

Ultra low Friction Anti-fouling



SEAFLO NEO



Series

SEAFLO NEO Z

SEAFLO NEO SLZ

Innovative fuel saving technology

SEAFLO NEO Z

Ultra low Friction Anti-fouling **Z** Series

"SEAFLO NEO Z" & "SEAFLO NEO SL Z" provide "Triple Synergy Technology*" Providing an Ultra-smooth surface which gives a long-term sustainability of ultra low FIR.

* when combined with BANNOH Z series (CMP's latest ultra smooth anticorrosive the best results are achieved)

SEAFLO NEO Z

SEAFLO NEO Z utilises innovative hydrolysis polymer, contributing to fuel saving, forming a smooth surface which has extremely low friction resistance. In addition, the lowest VOC level in the industry has been achieved as an eco-friendly, anti-fouling paint.

FIR 1.2%

SEAFLO NEO SL Z

SEAFLO NEO SL Z* realizes ultra-smooth paint film surface and an excellent hydrolysis anti-fouling property as it is designed using advanced silyl and unique pigmentation technology.

FIR 1.5%

* SEAFLO NEO SL Z is highly advanced silyl product.

After application*



Container Carrier



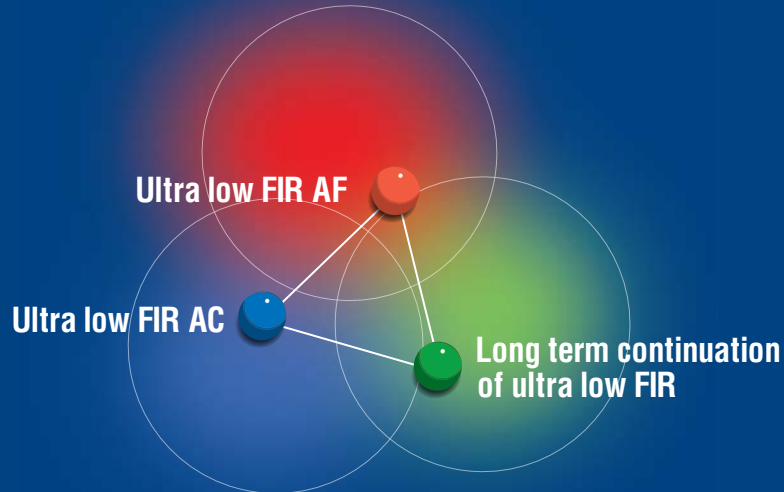
Bulk Carrier



VLCC



LNGC



3 innovative technology for Ultra Smooth Surface

Triple Synergy Technology

<p>● Ultra low FIR AF</p>	<p>Current AC + Current AF</p> <p>Rz: 111µm RSm: 3024µm</p> <p>FIR : 10.7%</p>	<p>Ultra low FIR anti-corrosive coating + SEAFLO NEO Z</p> <p>Rz: 42µm RSm: 3980µm</p> <p>FIR : 1.2%</p>	<p>Ultra low FIR anti-corrosive coating + SEAFLO NEO SLZ</p> <p>Rz: 46µm RSm: 3665µm</p> <p>FIR : 1.5%</p>
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<p>● Ultra low FIR AC</p>	<p>Current AC</p> <p>Rz: 119µm RSm: 2470µm</p> <p>FIR : 15.0%</p>	<p>Ultra low FIR anti-corrosive coating BANNOH Z Series</p> <p>Rz: 50µm RSm: 2291µm</p> <p>FIR : 2.9%</p>
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● Sustainable ultra low FIR

Ageing simulation test

FIR (%) estimation (by Ageing simulation test)

Year	Current AF (%)	SEAFLO NEO Z Series (%)
0	10.7	1.2
1	9.5	1.1
2	8.8	1.0
3	8.5	1.0
4	8.3	1.0
5	8.2	1.0

Performance*



LNGC / 25 Months



Bulk Carrier / 30 months



High Speed Ferry / 10 months

Application

SEAFLO NEO SLZ



VLCC



Gas Carrier



Container Carrier



PCC

SEAFLO NEO Z (SEAFLO NEO SLZ)



Product Carrier



Chemical Carrier



Bulk Carrier



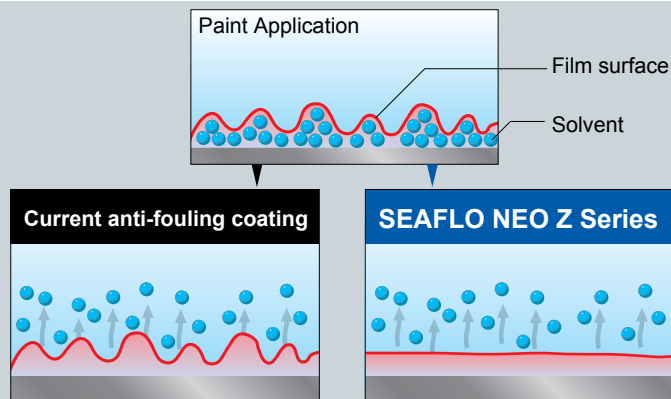
General Cargo

Result from SEAFLO NEO

		drop rate of high power	type of vessels
sea trial	ship yard 1	4.0%	Bulk Carrier
	ship yard 2	0.5 ~ 3.5%	PCC
	ship yard 3	3.5%	Bulk Carrier
	ship yard 4	2.0 ~ 2.8%	Bulk Carrier
in-service ship	ship owner A	17.1%	PCC
	ship owner B	14.3%	PCC
	ship owner C	4.4%	RORO
	ship owner D	5.0%	Container
	ship owner E	3.0%	Bulk Carrier

* The data derives from SEAFLO NEO and SEAFLO NEO SL.

