

The future of
anti-fouling, now

SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM



WHO IS SONIHULL



● Sales Offices

● Sonihull HQ

15 Years of
ultrasonic
experience

HQ in UK and
7 Sales Offices

Installed on
3,500+ vessels
and assets

62,000+
Transducers
installed



Centre of
Excellence & R&D
centre in UAE

Industries:
Marine, Steel, Oil
& Gas, Papermill,
Dairy

Resellers &
Installers in 34
countries



THE RACE TO DECARBONIZATION

1



AIMING FOR **CARBON NEUTRALITY**
SUPPORTING **LOGISTICS TRANSITION SOLUTIONS**
MAINTAINING A FOCUS **ON ENERGY EFFICIENCY**



2



2023

Entry into effect of the EEXI and CII as part of the IMO's short-term climate targets with requirement to comply by the end of the same year

2025

Planned revision of the EEXI, CII rating scheme and efficacy of the actions by the IMO

30,000+

Vessels affected

3



Getting to carbon-zero is the grand challenge of our time. But by working together, consulting expert partners, and embracing fuel flexibility, we can reach the destination.

Knut Ørbeck-Nilssen
CEO Maritime
DNV



MAERSK BROKER
SHIPBROKERS SINCE 1914

4

The shipping industry must embark on a journey towards a net zero-emission future. Currently, the shipping sector produces 2-3% of global CO2 emissions, and the maritime trade volume is expected to further increase in the next decades. That is putting high pressure on a hard-to-abate sector, that heavily relies on the use of fossil fuels. Greenhouse-gas emissions from shipping need to be reduced, and the infrastructure for new technologies must be created – making decarbonization in shipping a global challenge.

5

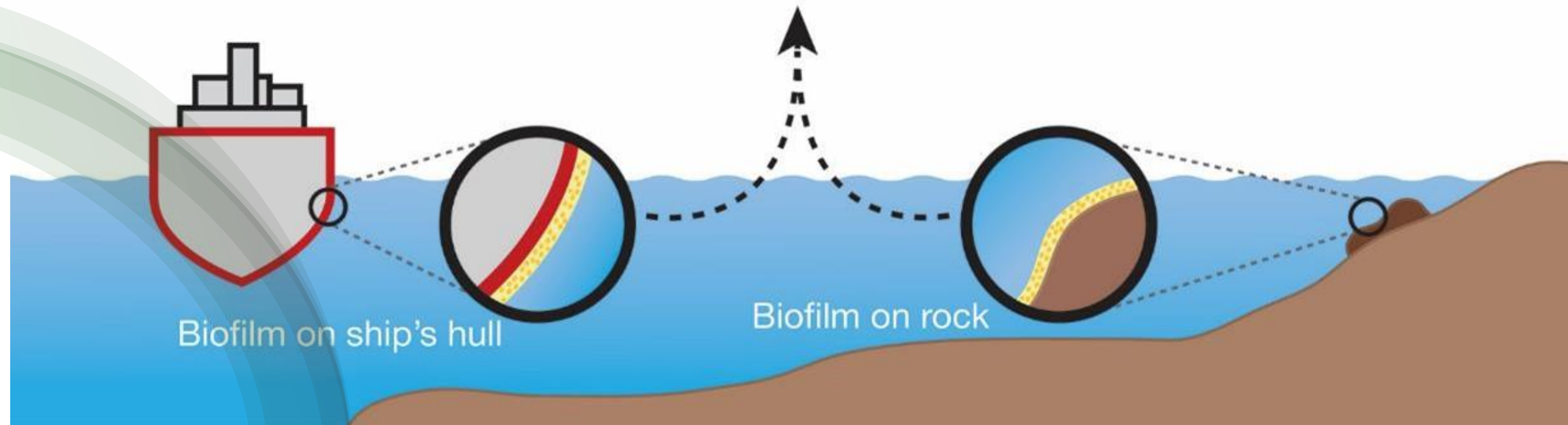
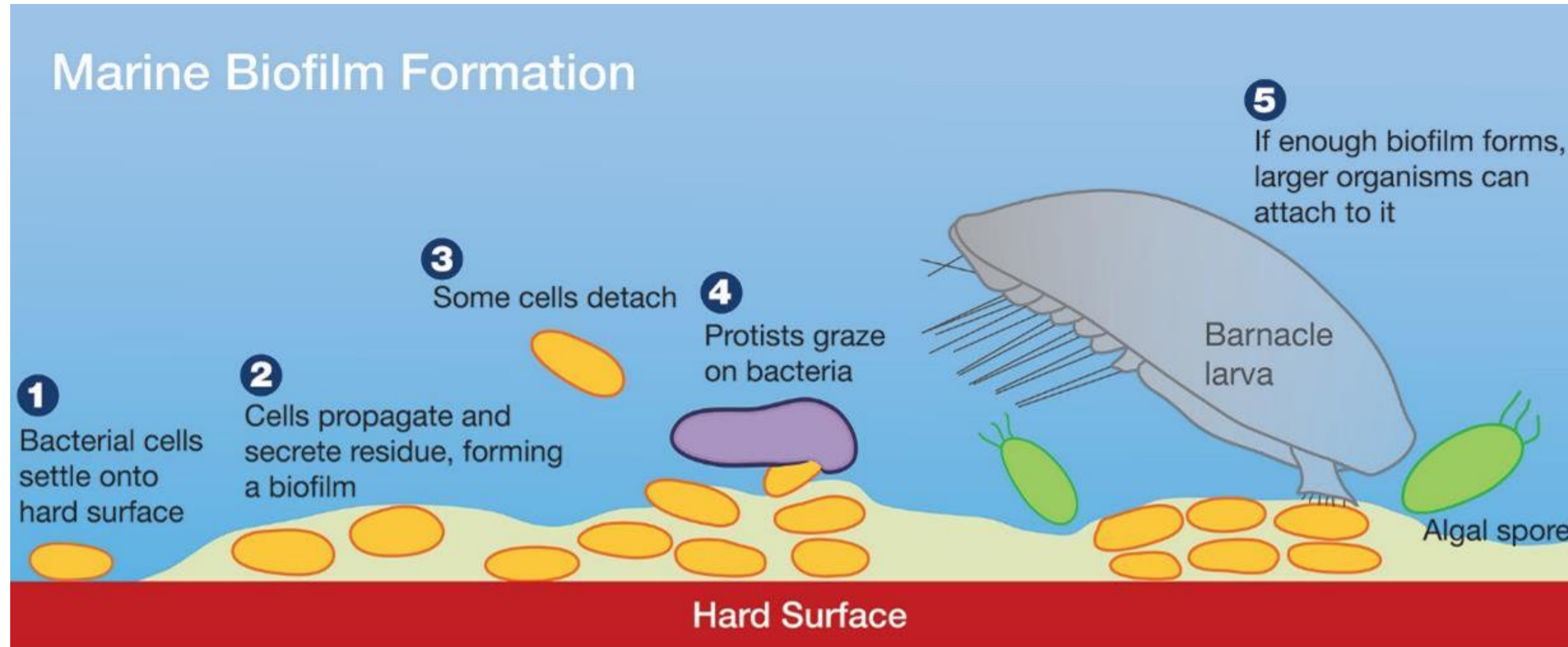


Hot Topics

IMO's work to cut GHG emissions from ships

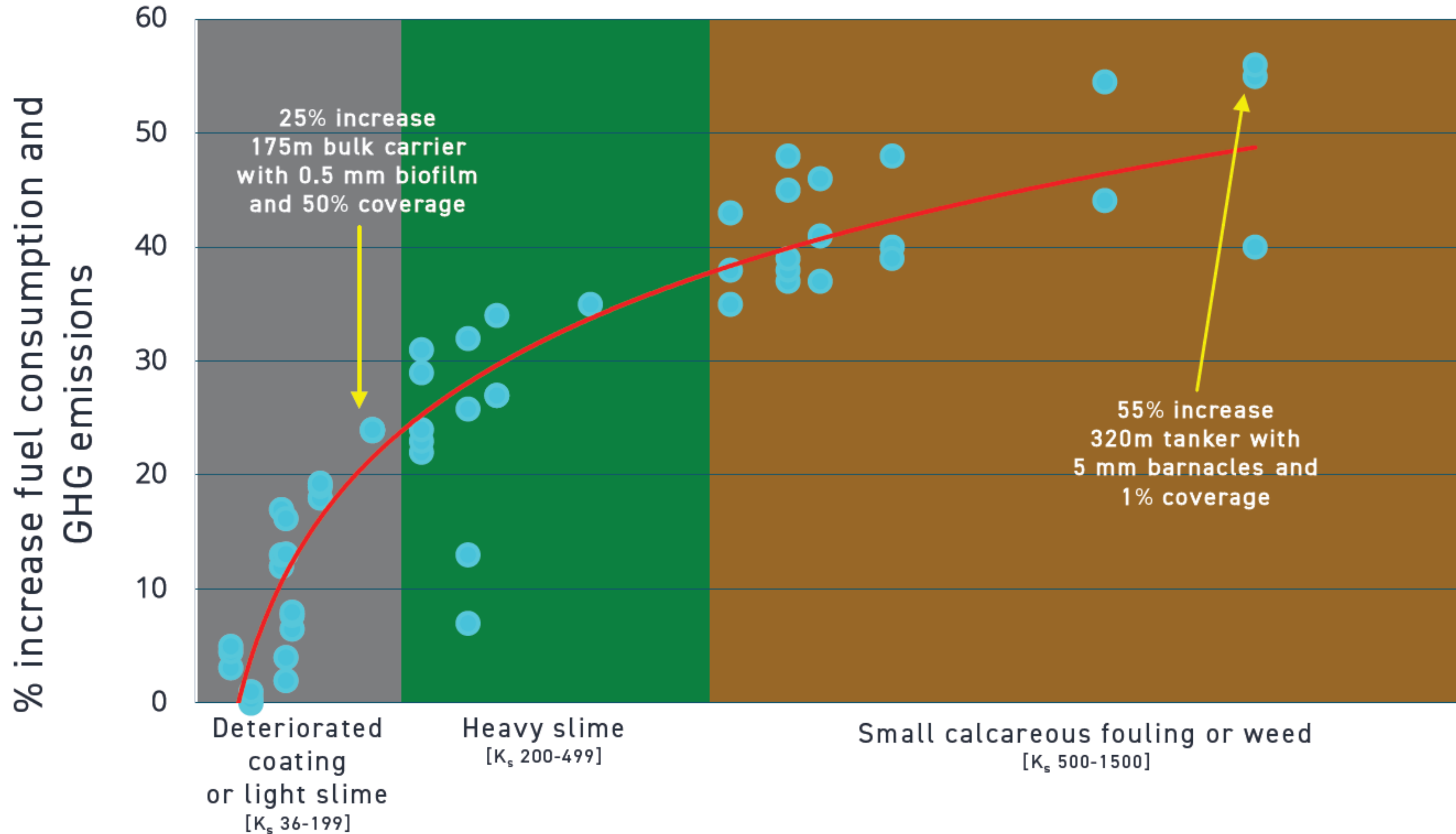


WHERE IT STARTS



THE REAL COST OF BIOFOULING

Biofouling condition



- This chart shows what fouling does to the GHG emissions of an unclean hull.
- Applying Sonihull to the hull will **prevent fouling and lower drag** on the hull
- It will also **extend the life of the coating**
- This lower drag will translate into lower fuel consumption.



