MARITIME LONDON

Department for International Trade

DECARBONISATION IN SHIPPING

ANDREW MCKERAN *Business Director – Maritime Performance Services* **Lloyd's Register** *(Moderator)*

RACHEL HOYLAND *Senior Associate* **Hill Dickinson**

GEORGE SAVVOPOULOS *Marine Decarbonisation Consultant* **AqualisBraemar LOC**

NOEL TOMLINSON *Director - Business Development* **BMT**

MARITIME LONDON

Department for International Trade

RACHEL HOYLAND

Senior Associate

Hill Dickinson


A presentation by
HILL DICKINSON

Decarbonisation
Regulatory & non regulatory incentives

Rachel Hoyland, Senior Associate

Marine Trade & Energy

Rachel.Hoyland@hilldickinson.com

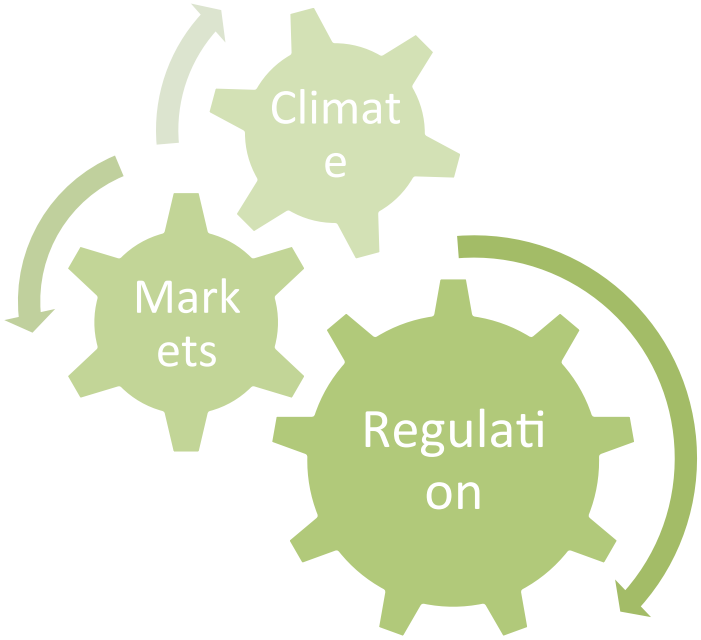
+44 7525 629 948

About the firm

- An international commercial law firm
- Business Groups: Marine, Health, Business Services
- Over 200 years of marine heritage
- More than 850 people, including 185 partners and legal directors
- Offices in the UK, Monaco, Singapore & Hong Kong
- Office in Piraeus since 1994 - Shipping & International Finance
- Greek speaking and Greek qualified team
- Owners, Clubs, related parties
- Contractual/dry and casualty/wet capability

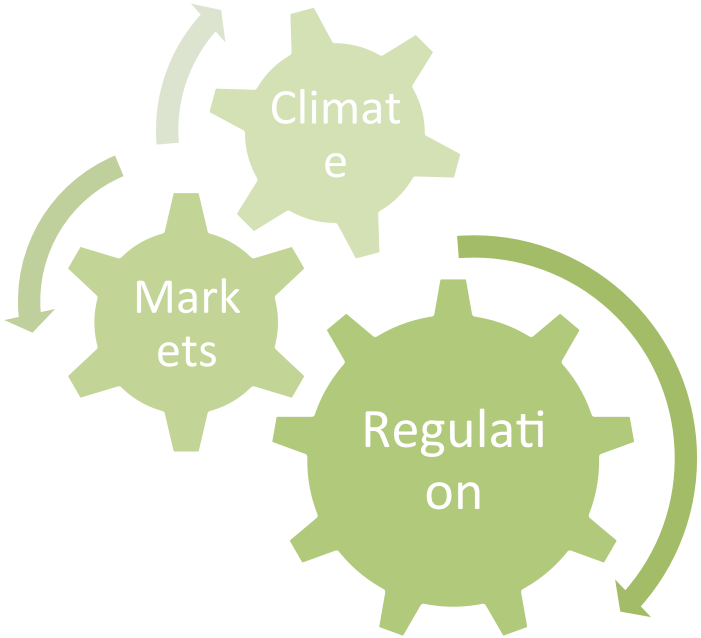
HILL DICKINSON

Decarbonisation



HILL DICKINSON

Decarbonisation



EEDI

SEEMP

EEXI

CII

HILL DICKINSON

Decarbonisation

Consumer/ Customer Demand

Asset Viability

Fuel Costs

Insurance?

