UK National Clean Maritime Research Hub

Clean Maritime Assembly 2026

Collaboration | Innovation | Transformation

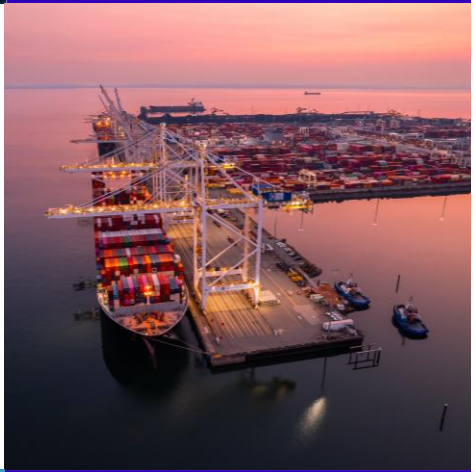
UKRI Engineering and Physical Sciences Research Council
Funded by UK Government

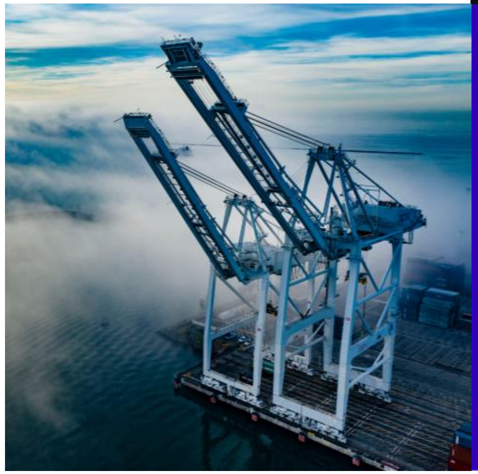
Highlights and Headlines

Session 1

Technology & Innovation

- Kassie Cigliana, MCA
- Simon Graham, De Corcy Alexander
- Aleksandra Adamowicz, Coltraco Ultrasonics





Maritime & Coastguard Agency

Safer lives, safer ships, cleaner seas

The UK Maritime Innovation Hub

The MCA’s new offer to innovators, technology developers and researchers

Dr. Kassie Cigliana, SFHEA
Maritime Digitalisation Technology Lead
UK Maritime Innovation Hub

June 2026

The MCA– the UK’s Maritime Regulatory Authority

The Maritime and Coastguard Agency (MCA) is first and foremost the UK’s civilian maritime regulator, with responsibility for safety, standards and environmental protection.

Core work includes Regulatory Policy, Seafarer and Flag Services and Survey & Certification responsibilities, as well as the work of His Majesty's Coastguard.

For innovation projects involving vessels, we are the key regulator, with ultimate responsibility for certification issued to a wide range of vessels.

A national body with a regional footprint – nine Marine Offices across the UK, and a technical and regulatory core based at our Head Office in Southampton.

