

CLEANSHIP

Innovative solution to ship hull fouling

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Hull fouling...a costly plague

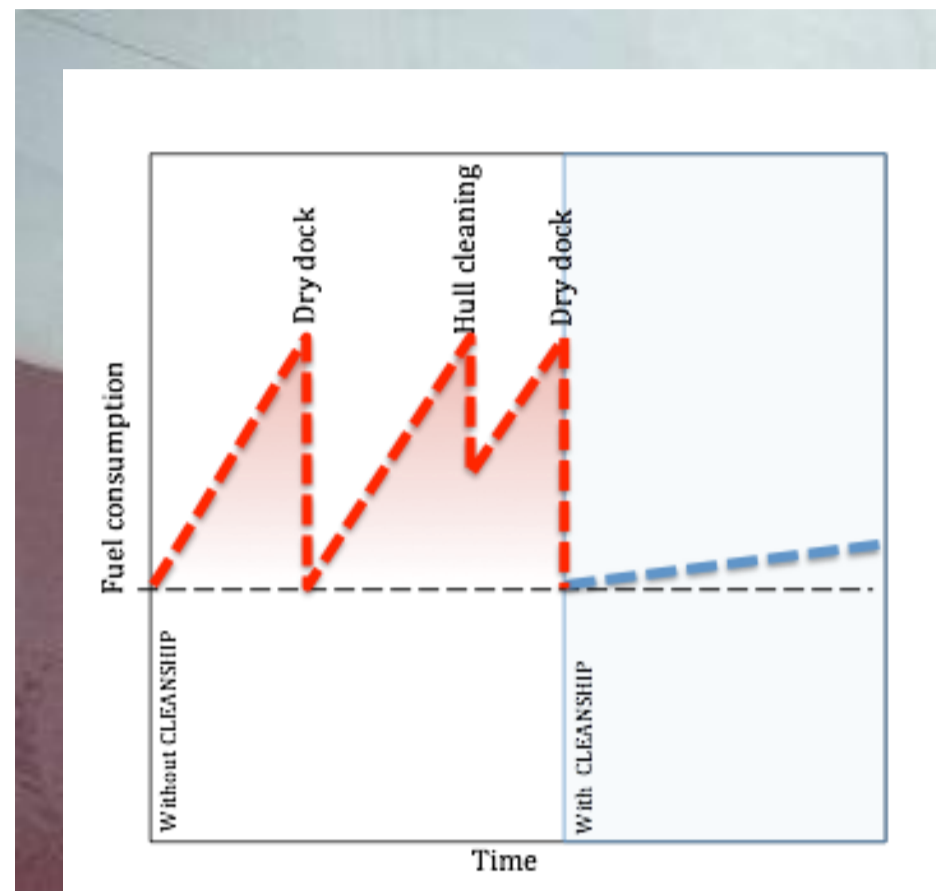


Figure 1. Clanship concept illustration targeting reduced idle time of the ship, ultimately due to improved fouling management.