THE REAL SAVINGS POTENTIAL

	Total fuel cost	Difference compared to "No cleaning"	%	Difference compared to "Always clean"	%
No cleaning	\$29.65 mil.	N/A	N/A	\$8.81 mil.	42%
Hull cleaning	\$25.64 mil.	-\$4.01 mil.	-14%	\$4.79 mil.	23%
Propeller cleaning	\$29.27 mil.	-\$0.38 mil.	-1%	\$8.43 mil.	40%
Hull & propeller cleaning	\$25.55 mil.	-\$4.11 mil.	-14%	\$4.70 mil.	23%
Ultrasonic anti-fouling for propeller	\$28.85 mil.	-\$0.80 mil.	-3%	\$8.00 mil.	38%
Hull cleaning + Ultrasonic anti-fouling for propeller	\$25.27 mil.	-\$4.39 mil.	-15%	\$4.42 mil.	21%
Proactive cleaning (hull & propeller)	\$23.07 mil.	-\$6.58 mil.	-22%	\$2.22 mil.	11%
Always clean	\$20.85 mil.	-\$8.81 mil.	-30%	N/A	N/A

Sonihull protects all wetted areas including niche areas.

Sonihull offers protection to areas where cleaning is difficult and costly.

Protection with Sonihull will:

- Reduce fuel burn
- Reduce GHG emissions
- Reduce maintenance and cleaning
- Reduce risk of carrying invasive species
- Prolong coating life

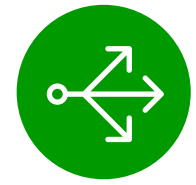


Note: This slide is a snapshot of one scenario. The data that we have used are the example the IMO used of vessels with an industry average cruising speed and over a 5 year docking cycle. The IMO report contains the tables and equations and they can be applied to each individual vessel.

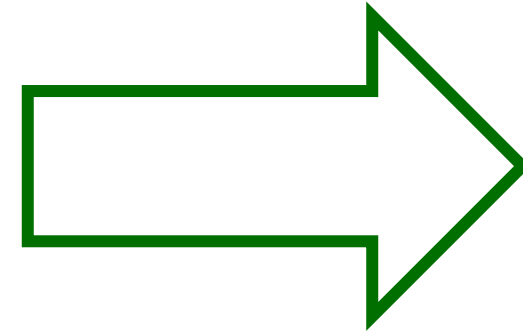




SONIHULL'S ROLE IN DECARBONIZATION



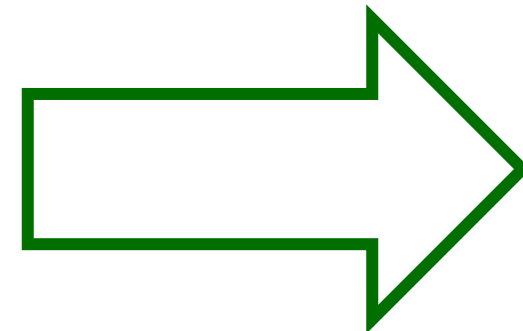
IMO Compliance & Regulation



IMO ban on biocides by 2026 -> Sonihull is future proofing vessels with green technology.



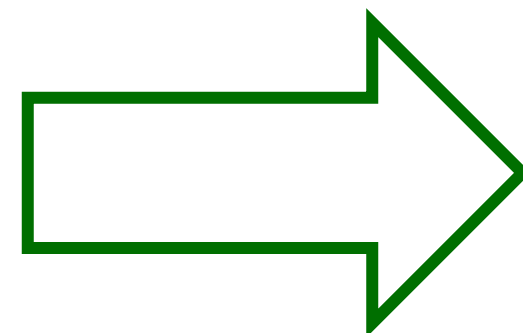
Lower Fuel Consumption & Reduced Carbon Emission



Clean propeller = improved vessel efficiency & fuel saving
Clean hull = improved vessel efficiency & substantial fuel saving
Reduced CO₂e due to reduced drag



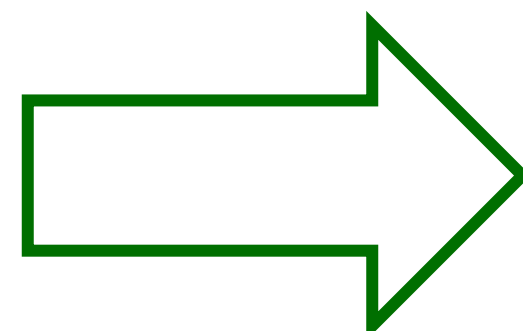
Environmentally Friendly



Effective bio-fouling without the poisonous environmental legacy of biocides or microplastics.



Lower Operating Costs



Reduced capital and MRO costs:
-> no anodes
-> extend coatings life cycle



SONIHULL ULTRASONIC ANTIFOULING



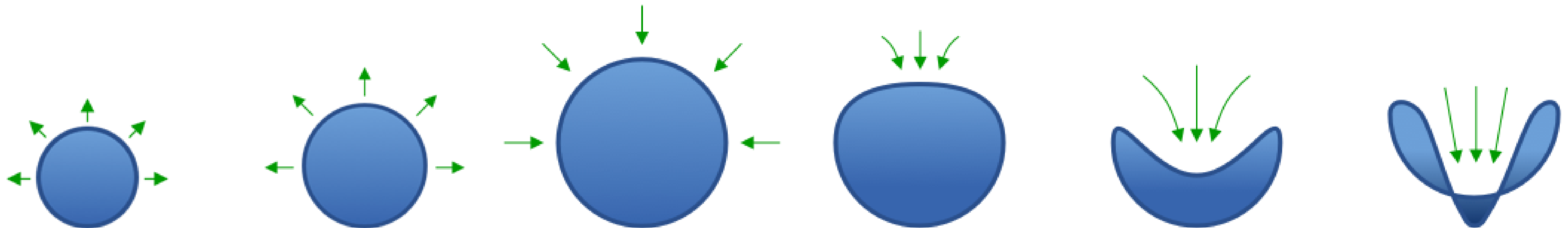
Sonihull antifouling systems use the **power of ultrasound** to protect the inside and outside of marine vessels and structures from **unwanted marine growth**.



'Ultrasonics are industry proven over decades of time'

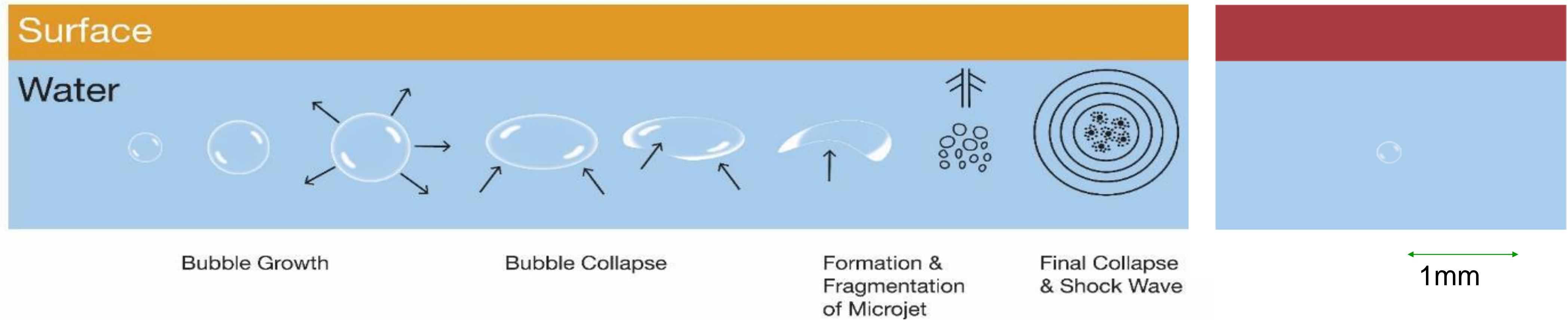
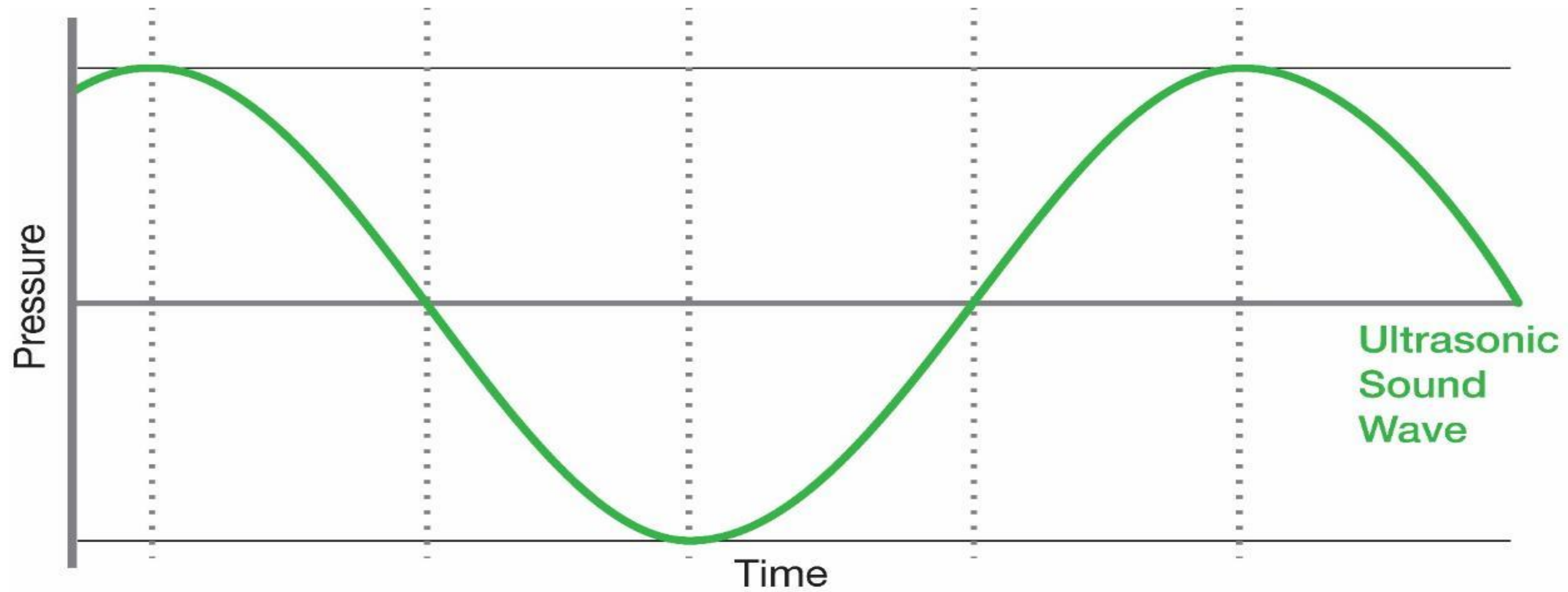
NON-INERTIAL CAVITATION

In a process called **agitation**, microscopic bubbles are created during the reduced pressure cycle and **are imploded** as the pressure increases.



