

# Bulk carrier

## Quantifying the benefits of applying in erection stage



## Bulk carrier

# Total cost of ownership and payback period



Application scenarios						Comparing the scenarios		
		Hempaguard NB (Erection Stage)	Hempaguard X7 (Post-Delivery Docking)	Hempaguard X7 (Pre-Delivery Docking)	SPC***	Hempaguard NB vs SPC*** (Erection Stage)	Hempaguard X7 vs SPC*** (Post-Delivery Docking)	Hempaguard X7 vs SPC*** (Pre-Delivery Docking)
Paint	Paint Purchase Cost	\$1,300,000	\$1,300,000	\$1,300,000	\$570,000	\$730,000	\$730,000	\$730,000
	Paint Application & Washing Cost	\$400,000	\$340,000	\$320,000	\$0	\$400,000	\$340,000	\$320,000
	General S/Y Cost	\$0	\$70,000	\$70,000	\$0	\$0	\$70,000	\$70,000
	Potential Mark-up Cost	\$0	\$30,000 - \$60,000*	\$300,000 - \$800,000**	\$0	\$0	\$30,000 - \$60,000*	\$300,000 - \$800,000**
Cleanings	Diver Cost	\$0	\$0	\$0	\$23,000	(\$23,000)	(\$23,000)	(\$23,000)
	Extra Costs Next DD	\$0	\$0	\$0	\$36,000	(\$36,000)	(\$36,000)	(\$36,000)
	Additional Fuel Consumption	\$0	\$0	\$0	\$320,000	(\$320,000)	(\$320,000)	(\$320,000)
Fuel	Total Cost of Fuel	\$46,000,000	\$46,000,000	\$46,000,000	\$50,400,000	(\$4,400,000)	(\$4,400,000)	(\$4,400,000)
TCO	Total Cost of Ownership	\$47,700,000	\$47,740,000 - \$47,770,000	\$47,990,000 - \$48,490,000	\$51,349,000	(\$3,649,000)	\$3,609,000 - \$3,579,000	\$3,359,000 - \$2,859,000
Total Savings \$						\$3,649,000	\$3,609,000 - \$3,579,000	\$3,359,000 - \$2,859,000
Expected Payback Period (Months)						19	21-22	25-34

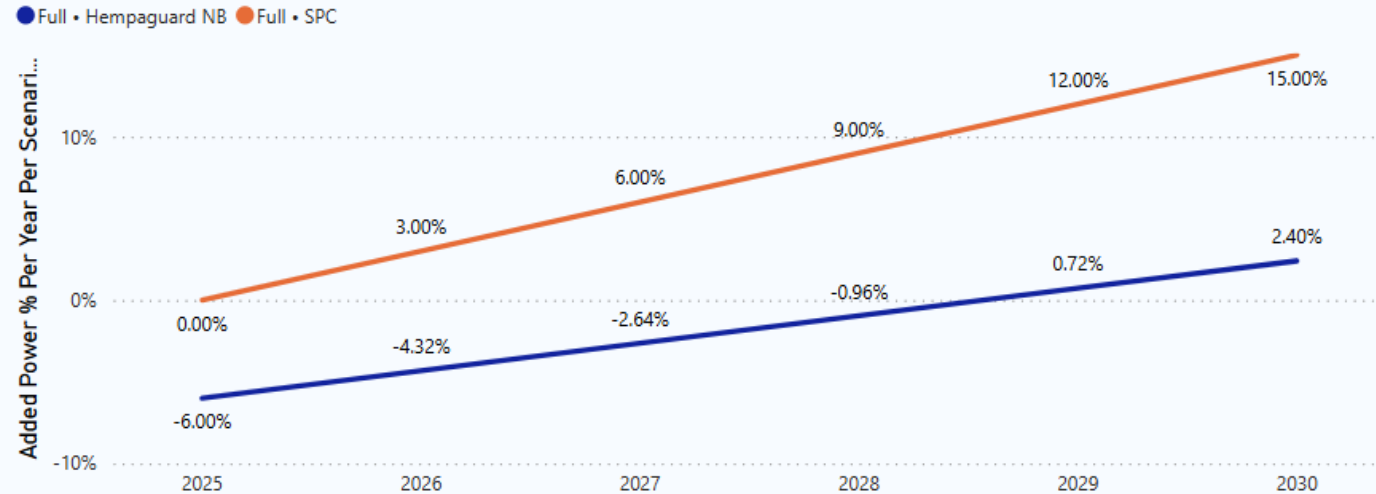
Assumptions: Capesize Bulk Carrier Vessel ~200,000 DWT, Consumption: 50t/day, Speed: 12 knots, Fuel Price: \$650/t

- \* Sea Trial cost for 3rd party management and fuel consumption
- \*\* Potential Mark-up S/Y Cost depends on the s/y location and has to do only for pre-delivery docking
- \*\*\* SPC Product with 2.5% speed loss for 5-years