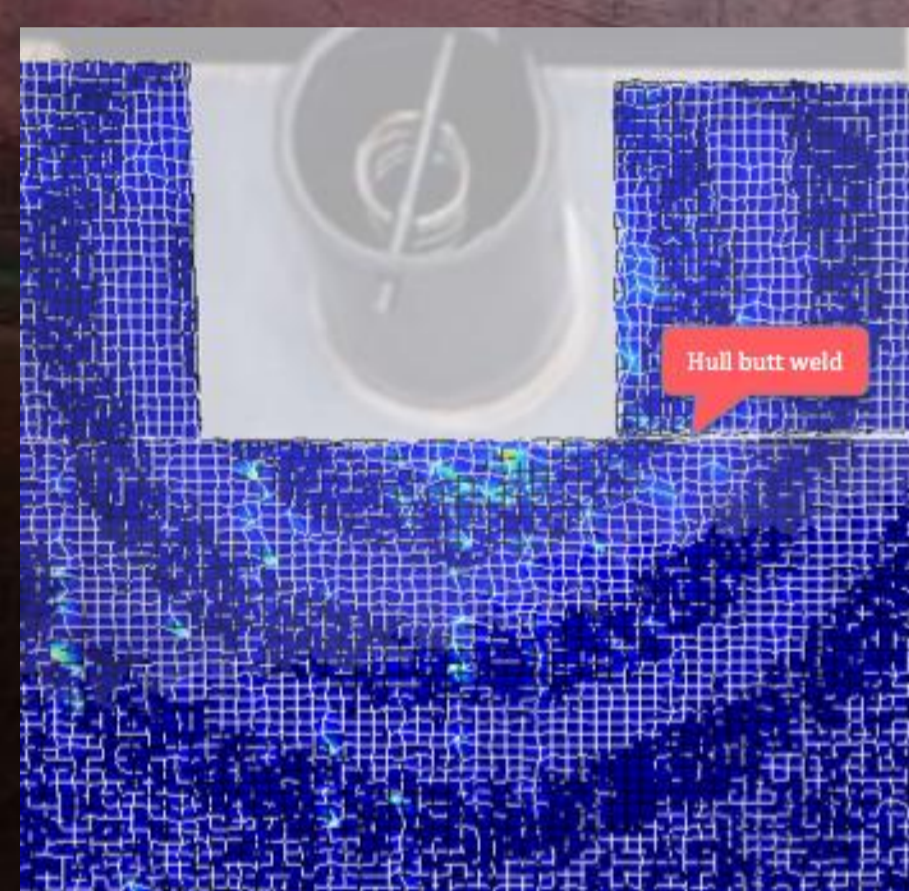


Figure 2. showing example surface vibrations on plate sample. Ultrasound wave propagation can be visualised through the use of laser scanning vibrometry in 1D-3D.

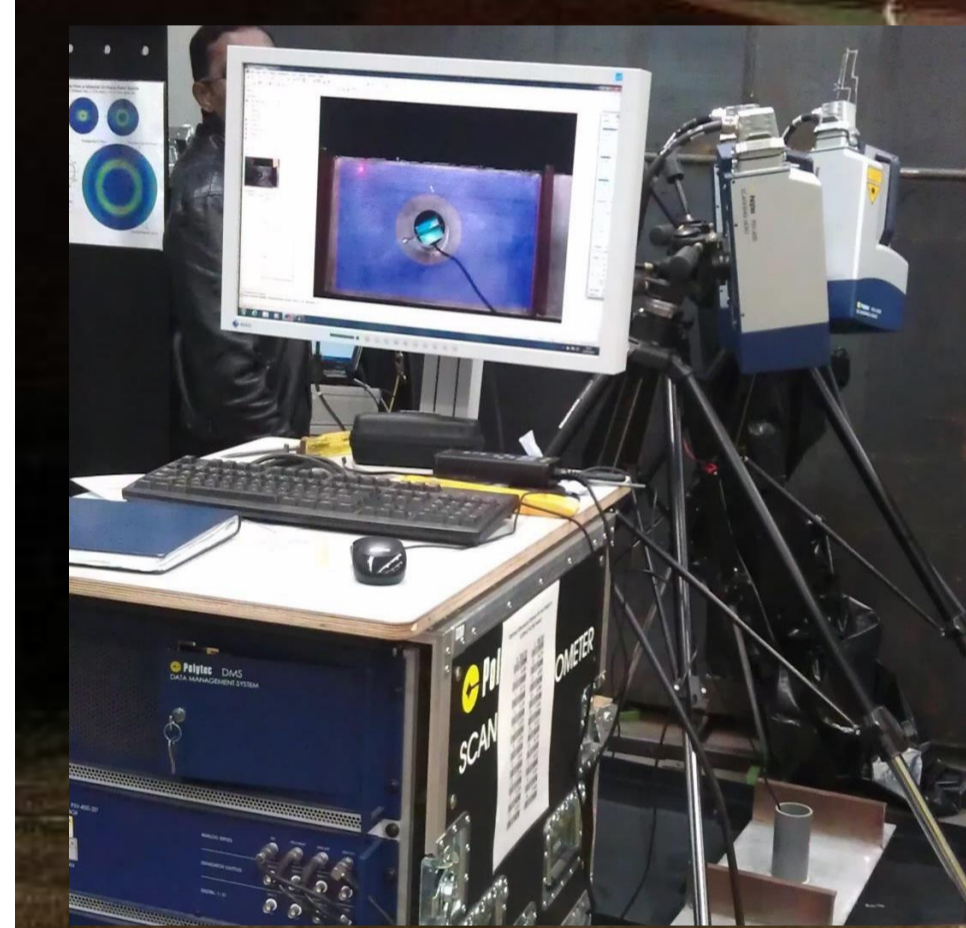


Figure 3. Sophisticated vibrometry technology permits accurate measurement and analyses of transduction effects and material response to wave propagation, with a view to optimise transducer-substrate interface for the best possible frequency selection.