The microscopic agitation has a **cleansing effect** which prolongs the attachment of surface algae **extending maintenance cycle**.

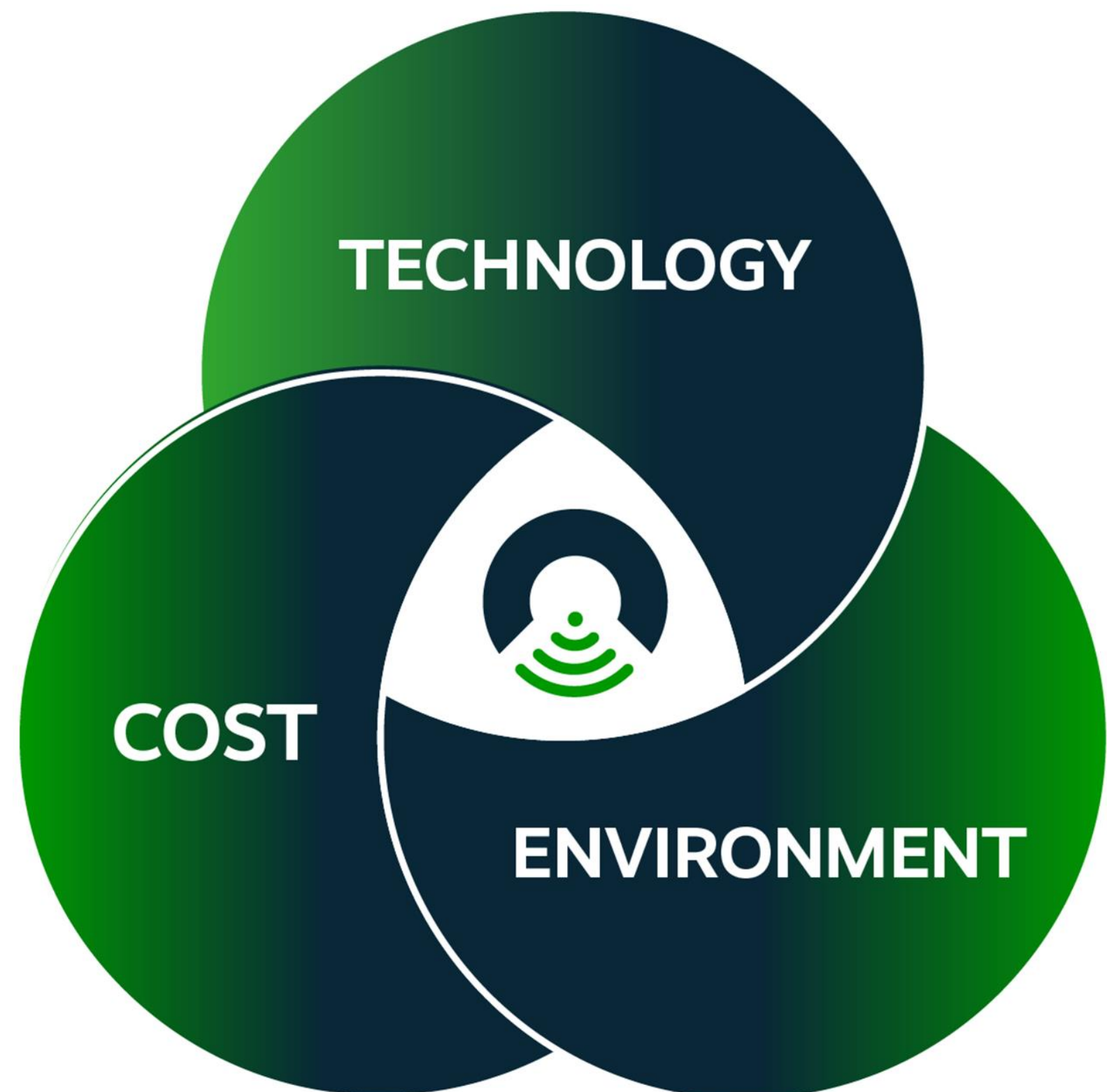
100% A GREEN TECHNOLOGY





SONIHULL IS BASED ON 3 PILLARS

- **Green Technology**
- **Protecting the environment**
- **Reducing cost for our customers**



Vessels are *under attack* of Bio-Fouling at all times and the problem is increased when the vessel is stationary.

Fitting a Sonihull system *proactively protects* by avoiding unnecessary Monthly & Quarterly cleans whilst *reducing cost* in vessel maintenance, *extending the lifecycle* of vessel systems & equipment.



“We can save the industry at least **160 million tonnes** of CO₂.
What’s more, we can do it **right now**”

SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM

Cut **fuel burn** and **reduce CO₂e - Today**

Simple installation of Sonihull on the stern tube & in some cases intermediate block will protect the propellor blades from bio-fouling, extending the time between propellor polishes and instantly improving the vessel’s fuel efficiency.

SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM



CONCLUSIONS – SONIHULL ULTRASONIC ANTI-FOULING

- Ultrasound – Industry Proven Solutions
- Capital & MRO Savings
- CO2e Reduction - Ships Systems & Propulsion
- Fit & Forget System with no consumables
- Retrofit – in the water
- Future Proof - For New Builds
- Zero Biocides - 2026 deadline is fast approaching to ban biocides by IMO
- Zero Poisonous Environmental Legacy

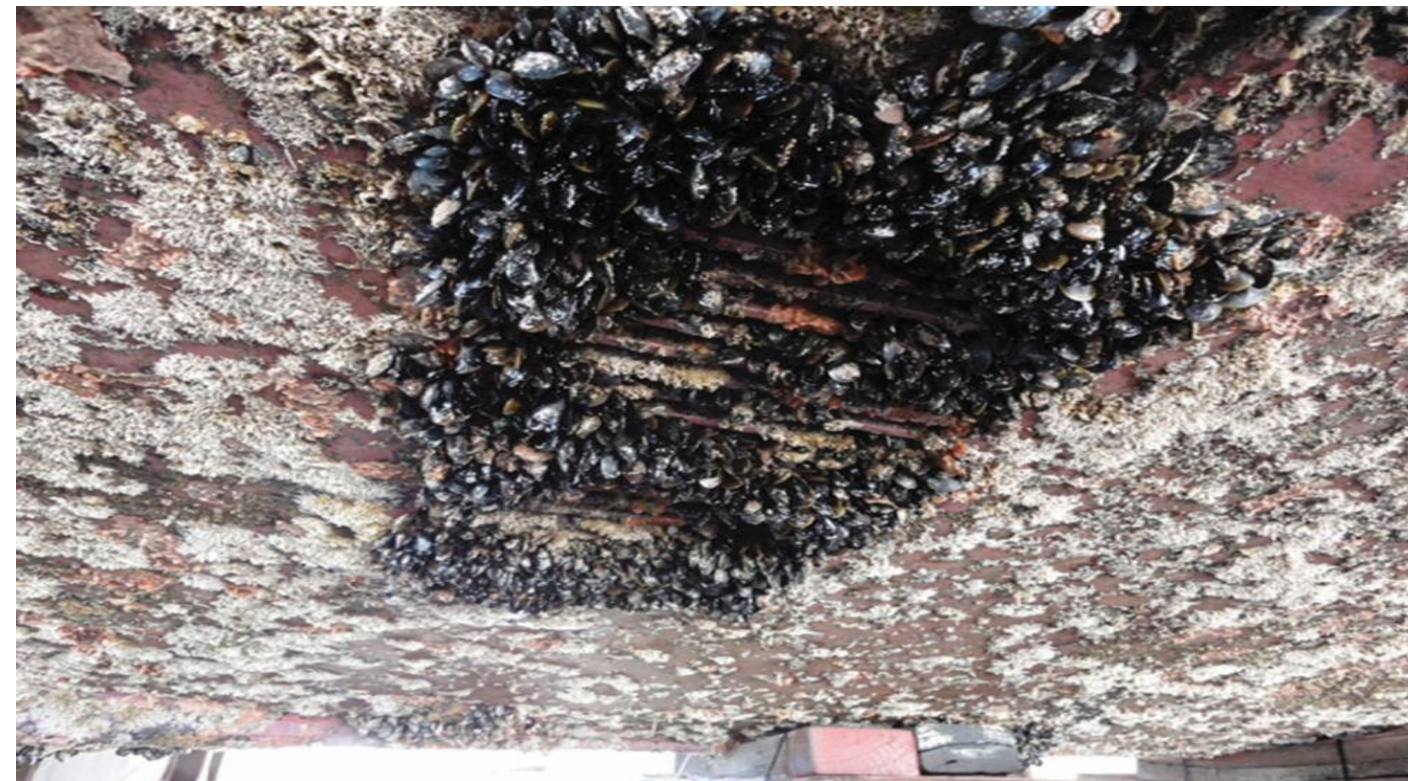
'Fit today, save today & contribute today'