Sea Cargo Charter

Poseidon Principles

EU ETS

Climat e

Mark ets

Regulati on

EEDI

SEEMP

EEXI

CII


A presentation by
HILL DICKINSON

MARITIME LONDON

Department for International Trade

ANDREW MCKERAN

Business Director – Maritime Performance Services

Lloyd's Register

Lloyd’s Register

Greek British Shipping Forum – GBSF21

EEXI & CII Overview

Andrew McKeran
Business Director – Maritime Performance Services
E-mail: andy.mckeran@lr.org
Mobile: +44 (0)7583 002546

Trusted advisor, beyond compliance…

Founded in 1760.

World’s first ship classification society.

The profits we generate fund the Lloyd’s Register Foundation, a charity which supports engineering-related research, education and public engagement around everything we do.

Working together for a safer world.

We recognise that maritime stakeholders must rise to the demands of changing technology and the drive to decarbonise our industry.

Working as a trusted advisor and supporting you with the significant investment decisions we must all make in the decade ahead.

Impending changes to carbon intensity compliance

Activities and objectives for the IMO

IMO	INDUSTRY	
2018-2050 OBJECTIVES	**2023-2030 OBJECTIVES**	**2030-2050 OBJECTIVES**
• Observe • Orientate • Decide • Act	More work, less fuel	More work, much less fossil fuel

Changes to regulations

Technically efficient ships…

Ticket to the game

- **EEDI**
- **EEXI**

…operated efficiently

The efficiency game
2023 – 2030

- **Carbon Intensity Reduction**

- **Intent**
- **Application**
- **Compliance options**
- **Survey & certification**
- **Impact**

Act now, manage your EEXI complexity and risk

Four steps to take

1

Don’t wait

Obtain an indicative view of the proportion of your fleet that may already comply with the draft guidelines.

2

Start your calculations

Our experts will review all available technical information and carry out the most accurate calculation possible.

3

Analyse your improvement options

If adaptions are required to improve your attained EEXI, we can help you select the appropriate option.

4

Prepare the Technical File

We’ll compile your EEXI Technical File following the implementation of solutions required for EEXI compliance.

We’re here to help along the way…

Act now, avoid risk.

Get technical expertise for your EEXI calculations with a trusted partner.

$$\left(\prod_{j=1}^{M} f_j\right)\left(\sum_{i=1}^{nME} P_{ME\,(i)} \cdot C_{FME} \cdot SFC_{ME}\right) + \left(C_{AE} \cdot P_{FAE} \cdot SFC_{AE}\right)$$

Lloyd's Register

MARITIME LONDON

Department for International Trade

GEORGE SAVVOPOULOS

Marine Decarbonisation Consultant

AqualisBraemar LOC

AqualisBraemar LOC Group

Greek British Shipping Forum

Session 2 - Decarbonisation

ABL-GROUP.COM

The AqualisBraemar LOC Family

Through targeted acquisition and organic growth, **AqualisBraemar LOC** have built a comprehensive family of branded energy and marine consultancy companies offering services that are both complementary and interconnected. This allows our business lines, branded service companies, and expertise to focus closely on delivering technical excellence in engineering and consultancy, loss prevention and loss management.

AqualisBraemar LOC Group

AqualisBraemar LOC

AqualisBraemar LOC is a leading global independent energy and marine consultant working in energy and oceans to de-risk and drive the energy transition across renewables, maritime and oil and gas sectors.

OWC
AqualisBraemar LOC Group

Offshore Wind Consultants (OWC)

Project development services, owner's engineering and technical due diligence to the offshore renewables industry.

JLA
AqualisBraemar LOC Group

John LeBourhis & Associates (JLA)

Rig moving, risk control services and surveying services, specialists in MODUs.