UK Maritime Innovation Hub

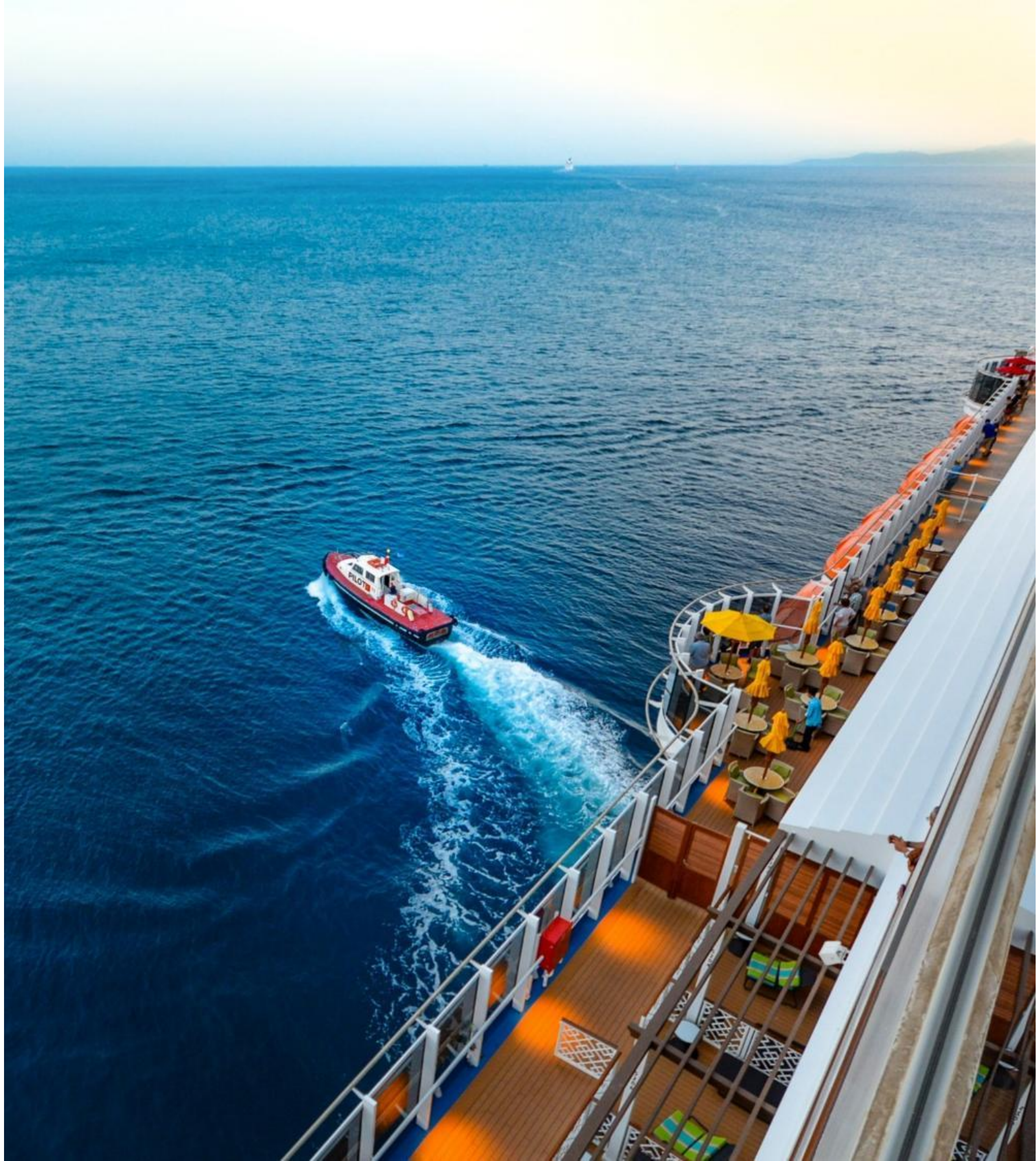
A coordinated service of the MCA, providing clear and early access to regulatory engagement for organisations developing innovative maritime technologies.

We're currently in our third month of operation.

As maritime technologies evolve, **timely engagement** between innovators and the regulator is increasingly important.

We provide **targeted support**, focused on **four priority areas** where clear and early regulatory engagement adds the most value.

- **Autonomy (MASS)** - Maritime Autonomous Surface Ships
- **Decarbonisation** (including energy efficiency and alternative fuels)
- **Digital systems and digitalisation technologies** (including AI)
- **Nuclear propulsion**