# Hull coating upgrade: Expected efficiency improvement



## Added Power % per year



## 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.

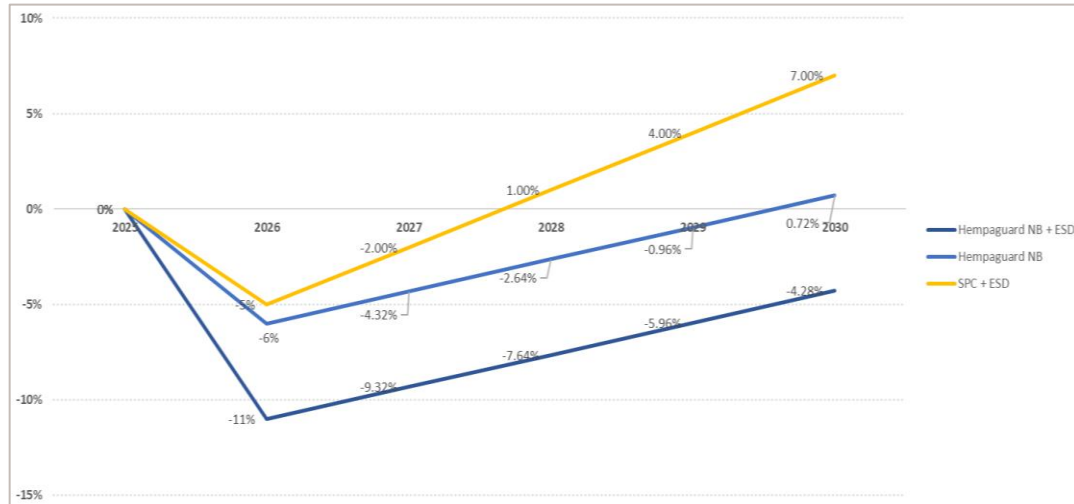
3:1 relationship between power increase and speed loss is assumed.

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 • Hempaguard NB		6.00	0.00	1.40	6.00	3.30	9.30
Full • SPC		0.00	0.00	2.50	0.00	0.00	0.00

# Increase vessel performance according to CII/EEDI

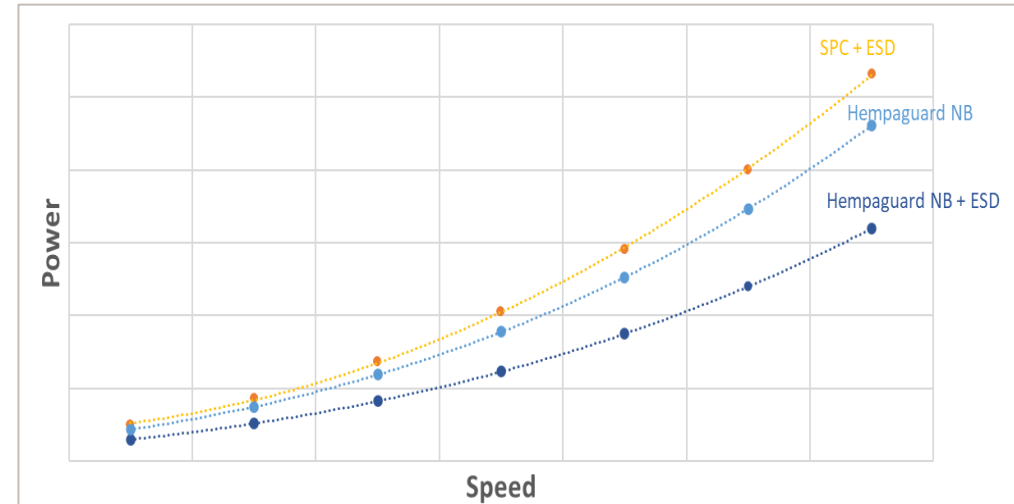


CII difference from reference year



Coating system	2025	2026	2027	2028	2029	2030
Hempaguard NB + ESD	2.2 (C)	1.96 (B)	1.99 (C)	2.03 (C)	2.07 (D)	2.11 (D)
Hempaguard NB	2.2 (C)	2.07 (C)	2.10 (C)	2.03 (C)	2.07 (D)	2.11 (D)
SPC + ESD	2.2 (C)	2.09 (C)	2.24 (D)	2.22 (D)	2.29 (E)	2.35 (E)

Impact on Vref for purpose of EEDI





# Reducing emissions for your newbuild bulker

## Comparing Hempaguard to traditional SPCs



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### Industry, Innovation and Infrastructure

Paint savings up to 12%, avoiding the supply of 4,875 litres of coating



**30 t CO<sub>2</sub>e not emitted in the manufacturing and application of coatings**



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### Climate action

Reduces CO<sub>2</sub>e emissions from fuel consumption by 12%, equivalent to 5,835 t of fuel over 5 years



**18,171 t CO<sub>2</sub>e emissions avoided over 5 years**



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### Life below water

Reduction of hazardous substances in the sea: no copper oxide and minimal use of co-biocides



**10.8 tonnes of biocides not leached / released into (sea) water**



#### Assumptions:

- Vessel ID: Bulker 210k DWT
- Flat bottom m<sup>2</sup>: 11,700 / Vertical bottom m<sup>2</sup>: 10,800