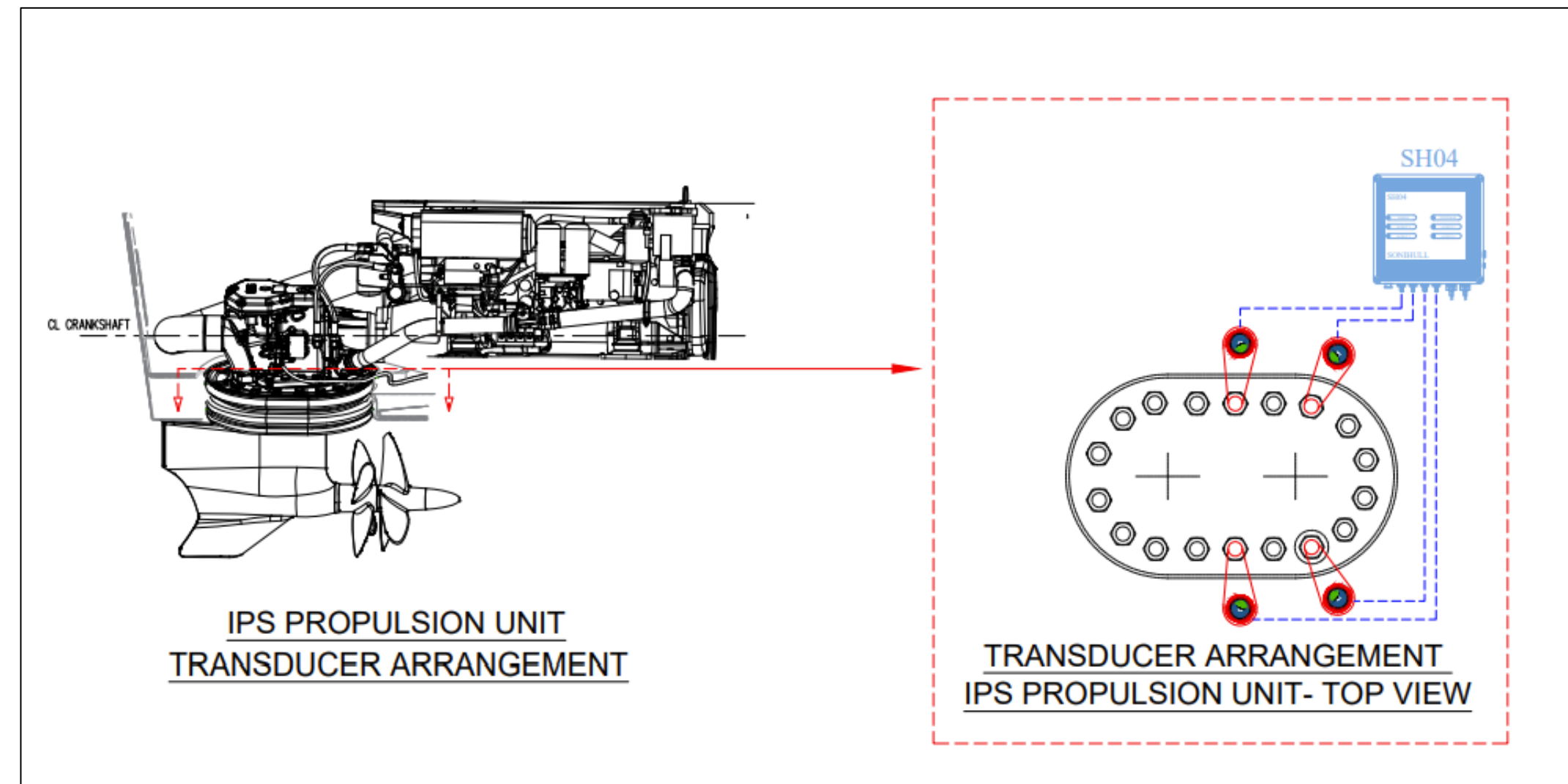
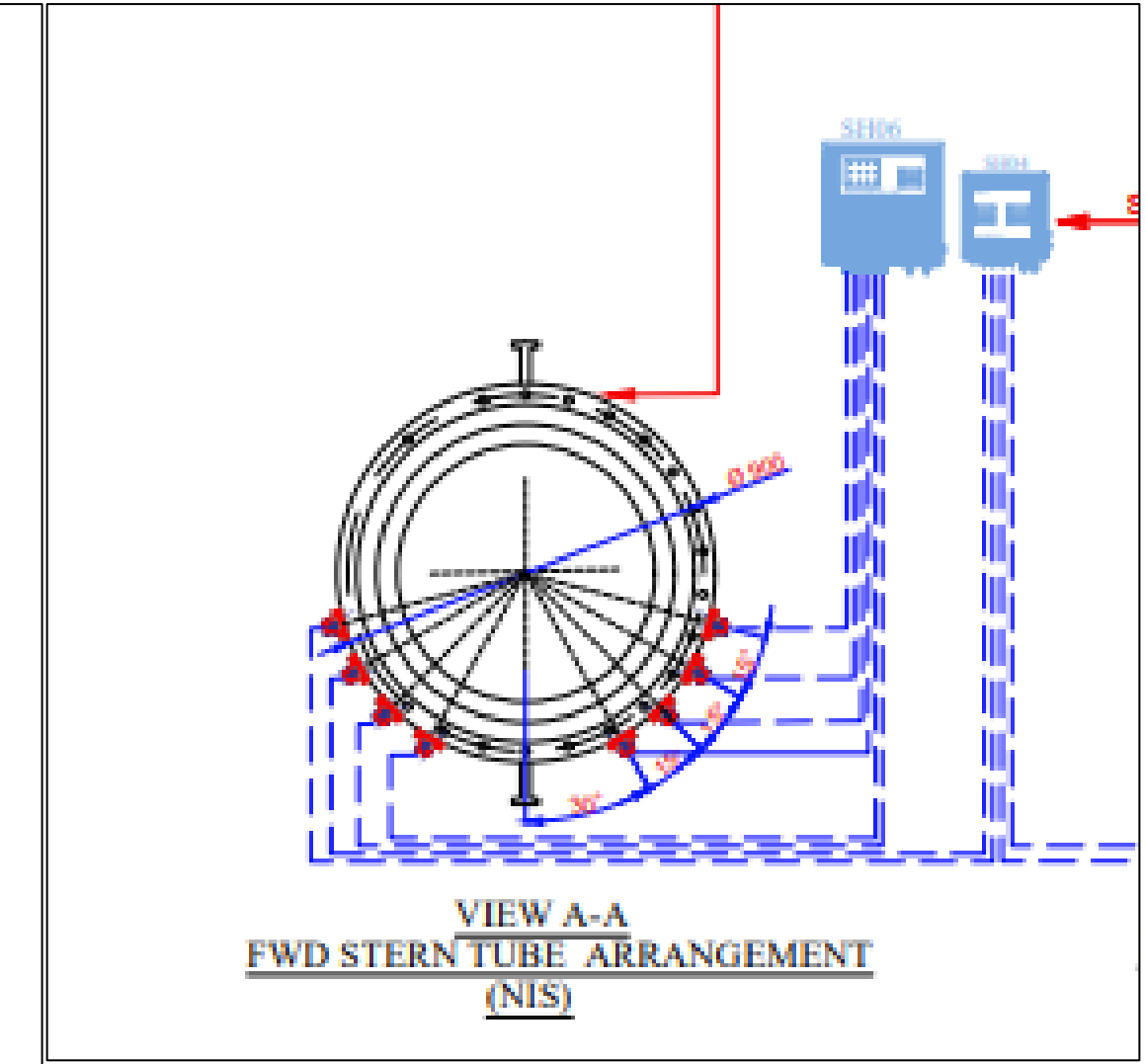
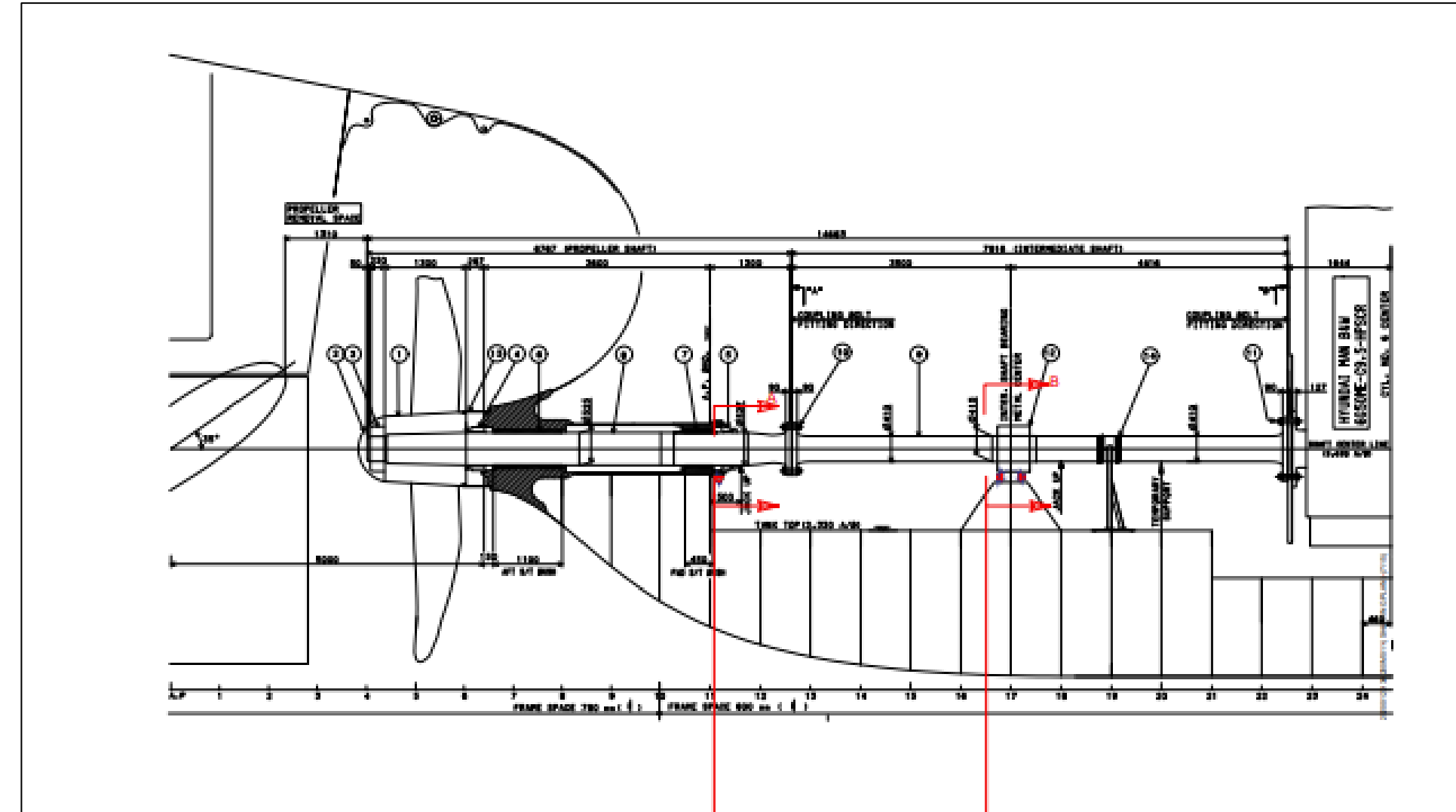
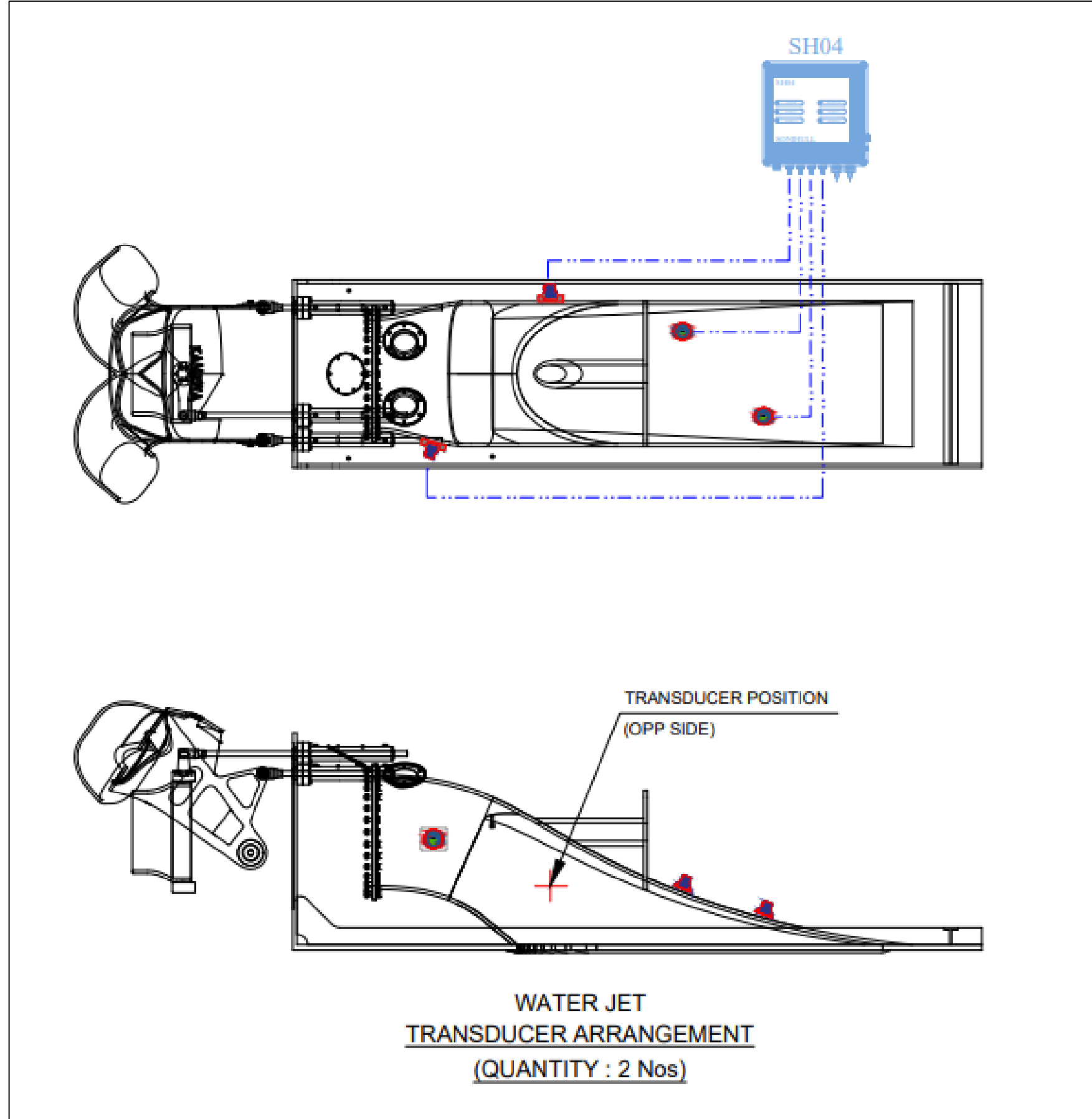
SONIHULL APPLICATIONS