EAST POINT GEO
AqualisBraemar LOC Group

East Point Geo

Expert Geoconsulting organisation supporting all sectors; providing efficient client-focussed deliverables including data assurance, ground models and quantitative risk assessment.

LONGITUDE
AqualisBraemar LOC Group

Longitude Engineering

Independent engineering, design and analysis services for the marine, renewables, oil & gas, defence, and offshore infrastructure industries.

INNOSEA
AqualisBraemar LOC Group

INNOSEA

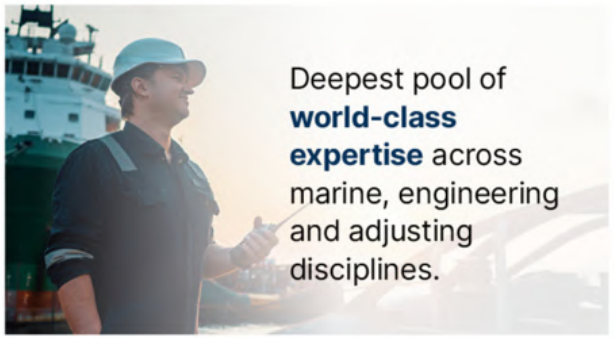
Engineering advistory, verification, research & development, concept development and consultancy for marine renewable energy.

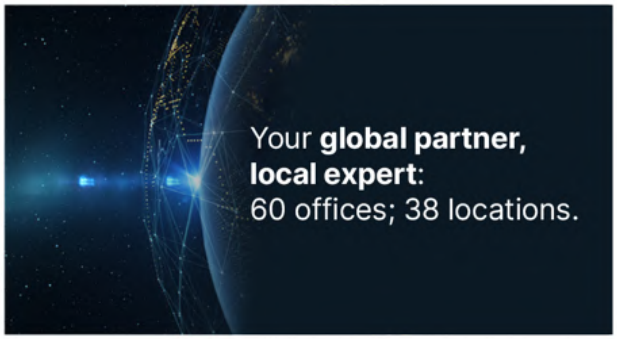
ABL YACHTS
AqualisBraemar LOC Group

ABL Yachts

Superyacht surveyors and consultants.

AqualisBraemar LOC





AqualisBraemar LOC Group

Our Markets

AqualisBraemar LOC Group

Global Partner, Local Expert

* 884 full-time equivalent employees as of 31 December 2020
** ABL locate many staff strategically at maritime and offshore hubs to be able to serve clients locally
Additional note: the 38 countries number is driven by our offices, in terms of locations where we have surveyors etc we cover 71 countries, a truly global footprint

AqualisBraemar LOC Group

What is the industry doing to contribute?

Financial Institutions

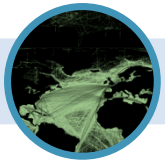
Jun 2019

POSEIDON PRINCIPLES

A group of 27 major banks, financing over 45 percent of the global shipping fleet, have agreed to adjust their lending procedures in order to incentivize the decarbonization of maritime vessels.

www.poseidonprinciples.org

Charterers



Oct 2020

SEA CARGO CHARTER

The Sea Cargo Charter was developed in an effort spearheaded by a diverse group of cargo owners and shipowners, intended as a transparent process for reporting emissions relating to chartering activities.