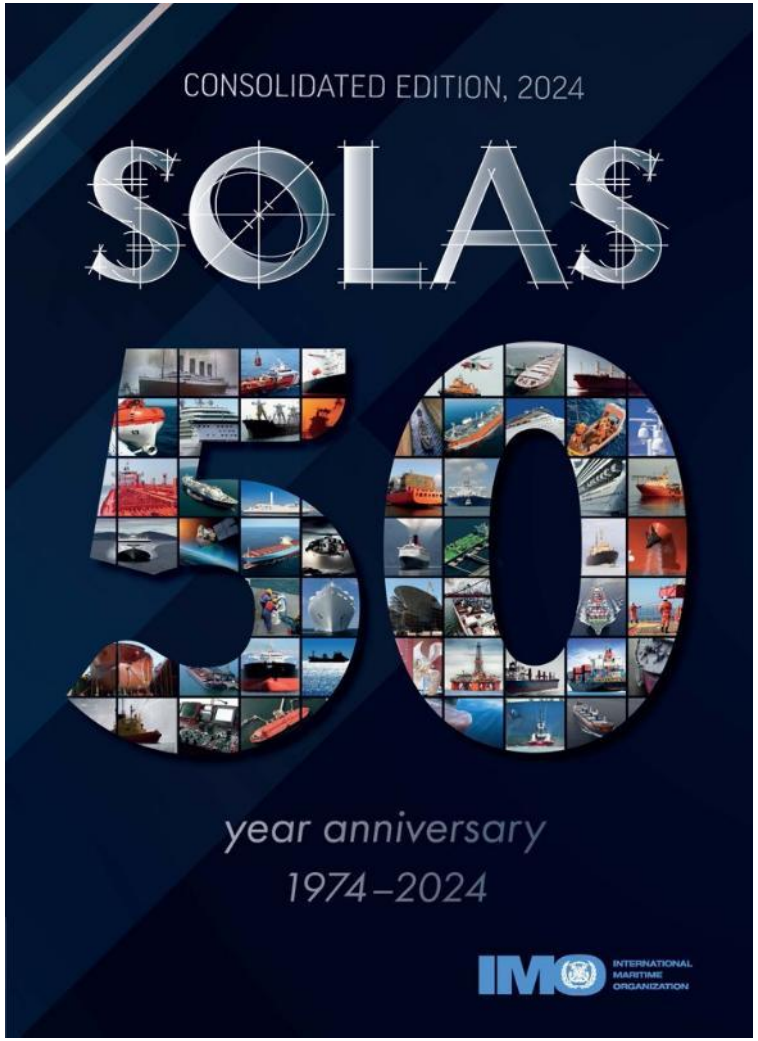


Early engagement, clear guidance and coordinated reliable routes through testing and approval, so innovators and businesses can move from concept to operation **at pace**.

We’re not changing standards; the MCA’s core mission as the regulator remains unchanged.

What’s improving is the experience, with a more streamlined process from concept to compliance, and the confidence of UK safety and environmental standards.

- Consistent and predictable pathways through testing and approval
- Greater certainty for owners and innovators
- The UK a trusted, reliable choice for future-focused shipping and sustainable maritime innovators



Prototype vessel trials

From this month, the MCA, working with the King's Harbour Master (KHM) Plymouth, has established designated trial areas within Plymouth Harbour for prototype vessels using innovative technology.

The UK Maritime Innovation Hub can assist stakeholders in applying for access to the trial areas during the six-month pilot.

www.gov.uk/guidance/prototype-vessel-trials

Areas of Research Interest

The UK Maritime Innovation Hub supports the MCA's **Areas of Research Interest** (ARI), helping external researchers align their work with policy development and regulatory priorities.

We're particularly keen to encourage research aligned to our four priority themes.

Areas of Research Interest

Summary

- Transition to **low- and zero-carbon energy sources** across shipping, supported by scalable fuel supply chains and fuelling/charging infrastructure.

- Deployment of **alternative fuels** (e.g. hydrogen, ammonia, methanol), **battery-electric systems** and **nuclear propulsion**, alongside robust safety, lifecycle and regulatory evidence.

- Managing **pollution risks from alternative fuels and batteries**, including spill scenarios, environmental impact, and effective containment and response measures.

- Decarbonisation of **new and existing vessels**, including retrofit pathways, novel materials, and integration of clean propulsion systems.

- Use of **digitalisation, AI and autonomy** to optimise vessel performance, improve route efficiency, and reduce fuel consumption and emissions.

- Advancement of **system-level solutions**, including green shipping corridors, wind-assisted propulsion, and data-driven operational optimisation to reduce overall energy demand.