SONIHULL

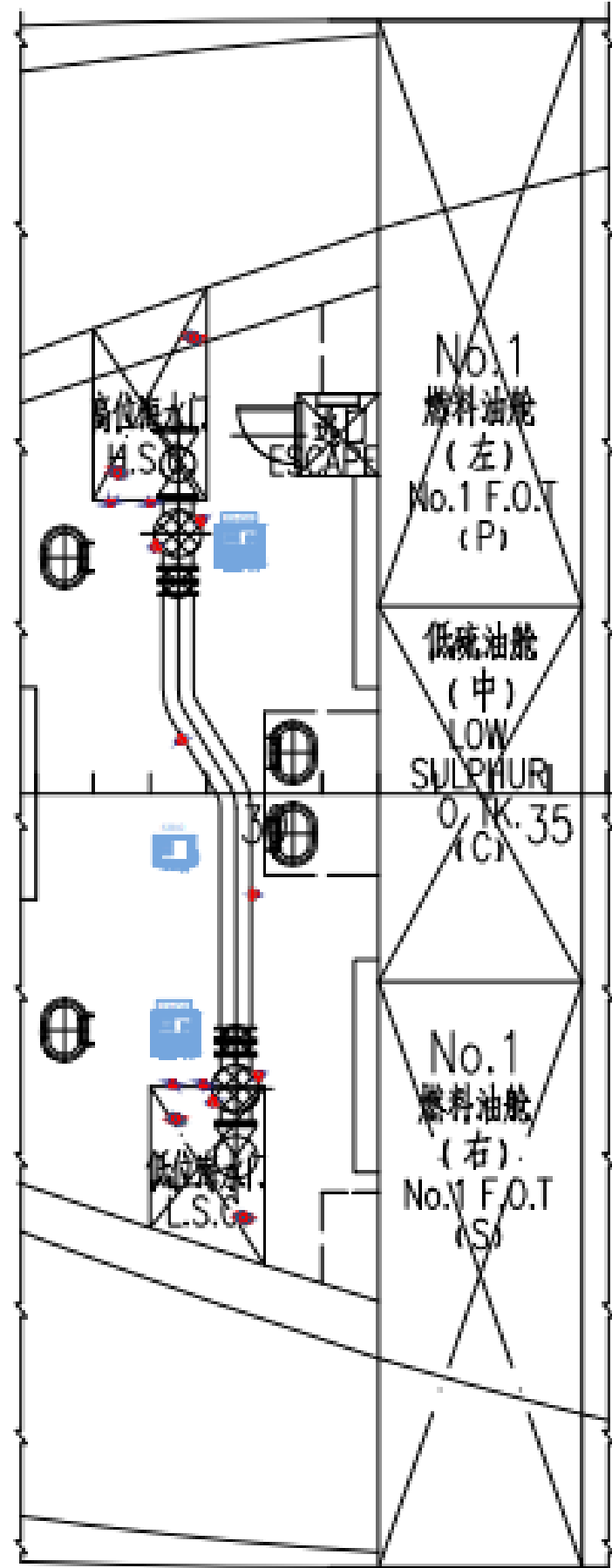
ULTRASONIC ANTI-FOULING SYSTEM



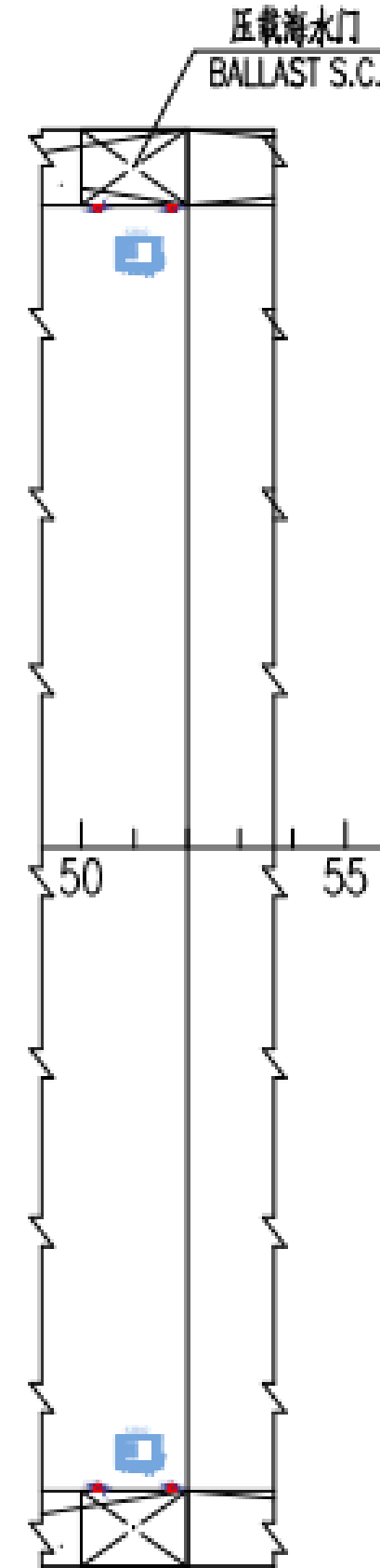
PROPELLOR AND DRIVE PROTECTION



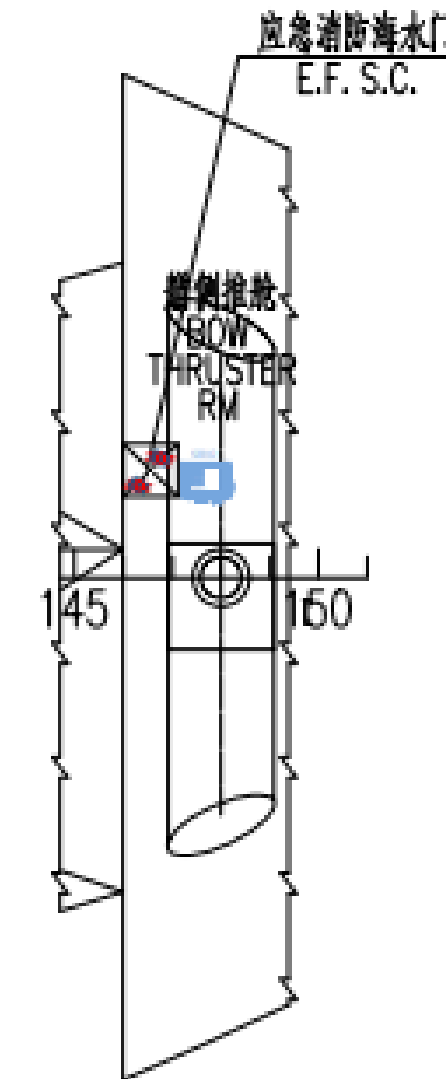
SEA WATER & COOLING PROTECTION SOLUTIONS