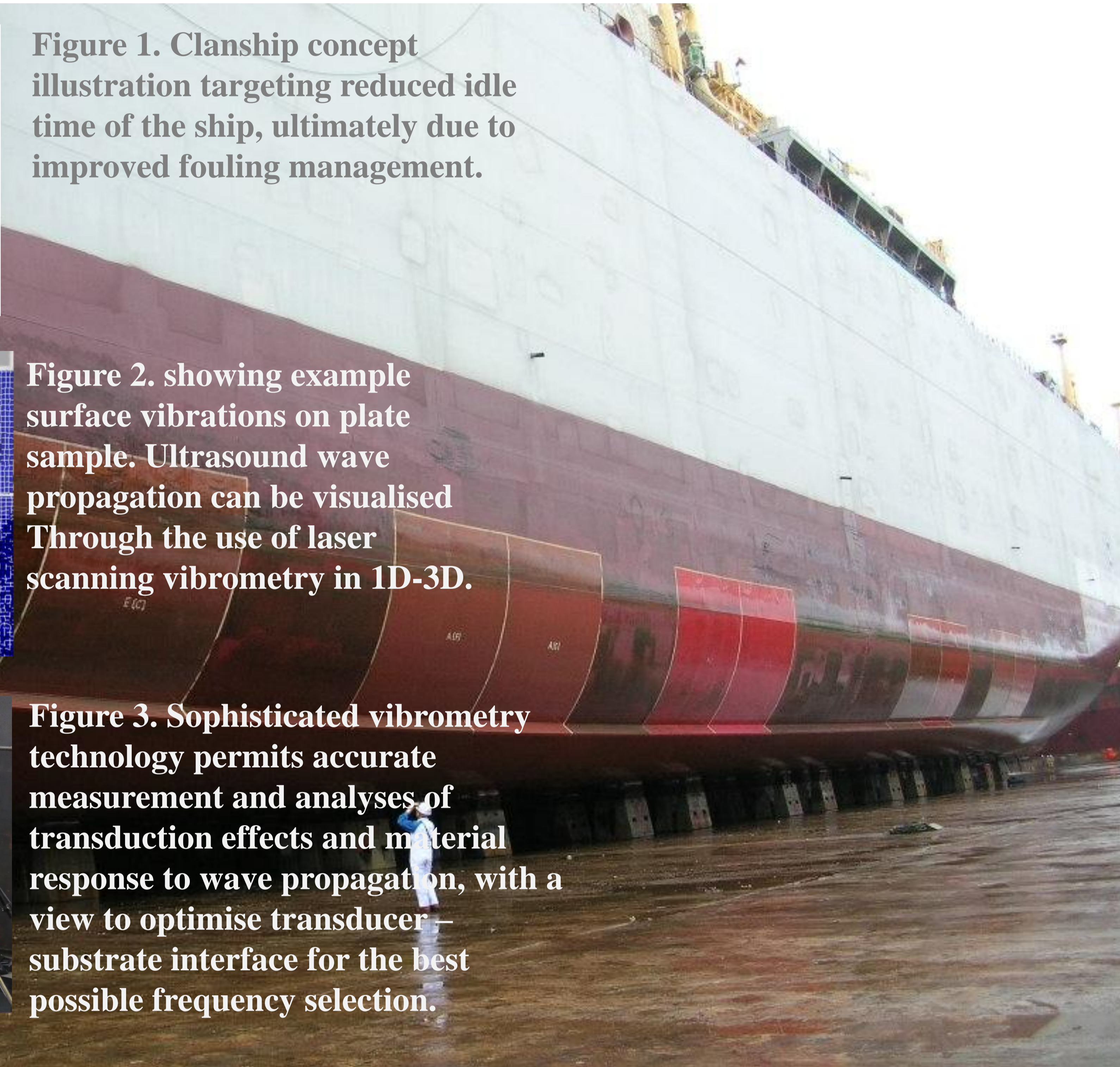


Figure 5. Bow thruster obstruction



Figure 6&7. Marine fouling example

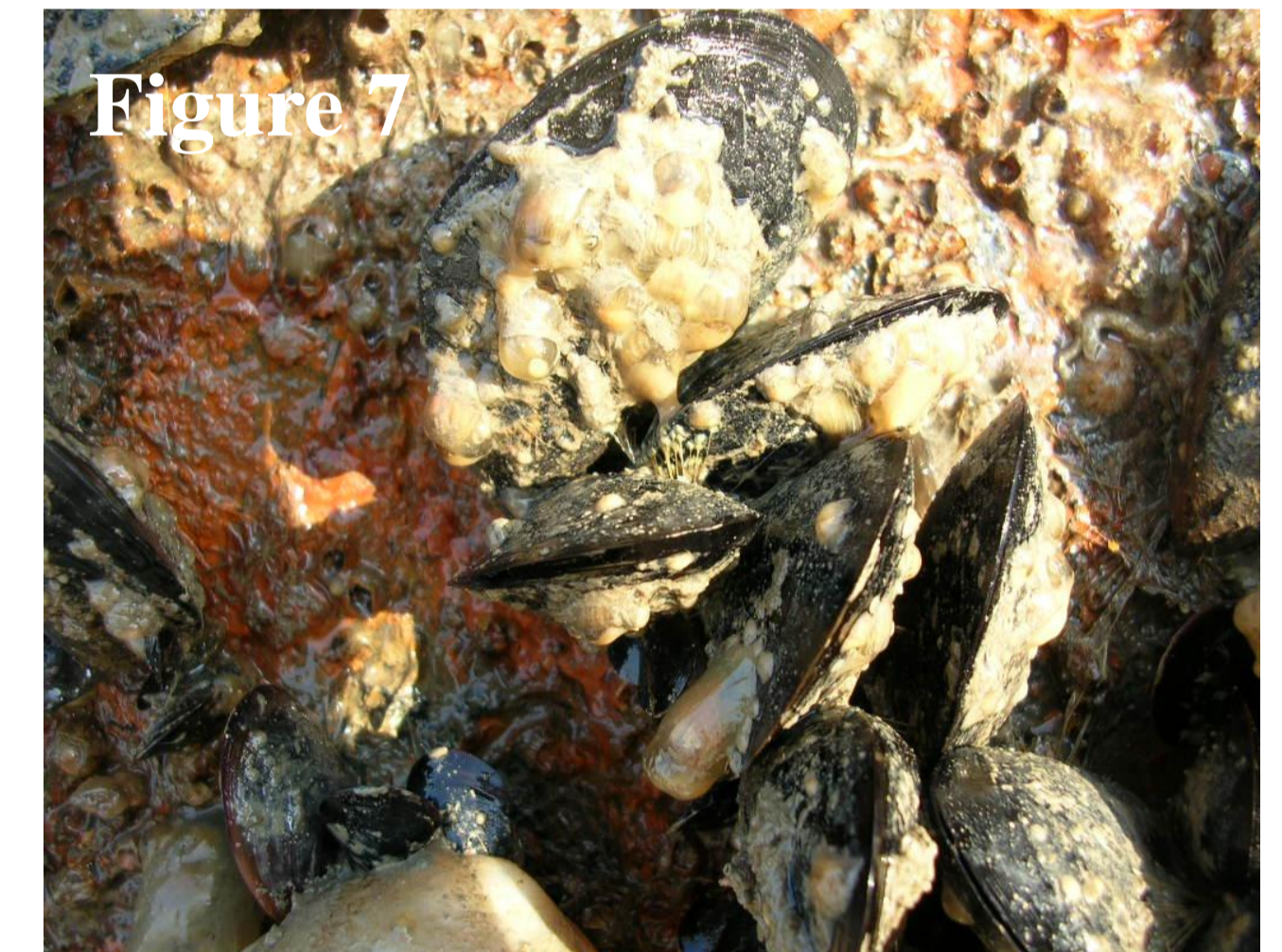


Figure 7

Photos (vessel, fouling examples) courtesy of Lloyd's Register

CLEANSHIP CONCEPT

A pan European collaboration for developing a non invasive methodology based on ultrasonics for fouling detection and prevention in marine environment, with a view to better manage the performance and life of waterborne vessels for the maritime industry.