View our full list of **ARI** here:

Find out more and contact us

www.gov.uk/government/collections/uk-maritime-innovation-hub

For **project proposals** or requests for support, email **innovation@mcga.gov.uk.**

For **research opportunities,** email **ari@mcga.gov.uk.**

Dr. Kassie Cigliana
Maritime Digitalisation Technology Lead
kassie.cigliana@mcga.gov.uk

Innovation and Commercialisation

The challenge

DCA

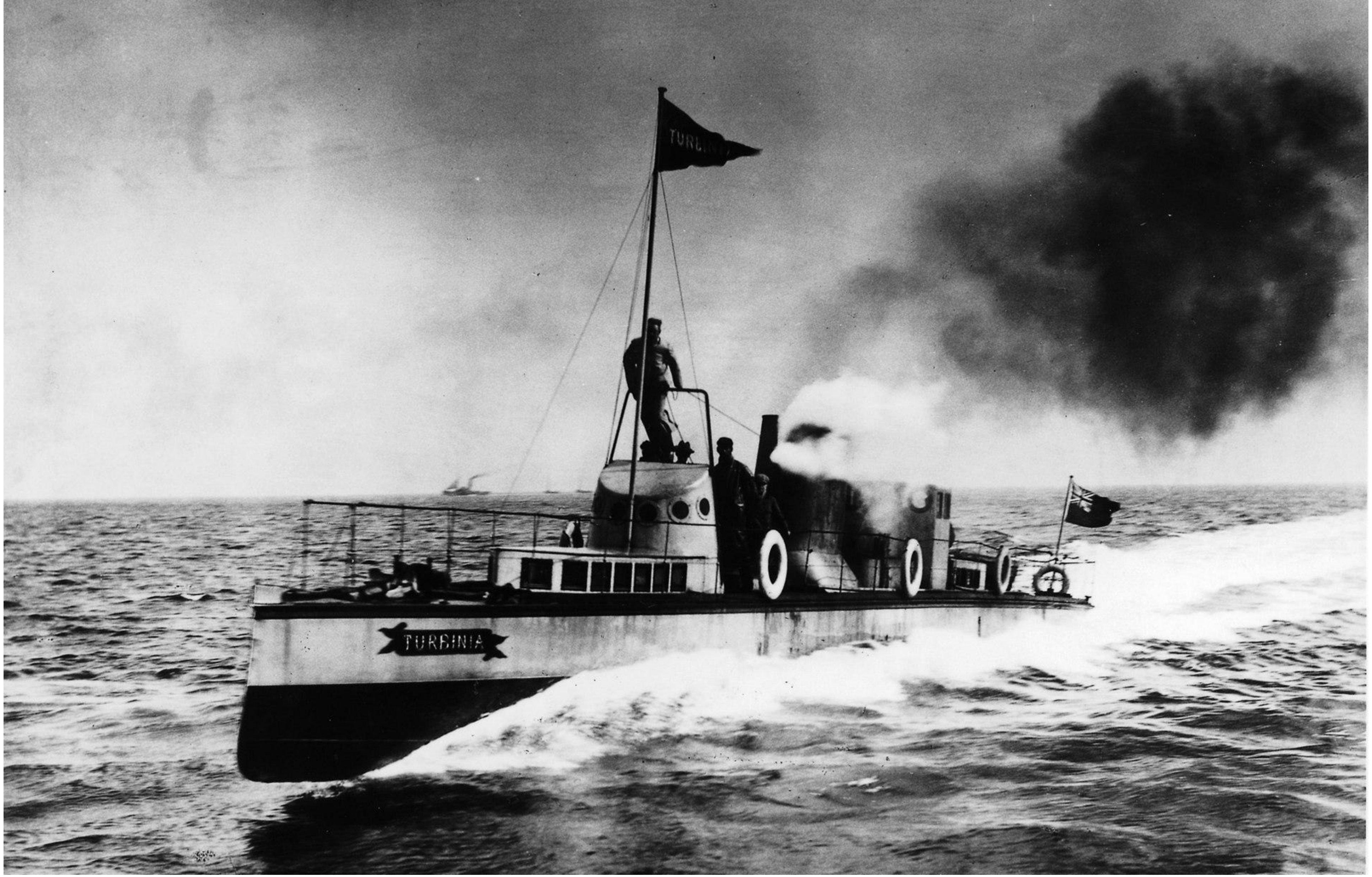
The opportunity

Collaboration

Systems

DCA

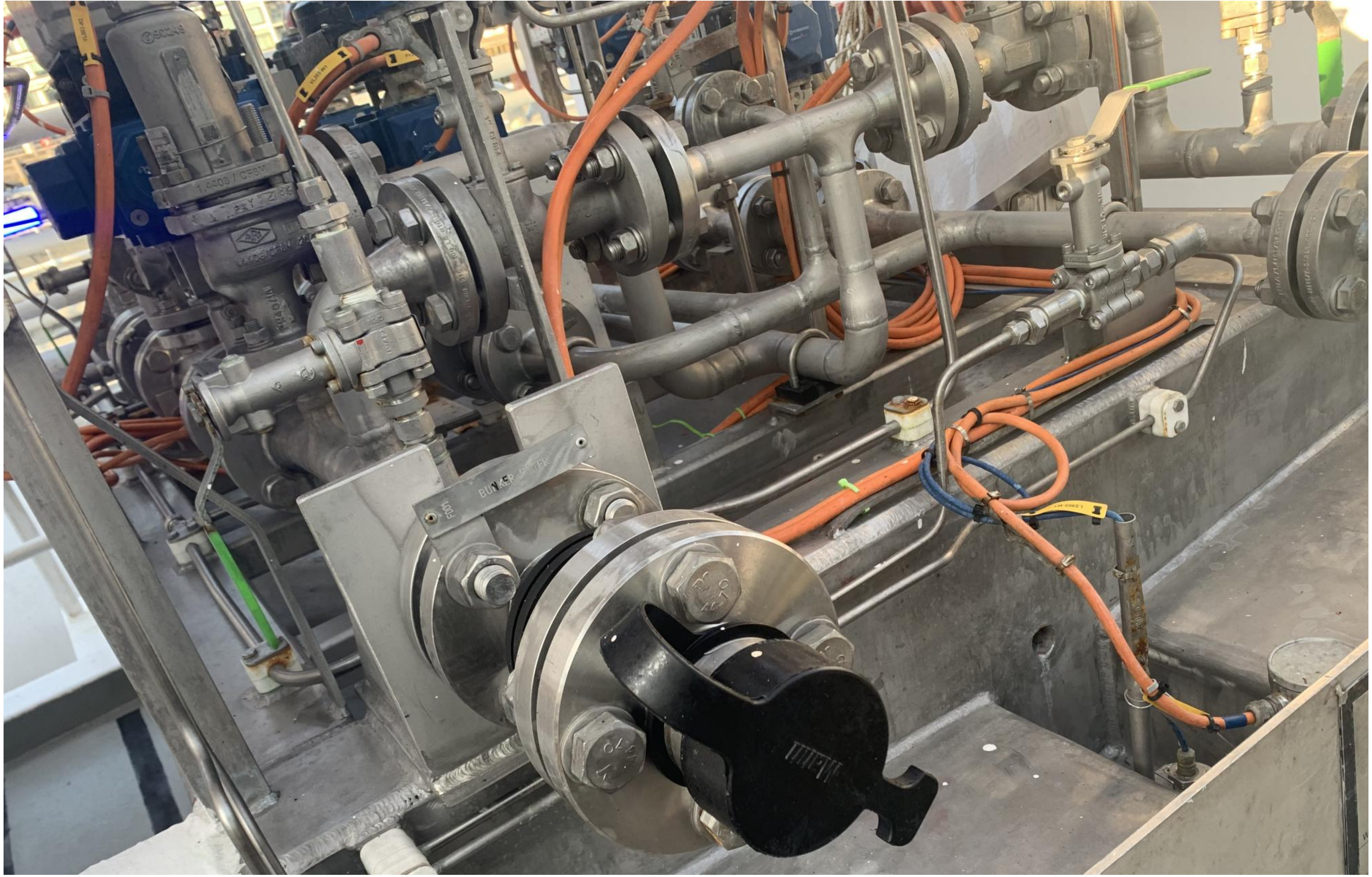
Reach



Awareness & action

Believe & Build

DCA



Clarity & complexity

Design & delivery

simon.graham@decourcyalexander.co.uk

DCA

COLTRACO
Ultrasonics | since 1987

Innovate UK

Technology and Innovation: Developing an Ultrasonic Monitoring System for Ammonia Fuel Tanks