SEA CHEST, STRAINER, CROSS OVER PIPE
TRANSDUCER ARRANGEMENT

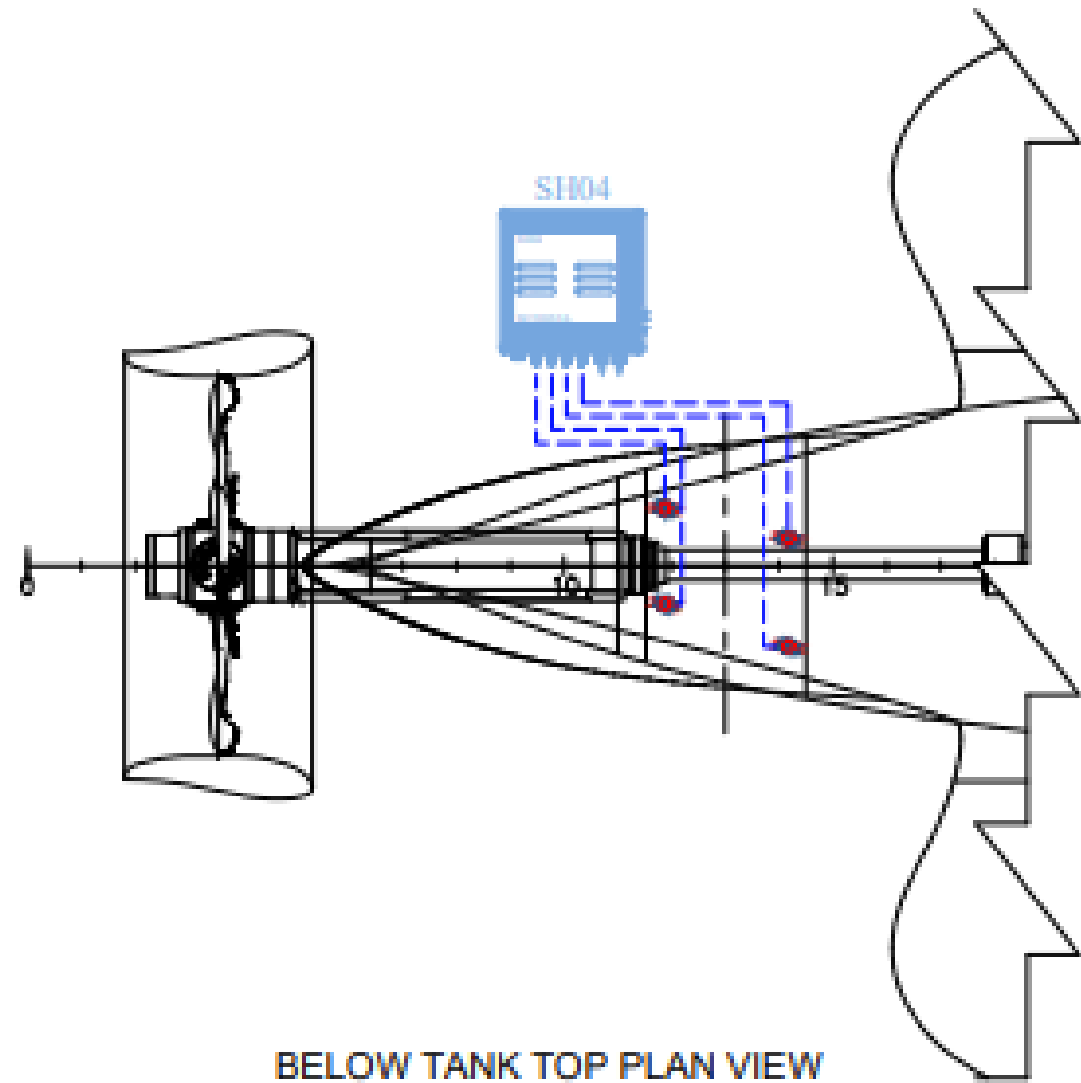


BALLAST SEA CHEST
TRANSDUCER ARRANGEMENT

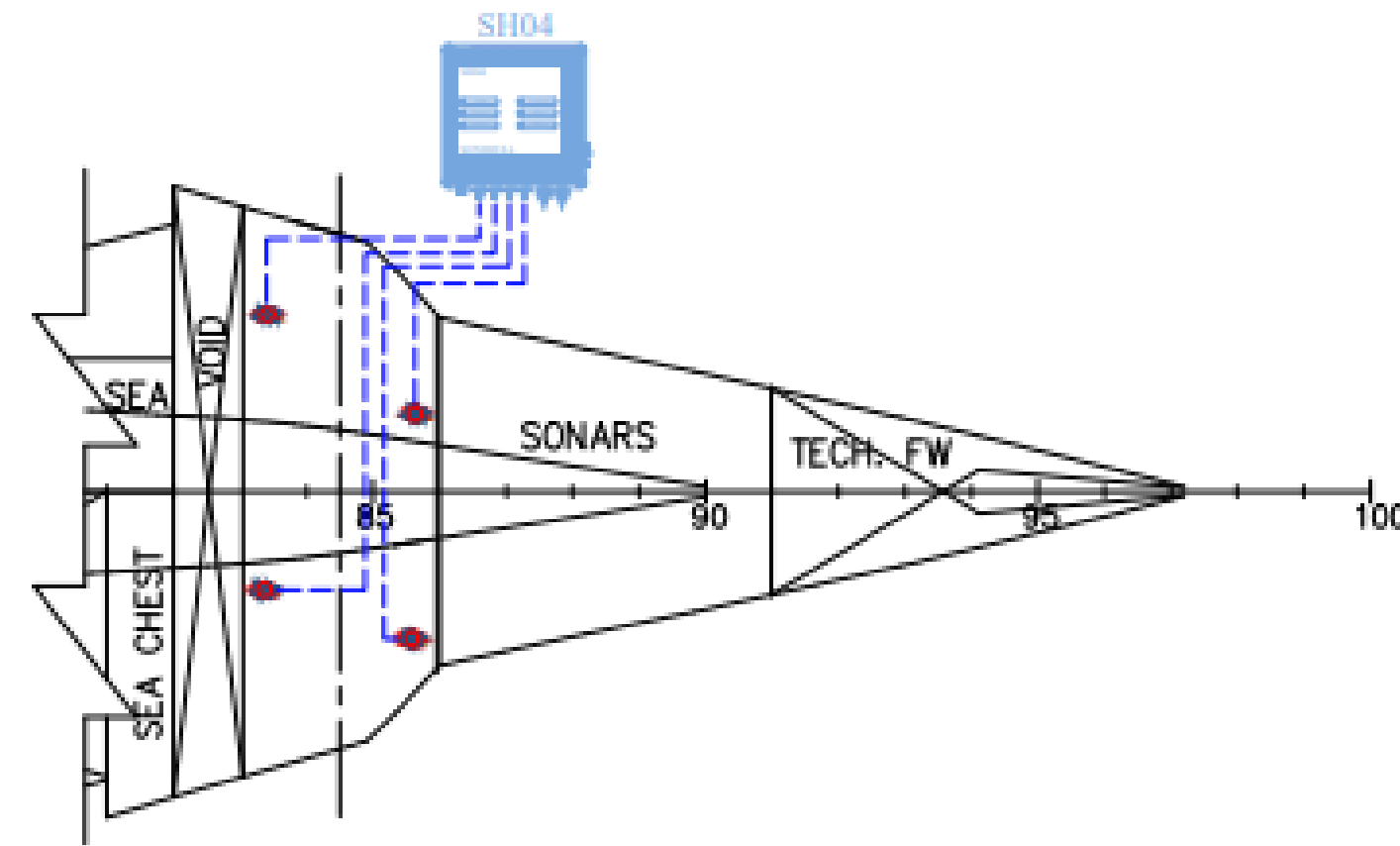


EMERGENCY SEA CHEST
TRANSDUCER ARRANGEMENT

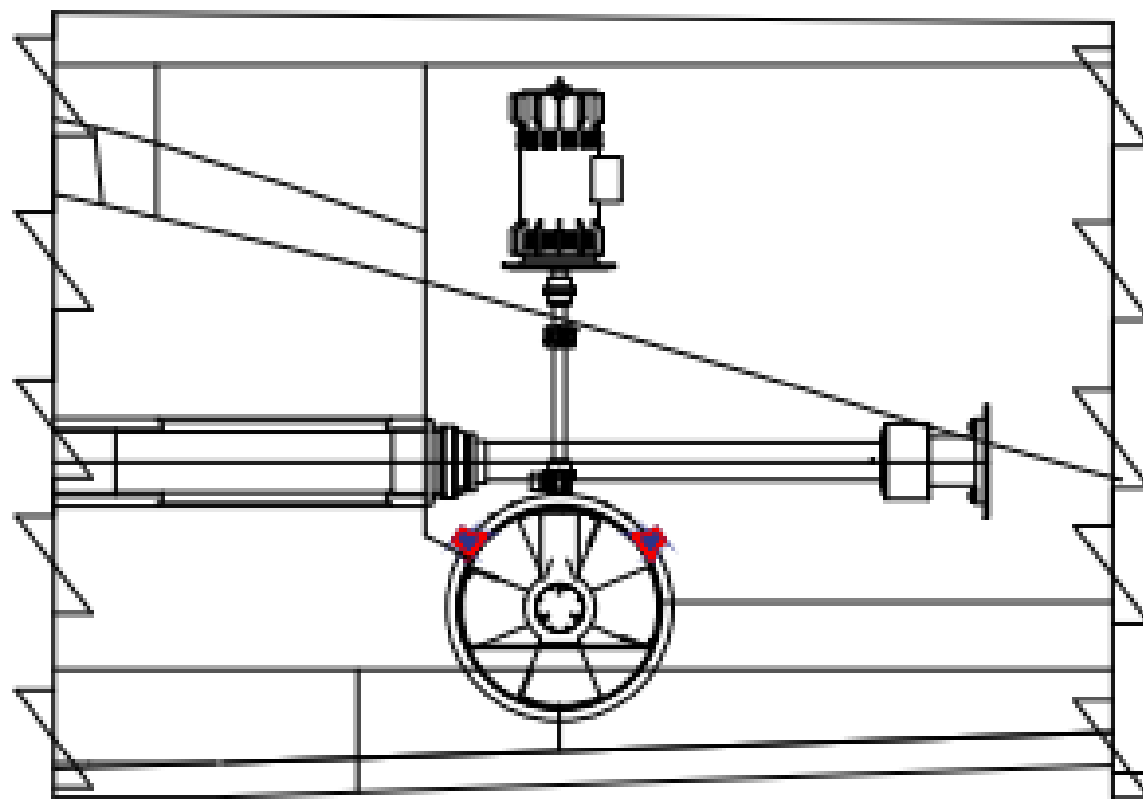