HULL FOULING

- Increased drag
- Unproductive downtime
- Higher maintenance
- Rising CO₂ emissions
- Reduced fleet efficiency
- Reduced return on investment
- Environmental contamination

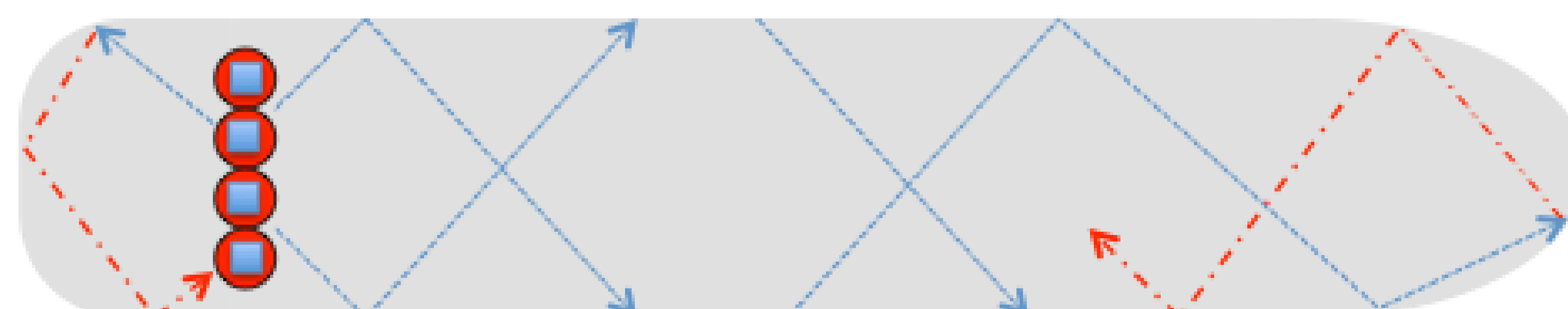
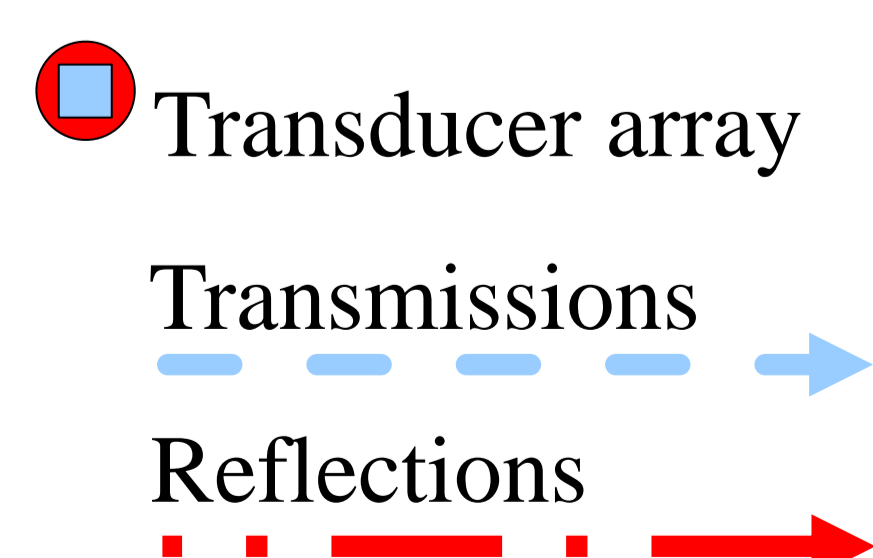
THE BENEFITS

- Ultrasound prevents/slows down fouling
- Real-time fouling detection for more efficient maintenance scheduling
- Suppresses frequent hull cleaning requirement
- Reduces fuel consumption and operating cost
- Lowers marine pollution and CO₂ emissions
- Economy and ecology hand in hand

THE TECHNOLOGY

The innovative Cleanship technology combines hull fouling prevention with fouling detection and measurement.

- Cleanship uses an innovative ultrasound technology to excite an entire ship hull with sufficient ultrasound energy to prevent biological deposits on the hull. This approach permits continuous protection of the hull.
- To monitor actual deposits on the hull and to minimize periodic dry docking, a new method using ultrasound detection algorithms is developed, adding continuous quantitative monitoring of the hull performance, complementing prevention for optimal economies.
- The combination of ultrasonic hull fouling protection with sophisticated hull performance monitoring will contribute significantly to the environment as well as to the profitability of ship operations.



A European FP7  research project with benefits on a global scale