Clean Maritime Assembly 2026
24th June 2026
Durham university, Teaching & Learning Centre

by Aleksandra Adamowicz

COLTRACO
Ultrasonics | since 1987

about coltraco

- **UK-sovereign high-exporting manufacturer** in over 120 countries worldwide
- Range of engineering, scientific and artificial intelligence **services provider**
- Integrated **research-to-manufacturing** organisation
- **National research institute**, the Durham Institute of Research, Development, and Invention (DIRDI)
- **Specialised research centres**, led by the Centre for Underwater Acoustic Analysis (CUAA) for the Royal Navy
- **Strategic sensor development** capability

COLTRACO Ultrasonics | since 1987

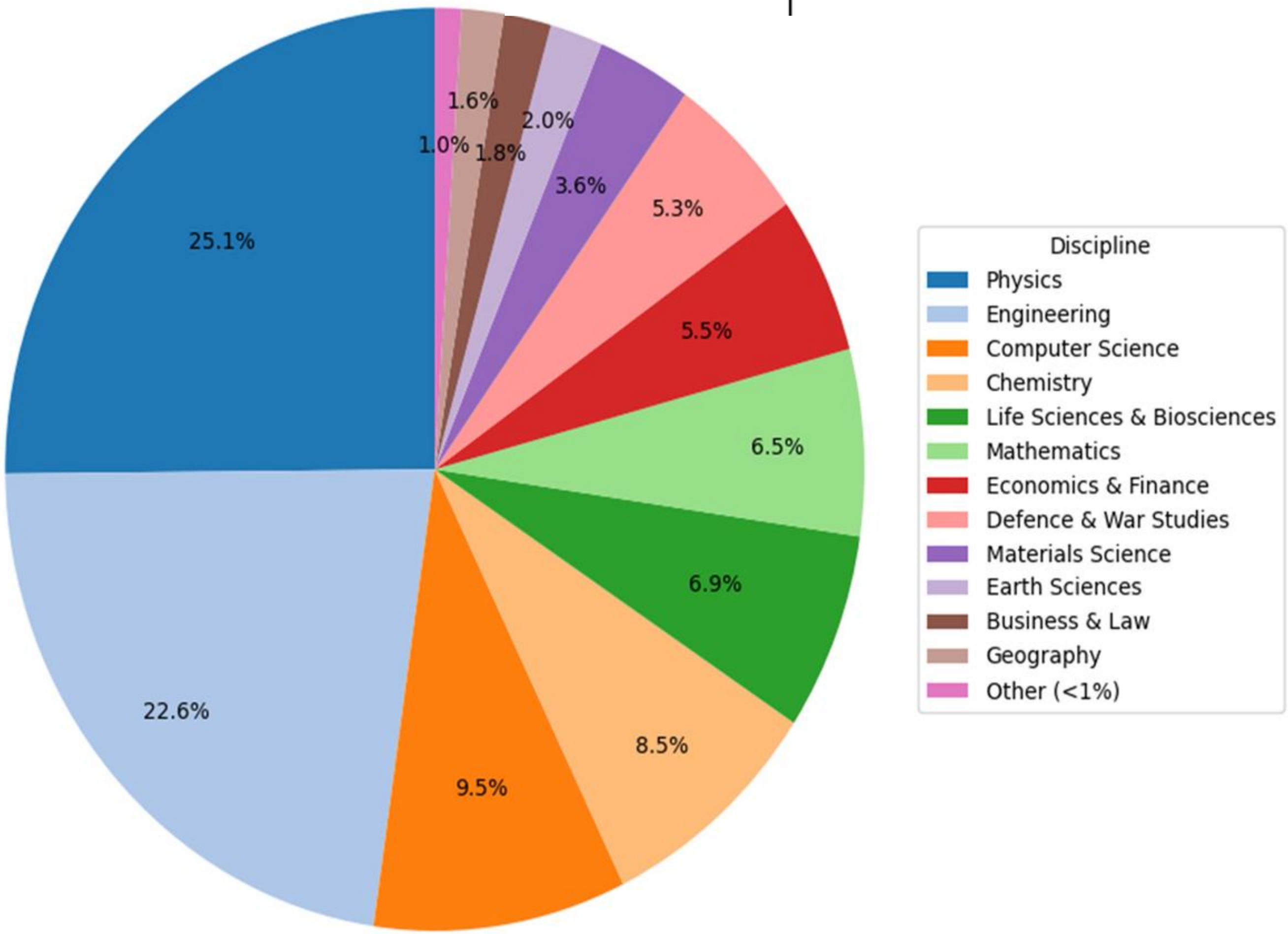
Durham Institute of Research, Development, and Ir