Rheology control



Combination

Excellent balance of pigments and the polymer

The excellent balance of pigments, polymer and the technique of dispersion results in proper release of biocides

Ultra low FIR anti-fouling coating

SEAFLO NEO Z
Series

Ultra low FIR anti-corrosive coating

BANNOH Z series

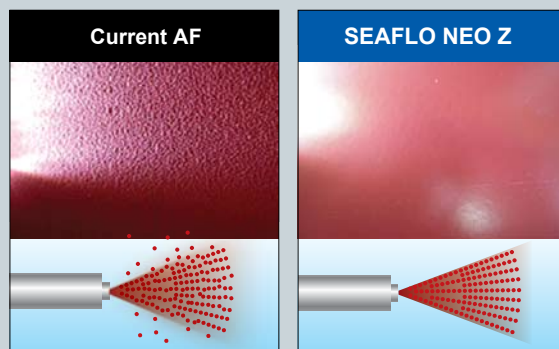
Unique spray characteristics

High solid / Less Solvent

Less dust/overspray

Attainment of smoothness of the applied film

Less impact on humans and the environment



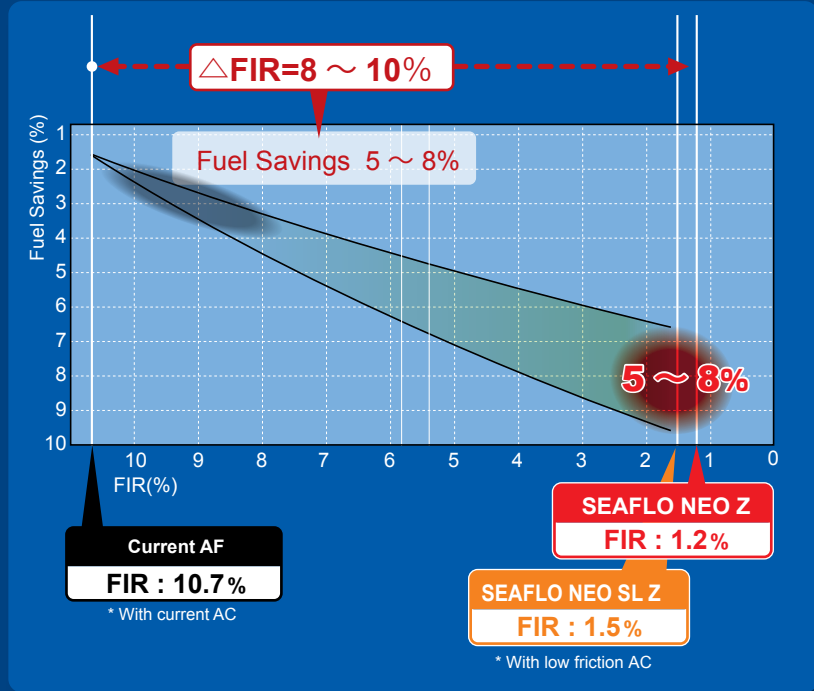
SEAFLO NEO Z Series

Fuel Savings

5~8%

*Compared with current products

It is known that the Frictional resistance is about 60-80% of the total hull resistance that greatly affects the vessels' fuel consumption. SEAFLO NEO Z series contributes to give a remarkable fuel saving with the ultra smooth surface technology.



FIR THEORY

Friction Increase Ratio

(Patent Pending)

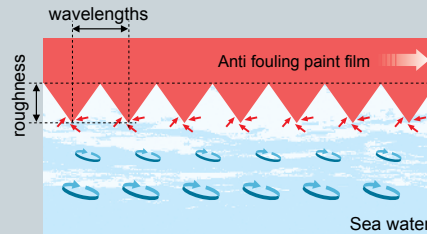
FIR theory is our indicator which is established by collaborating with Tokyo University of Science, Tokyo university of Agriculture and Technology and National Maritime Research Institute, that can be verified the fuel saving rate.

Low FIR = Higher Fuel Savings

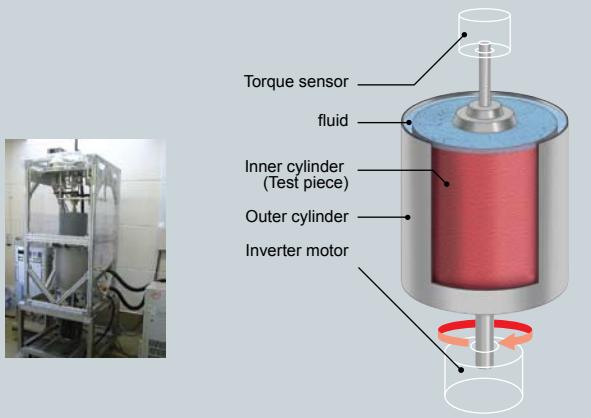
$$FIR(\%) = 2.62 \times \frac{Rz^2}{\text{wavelength}} \div \frac{RSm}{\text{wavelength}}$$

FIR can be estimated from the roughness(Rz) & wavelength (RSm) of the surface, through the above mathematic formula.

Surface roughness and turbulent flow



Double Cylinder Friction Resistance Equipment



Ultra low Friction Anti-fouling

SEAFLO NEO Z
Series

"Fuel Saving, Low VOC and Carbon Reduction"

CMP CHUGOKU MARINE PAINTS, LTD.

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