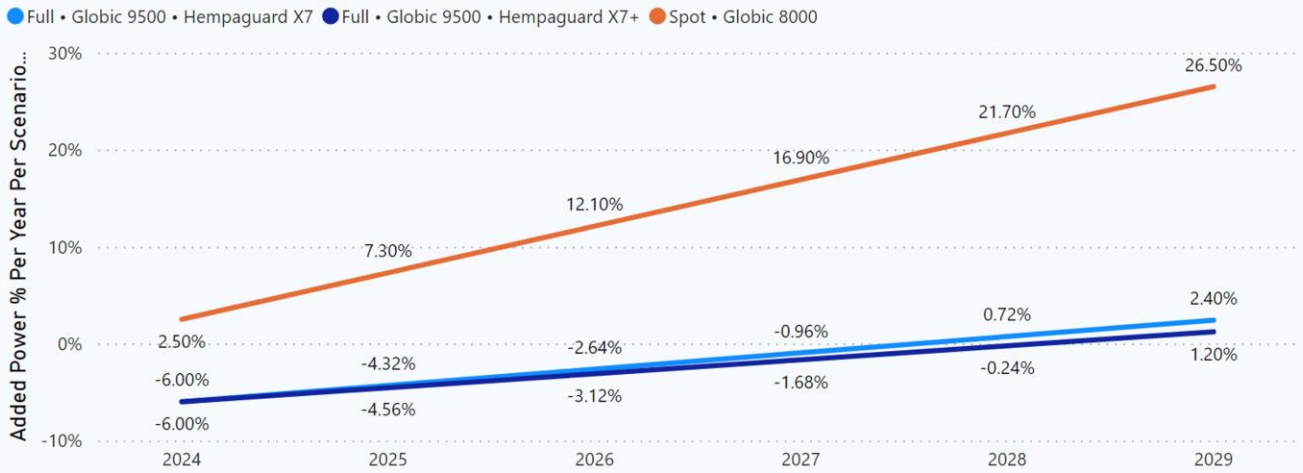


Economical potential

Impact of a hull coating upgrade

Impact of a hull coating upgrade

Expected efficiency improvements



Assumptions

Out of dock savings are based on the absolute power gain from the smoothness of silicone compared to self-polishing antifouling.

Savings over time is based on speed loss difference of silicone compared to self-polishing antifouling translated to power saving.

3:1 relationship between power increase and speed loss is assumed.

Paint System Description	Seamflow	Out of Dock Power Gain %	Surface Preparation %	Speed Loss %	Out of dock & Surface Preparation Diff%	Overtime Power Savings %	Total Fuel Savings %
Full • Globic 9500 • Hempaguard X7+		6.00	0.00	1.20	8.50	8.40	16.90
Full • Globic 9500 • Hempaguard X7		6.00	0.00	1.40	8.50	7.80	16.30
Spot • Globic 8000		0.00	-2.50	4.00	0.00	0.00	0.00

Expected paypack period

1

Month

Impact of a hull coating upgrade

TCO and expected payback period

	Elements of Cost	Full • Globic 9500 • Hempaguard X7+	Full • Globic 9500 • Hempaguard X7	Spot • Globic 8000		Top Upgrade VS Baseline System
Paint	Paint Purchasing Cost					
Repair Yard	Surface Preparation	$31,620	$31,620	$12,648		$18,972
Repair Yard	Washing	$2,550	$2,550	$2,550		$0
Repair Yard	Paint Application Cost	$44,480	$47,540	$7,038		$37,442
Repair Yard	Shipyard Rent	$45,000	$45,000	$30,000		$15,000
Repair Yard	Off Hire Cost	$0	$0	$0		$0
Cleanings	Diver Cost	$0	$0	$7,650		($7,650)
Cleanings	Extra Costs Next DD	$0	$0	$9,042		($9,042)
Cleanings	Additional Fuel Consumption	$0	$0	$505,932		($505,932)
Cleanings	Off Hire Cost - Cleaning	$0	$0	$0		$0
TCO Fuel	Total Cost of Fuel	$56,057,319	$56,462,065	$67,457,665		($11,400,345)
	Total Cost of Ownership	$56,359,969	$56,746,775	$68,117,525		($11,757,556)
					Total Savings $	$11,757,556

Additional upfront cost for upgrade:

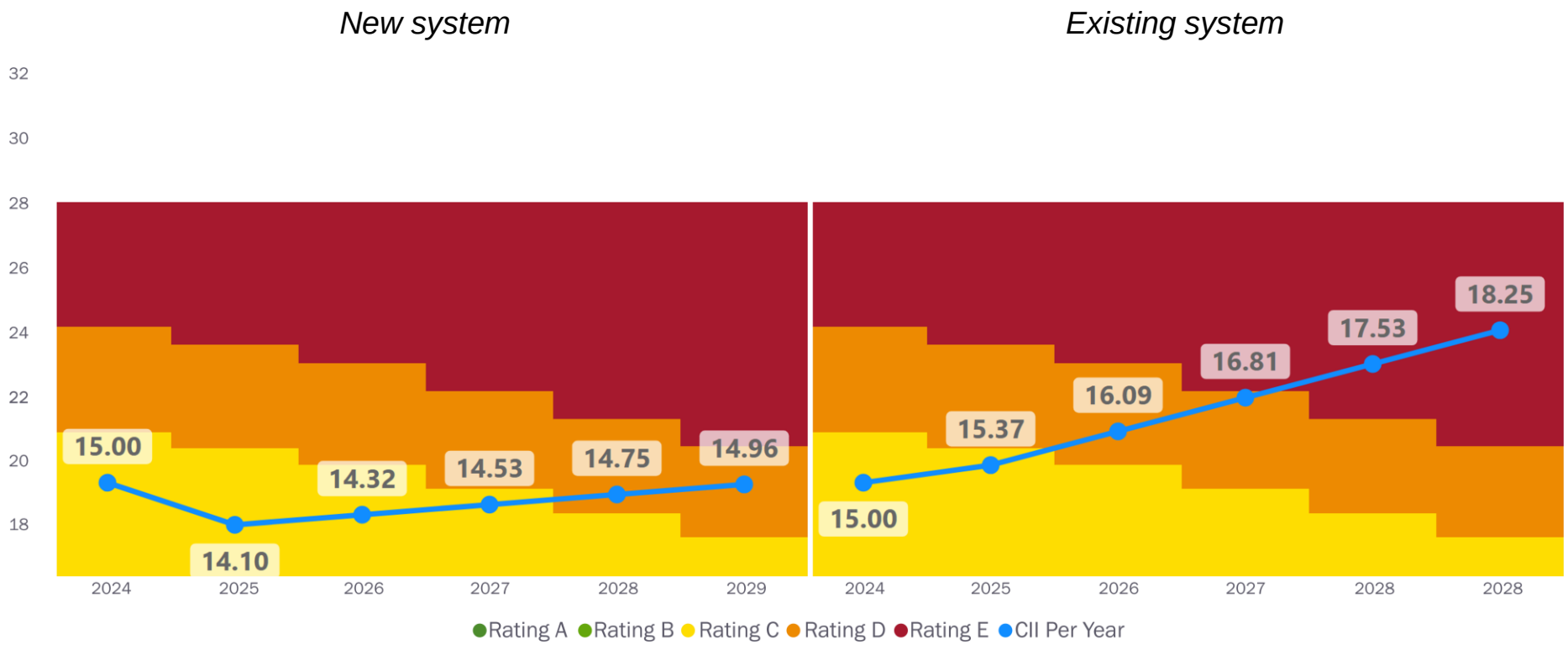
- **Paint Cost:**
- **Shipyard Cost: $71K**

Regulatory compliance

Impact of a hull coating upgrade

Impact of a hull coating upgrade

Impact on CII rating vs. existing coating system



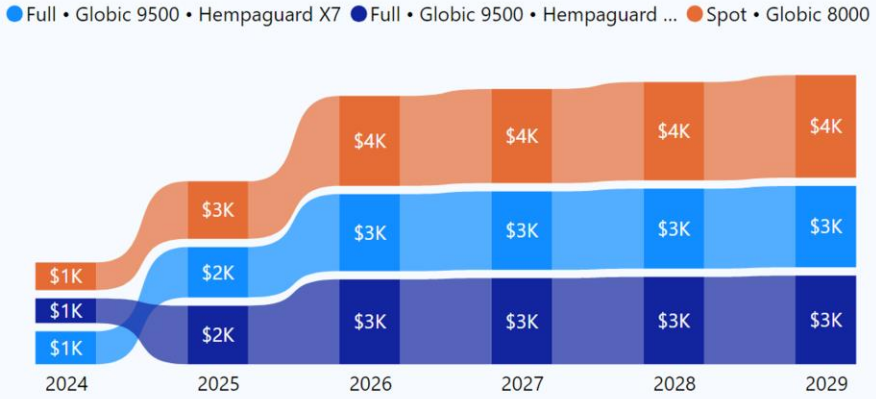
Impact of a hull coating upgrade

EU ETS carbon cost and savings

Added Power % and CO2 emissions

% eligible emissions to be taxed	40%	70%	100%			
Project Paint System Description	2024	2025	2026	2027	2028	2029
Full • Globic 9500 • Hempaguard X7						
Added Power %	-6.00%	-4.32%	-2.64%	-0.96%	0.72%	2.40%
CO2 Emissions (tn)	61415	62513	63610	64708	65805	66903
Full • Globic 9500 • Hempaguard X7+						
Added Power %	-6.00%	-4.56%	-3.12%	-1.68%	-0.24%	1.20%
CO2 Emissions (tn)	61415	62356	63297	64237	65178	66119
Spot • Globic 8000						
Added Power %	2.50%	7.30%	12.10%	16.90%	21.70%	26.50%
CO2 Emissions (tn)	66968	70104	73241	76377	79513	82649

Carbon Cost ($)



Top Performance VS Baseline System

	2024	2025	2026	2027	2028	2029
Added Power Difference %	0.00%	10.18%	11.86%	13.54%	15.22%	16.90%
CO2 Emissions Reduction (Tn)	5553	7749	9944	12139	14334	16530
Carbon Cost Savings ($)	$114	$279	$511	$623	$736	$849

Get an impact assessment of a coating upgrade for your vessel

Book a vessel specific assessment today >>

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