THRUSTER PROTECTION SOLUTIONS



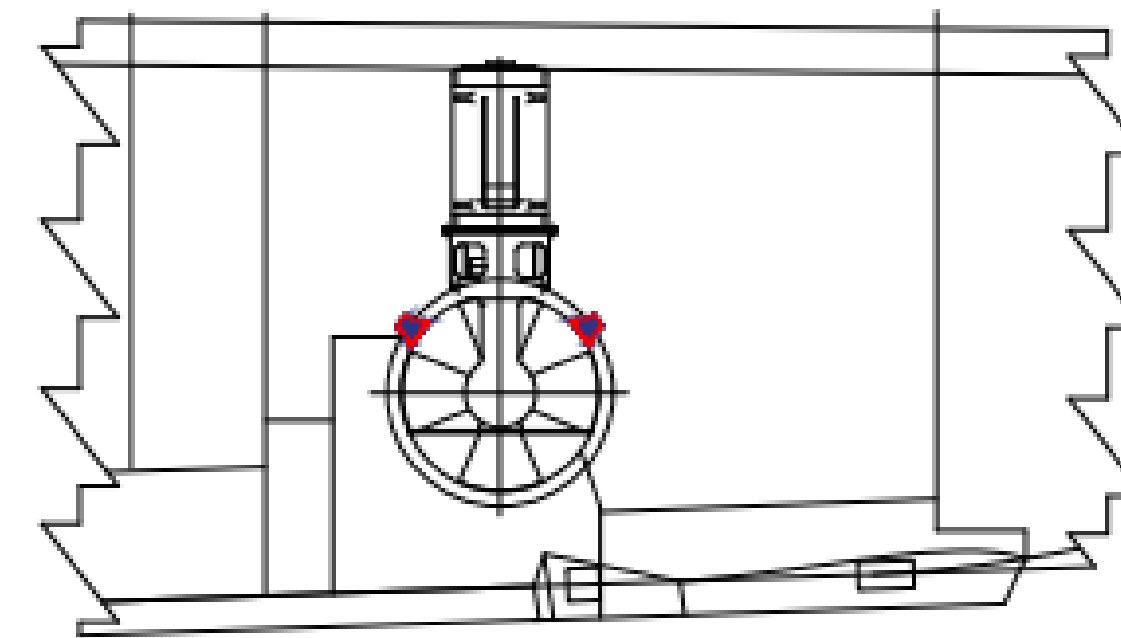
BELOW TANK TOP PLAN VIEW
AFT THRUSTER TRANSDUCER ARRANGEMENT



BELOW TANK TOP PLAN VIEW
FWD THRUSTER TRANSDUCER ARRANGEMENT

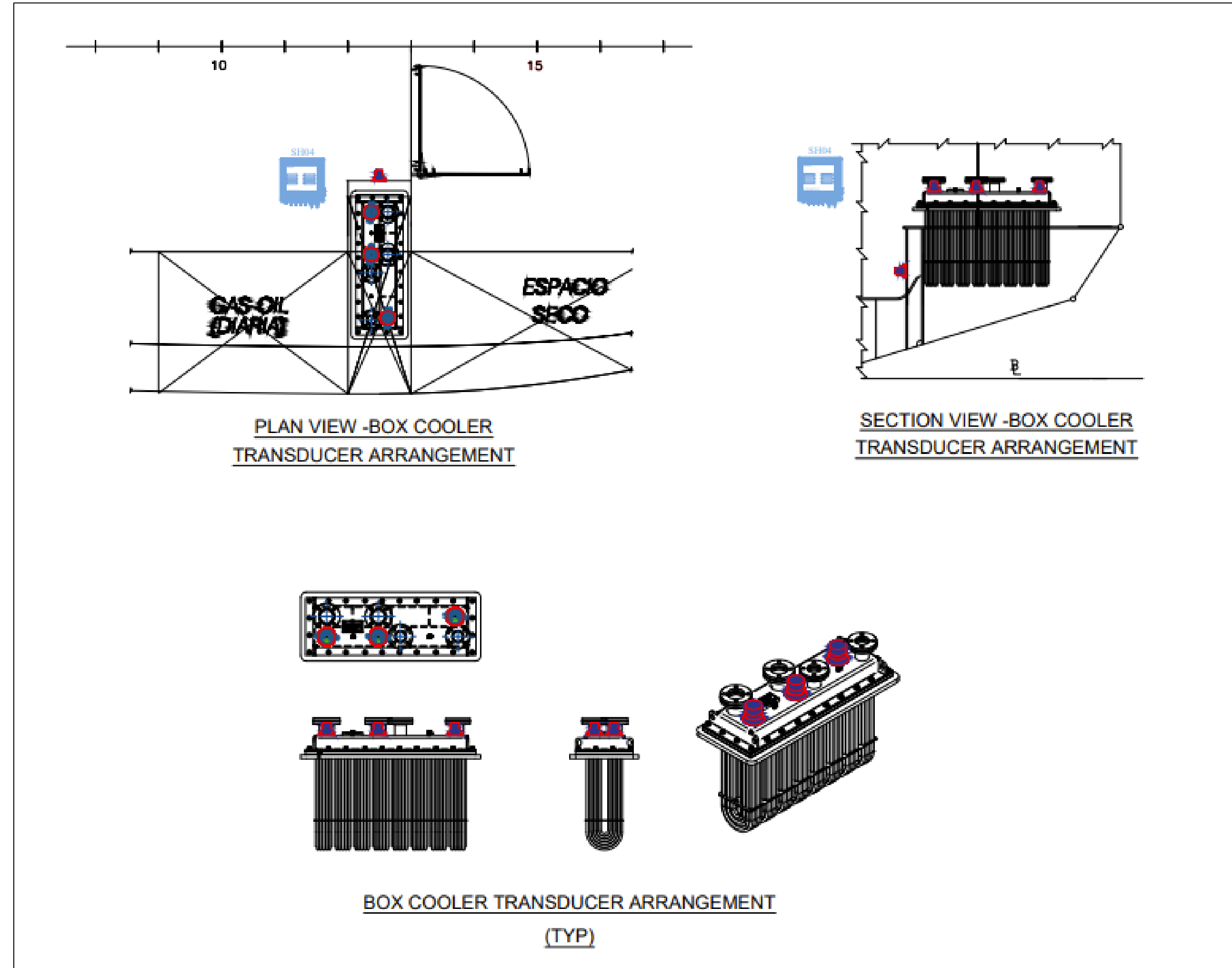
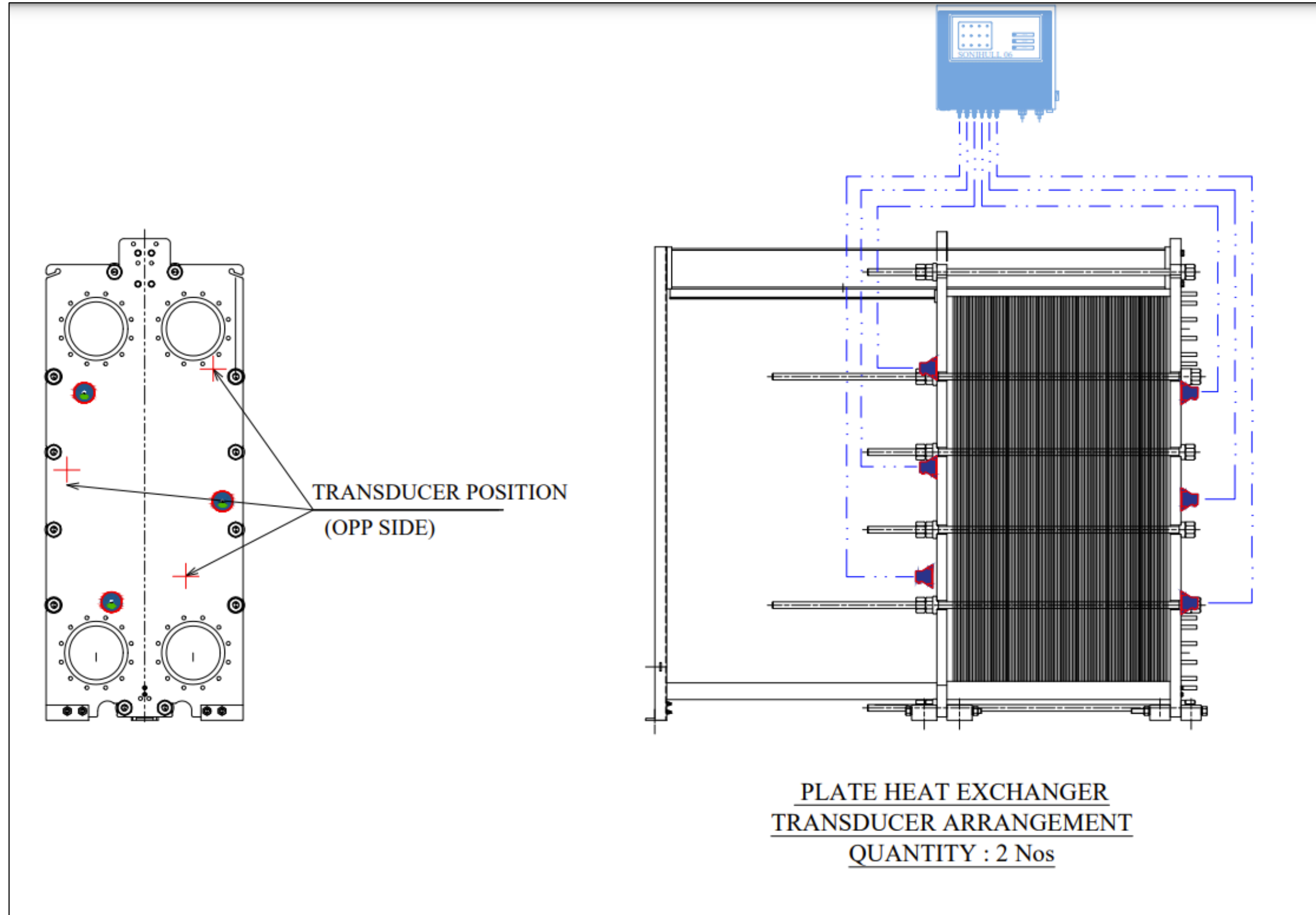