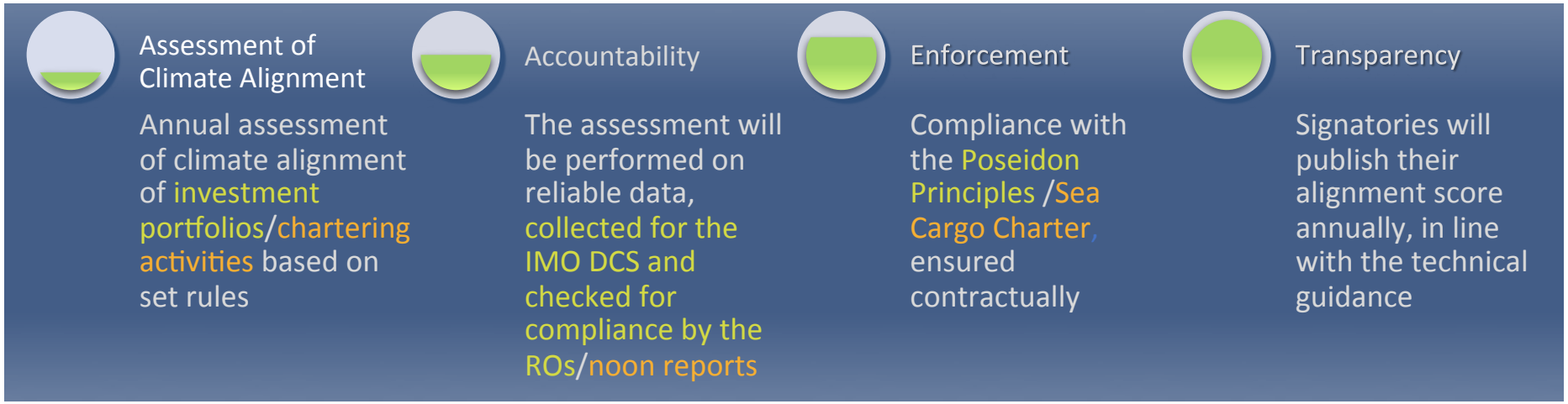
www.seacargocharter.org

Insurance

Oct 2021?

AqualisBraemar LOC Group

Both initiatives operate on 4 principles



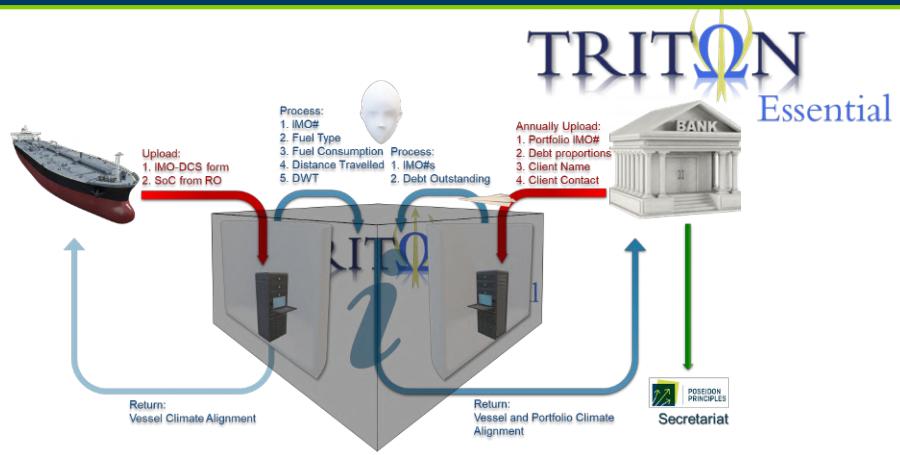
All private initiatives are reliant on the willingness of the institutions to be transparent, and the access to reliable information for the assessments to be performed

Is our industry sharing enough information?

AqualisBraemar LOC Group

Our work on emissions

We support owners and financial institutions to implement the Poseidon Principles



Most owners were happy to share their information with lenders directly

AqualisBraemar LOC Group

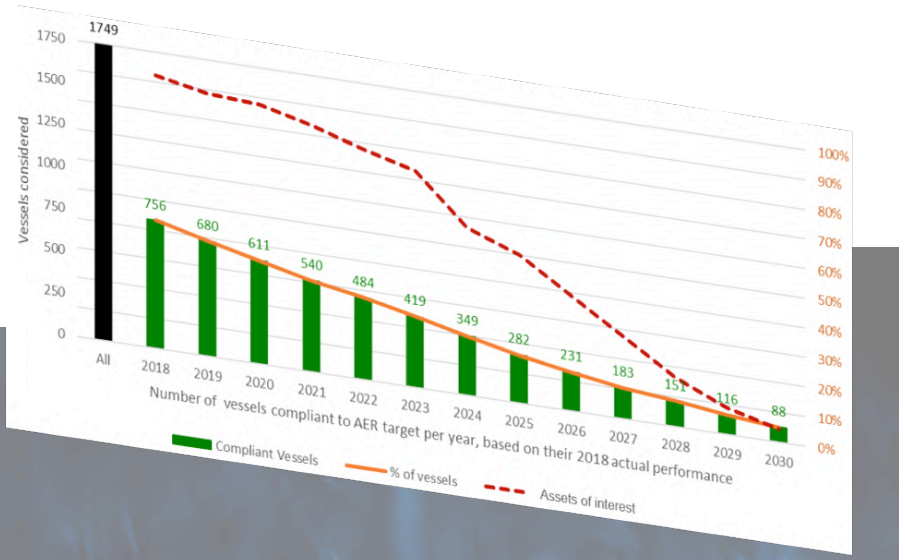
Our work on emissions

We perform due diligence assessments on emissions

As an independent third party, we are available to look at the technical specifications and past performance of assets and provide our opinion to our instructing parties.

We help owners and third-parties, buyers, investors, charterers, by advising:

- How a vessel performs against its peers
- When a vessel is expected to require upgrade
- The available and suitable options for such upgrade
- The performance expectation of proposed designs, and their regulatory compliance



AqualisBraemar LOC Group

The essence of ESG

The discussion so far is driven by the E. We should also keep our focus on documenting and highlighting the S and the G.

AqualisBraemar LOC Group

MARITIME LONDON

Department for International Trade

NOEL TOMLINSON

Director - Business Development

BMT

Greek British Shipping Forum 2021

June 2021

Noel Tomlinson
Senior Business Development Manager
Commercial Maritime, BMT

noel.tomlinson@bmtglobal.com

BMT

BMT – A leading, multidisciplinary international design, engineering, science and risk management consultancy

1,500 people

Established 1985

23 offices

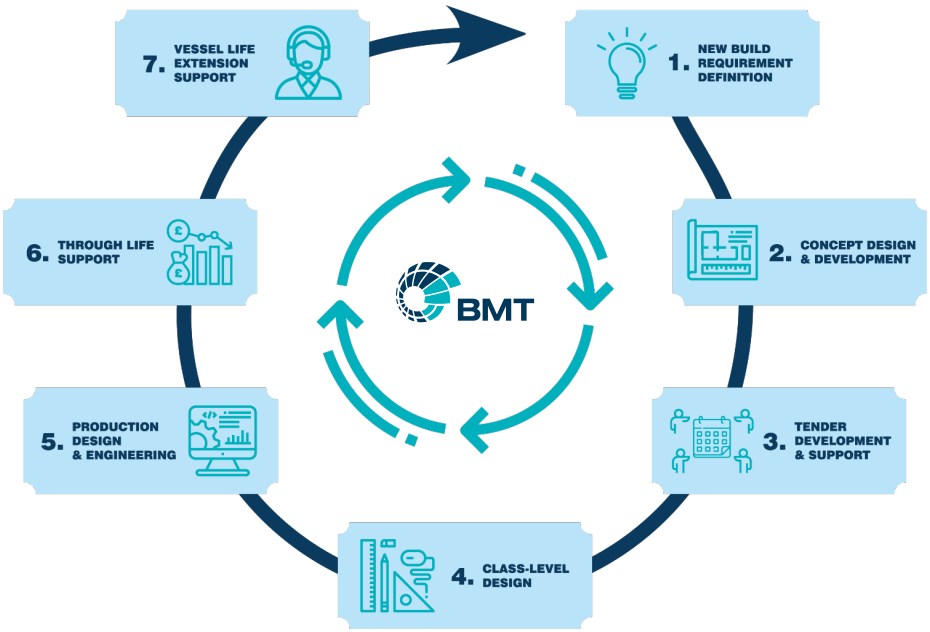
4 continents

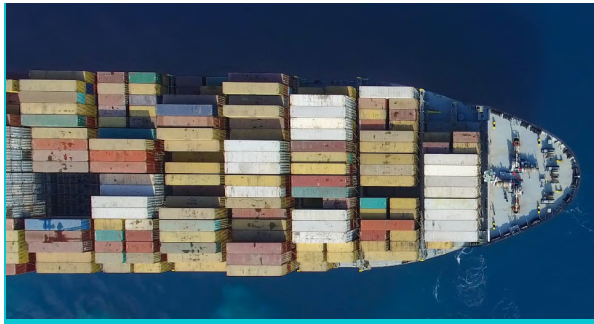
Turnover FY18:
£175m

Independent:
an Employee Benefit Trust

BMT

BMT – leading the way for over 35 years





Maritime Design and Consultancy

- Industry-leading Technical Innovation
- Customer Focused Collaborative Approach
- Efficiency Across every aspect

BMT

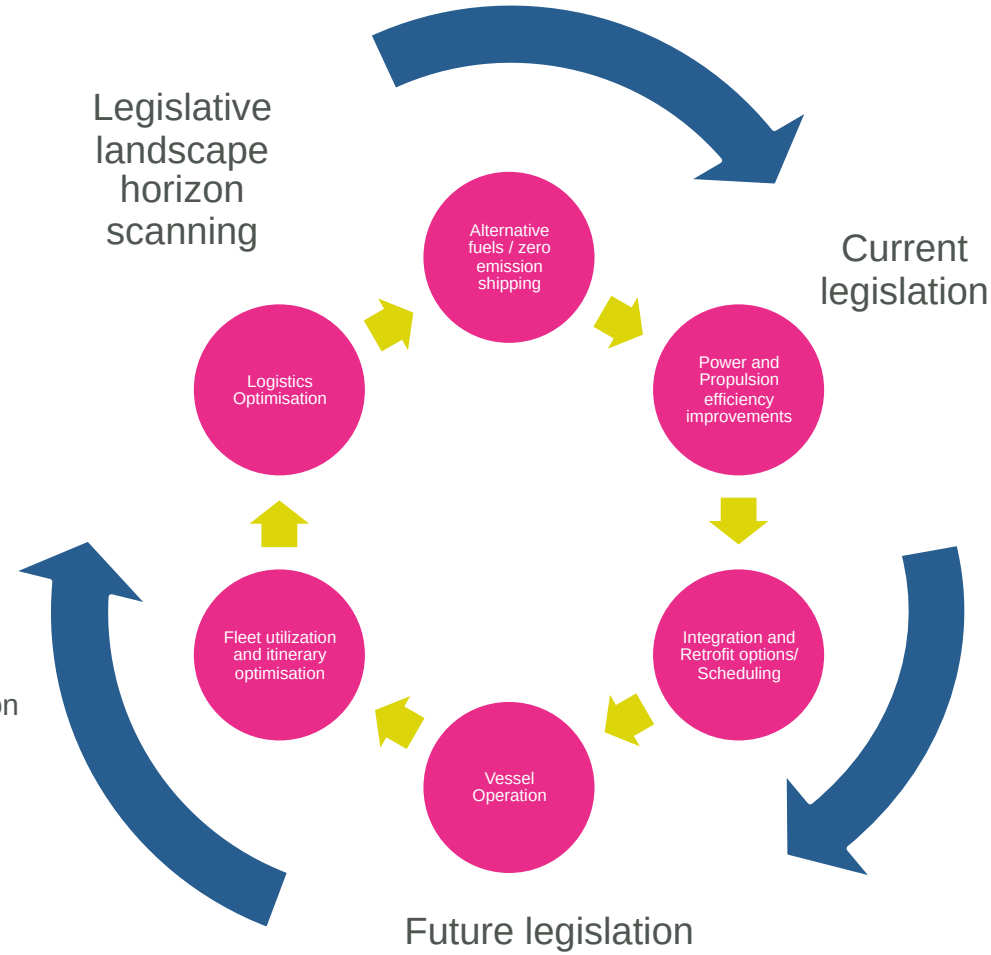
A clear fleet-wide roadmap to regulatory compliance

Current and future regulation/codes include, but are not limited to:

- IMO (i.e. Marpol Annex VI provisions
- Energy Efficiency Design Index (EEDI)
- IMO Data Collection System (DCS)
- IMO Energy Efficiency Operational Indicator (EEOI)
- Ship Energy Efficiency Management Plan (SEEMP),
- EU Monitoring, Reporting and Verification (MRV) and any future EU Emissions Trading System (ETS)
- Energy Efficiency Existing Ship Index (EEXI)
- Carbon Intensity Indicator (CII)

Options that may help mitigate the impact of current & future legislation include, but are not limited to:

- Technological changes (e.g. Energy Saving Technologies (ESTs
- Vessel operational changes (e.g. slow speed operations, route planning optimisation, itinerary changes)
- Operating philosophy changes (e.g. fleet optimisation (i.e. the right ships on the right routes), alternative cold ironing options)



Marine Energy Saving Technologies

EST Feasibility

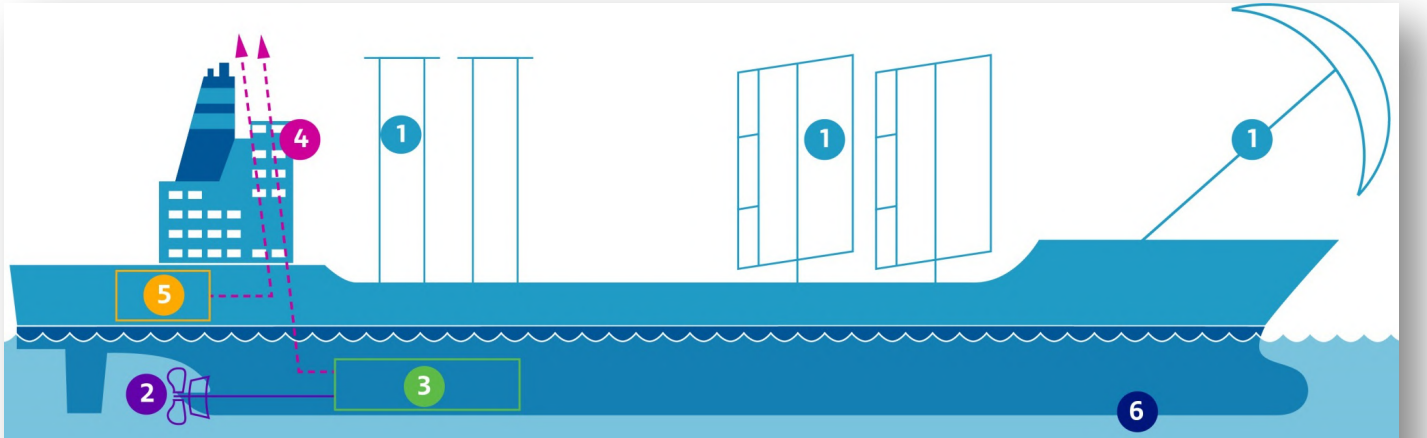
Using your data to assess EST feasibility

EST Performance Comparison

Helping you choose the EST that's right for you

Design and Installation Support

Our one stop shop for delivering your EST solution



1. Propeller Power Reduction (above water line) – Fettner rotors, kites, wing sails
2. Propulsion efficiency – large area propellers, post-swirl stators, surface coatings, optimised rudders
3. Transmission & prime mover – LNG methane fuels, 2 stage turbocharging, fuel water emulsification
4. Water heat recovery – Organic Rankine Cycle, turbo generator
5. Auxiliary power – fuel cells
6. Propeller Power Reduction (below water line) - air lubrication, surface coating, air cavity

BMT

Key Takeaways

- Technical modifications may be the only realistic way to achieve EEXI compliance
- The Regulations do not prescribe which improvement method should be deployed
- A wide range of Energy Saving Technologies are available **now** with more emerging
- Accurate modeling and analysis of EST's is required in order to maximise return on investment
- EEXI compliance is only one element of a longer-term roadmap to de-carbonisation
- An effective roadmap to compliance needs to include both ship specific and fleet wide considerations
- Collaboration is essential: Class Authorities, Naval Architects, Equipment providers, Financial, Insurance and charter parties

Thank you

Noel Tomlinson
Senior Business Development Manager Commercial Maritime

noel.tomlinson@bmtglobal.com

MARITIME LONDON

Department for International Trade

DECARBONISATION IN SHIPPING

ANDREW MCKERAN *Business Director – Maritime Performance Services* **Lloyd's Register** *(Moderator)*

RACHEL HOYLAND *Senior Associate* **Hill Dickinson**

GEORGE SAVVOPOULOS *Marine Decarbonisation Consultant* **AqualisBraemar LOC**

NOEL TOMLINSON *Director - Business Development* **BMT**