AFT THRUSTER - PROFILE VIEW
TRANSDUCER ARRANGEMENT



FWD THRUSTER - PROFILE VIEW
TRANSDUCER ARRANGEMENT

HEAT EXCHANGER & BOX COOLER SOLUTIONS



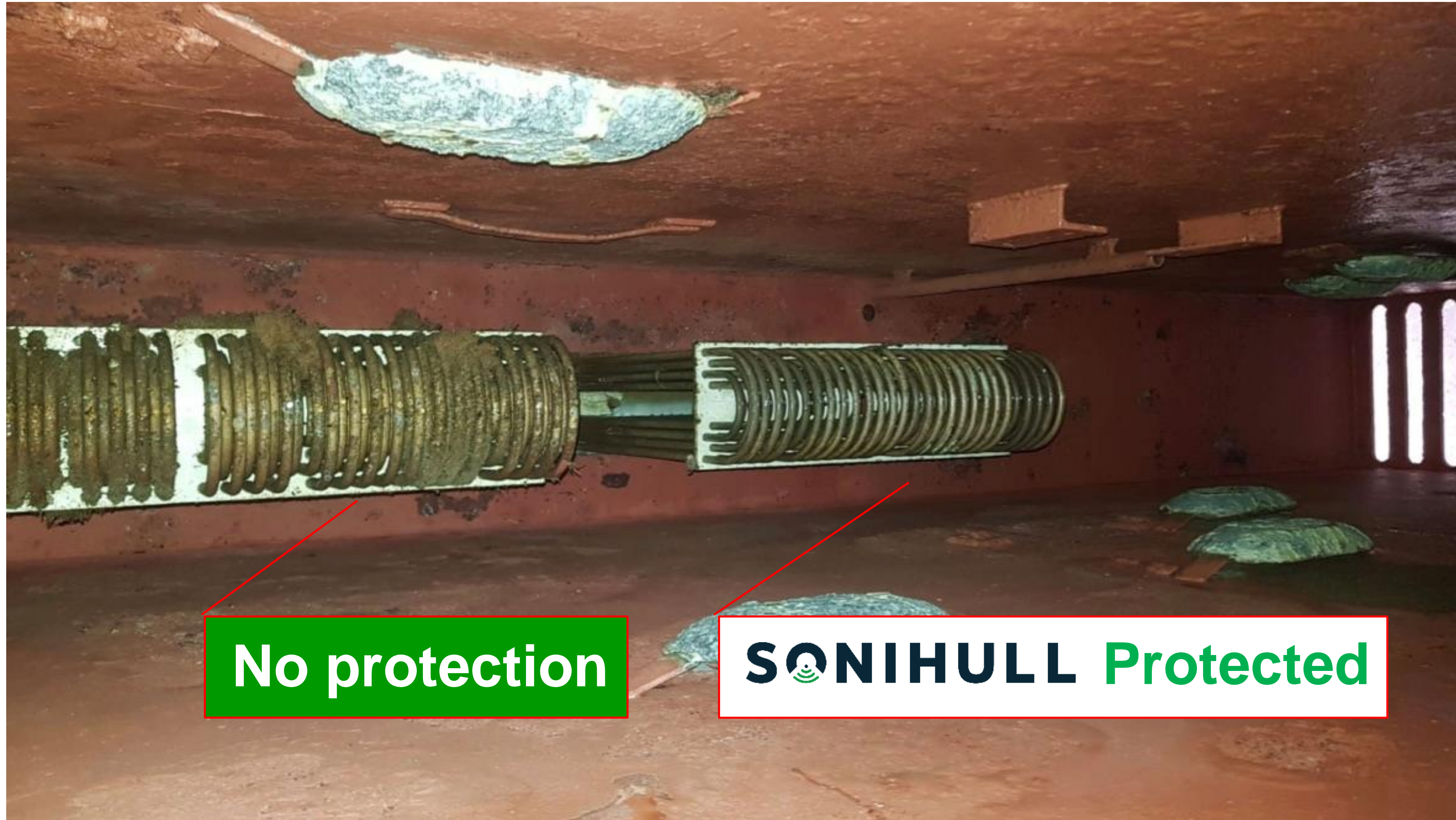


CASE STUDIES - BEFORE & AFTER

SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM



RESULTS AFTER 12 MONTHS



No protection

SONIHULL Protected

FOULING WITHIN 4 MONTHS – WITHOUT SONIHULL



Port side RSW pipework
after 4 months operation
without Ultrasonic
protection

Totally blocked by mussels



CLEAN AFTER 14 MONTHS WITH SONIHULL FITTED

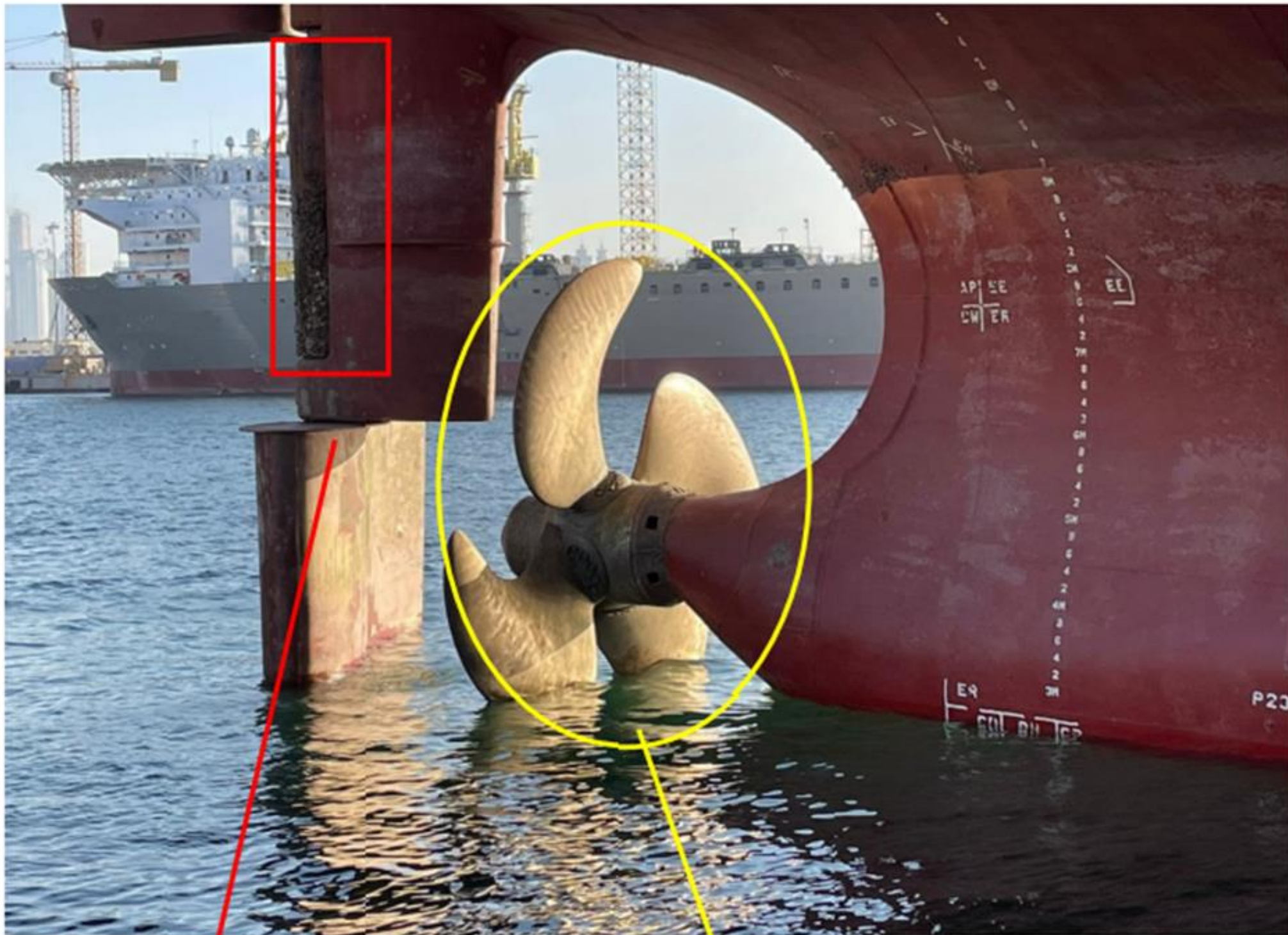


Here's the Starboard side RSW valve on the same vessel after 14 months operation with Ultrasonic protection



CPP PROPELLOR (8m) WITH SONIHULL

- 12 Months Installed with 1 x Soni 8
- 45 Days at Anchorage - no turn or movement
- Zero fouling



Bio Fouling after Anchorage of 45 days

Propeller remained clean inspite of the Bio fouling affecting other areas of the vessel



COMPONENTS INCLUDED

Sonihull 8

- Sonihull ultrasonic Control Box with 8 outputs
- 8 x Ultrasonic Transducers each with 7.5m of cable and transducer mounting rings
- Mains cable with standard UK 3-pin fused plug
- Marine grade epoxy for bonding transducer mounting rings to surfaces
- Transducer gel

TECHNICAL SPECIFICATIONS

Sonihull 8

Power Supply Approvals	UL and CE
Voltage	115/230V AC 50/60Hz (180mA) or 13-30V DC (2.5A)
Avg. Power Consumption	34 Watts AC or 31 Watts DC
Supply Breaker	20 Amps
Ultrasonic Frequencies	19.5 kHz – 55 kHz
Control Box IP Rating	IP53
Transducer IP Rating	IP68
Transducer Cable Length	7.5m (extendable up to 80m)
Weight	Control Box 9kg, Transducers 9.6kg, Total Boxed 20.6kg
Control Box Dimensions	388 x 340 x 100mm (W x H x D)
Mounting Ring Dimensions	95 x 24mm (Ø x H)
Transducer Dimensions	76 x 75mm (Ø x H)



Before and After Sonihull

Before - 12 months of normal operation with existing AF systems and regimes.

After - 12 months of normal operation after cleaning & fitting Sonihull system.



Box Coolers & Seachests



Pipework & Valves



Hulls & Keel Coolers



SONIHULL IN SUMMARY



Environmentally Friendly

Effective bio-fouling without the poisonous environmental legacy of biocides or microplastics.



Easy Installation

No drydocking, no through-hull fittings, no expensive Impressed Current Antifouling copper anodes to replace.



Microbial Control

Ideal for bulk storage. Sonihull suppresses Diesel bug and keeps potable water fresher for longer.



Lower Operating Costs

Can save up to 95% of capital and MRO costs when compared to impressed-current antifouling systems.



Less Downtime

No cleaning hard-to-reach areas, extended maintenance intervals, less downtime and reduced running costs.



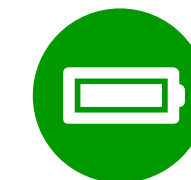
No Disturbance

Inaudible to humans and marine life with no interference to sonar and electronic equipment.



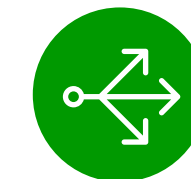
Lower Fuel Consumption

Clean hull, propellers and rudders can reduce fuel consumption by up to 30%.



Low Power Consumption

At only 3.6 Watt-hours per transducer, Sonihull is ideal for onboard, standby or remote power.



Easy System Integration

Compatible with RS232/RS422, Modbus communication interface for remote control with critical path fault monitoring.

Thank You

SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM