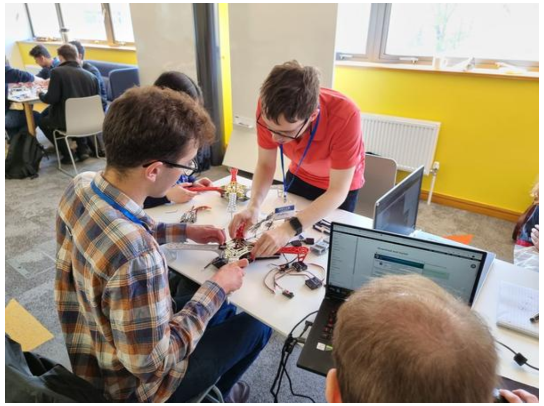
Durham Institute of Research, Development, and Invention

DIRDI

The Institute:

- **500+ senior academic Fellows** from UK Universities
- Is inspired by **"Newtonian discovery"** and **"Nelsonian geostrategic genius".**
- Supported by **specialised sub-units** including our Centre for Underwater Acoustic Analysis (CUAA) based at Durham





Clean Maritime Demonstration Competition 6: Smart Shipping

- Winners of the Clean Maritime Demonstration Competition 6 (CMDC6).
- UK SHORE + Innovate UK has allocated over £230m since 2022 for decabonisation activities in UK maritime and economic growth
- Our project is funded by the UK SHORE programme and the DfT
- Collaboration between DU and Coltraco

UKRI Innovate UK

Durham University

Department for Transport

COLTRACO
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Developing an Ultrasonic Monitoring System for Ammonia Fuel Tanks

Addressing a critical safety and technological barrier to the adoption of ammonia as a zero-carbon fuel

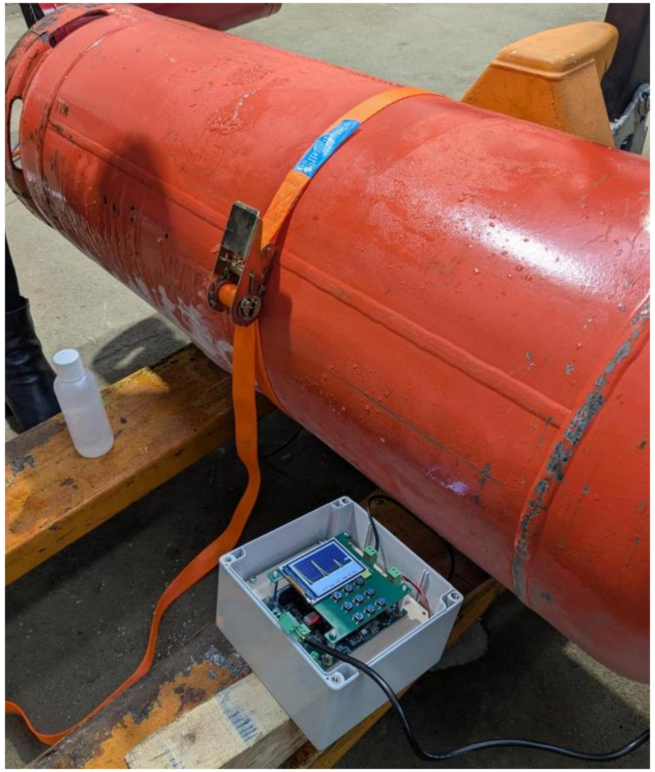
CUTS LOSES AND COSTS

SUPPORTS NET-ZERO CLIMATE STRATEGIES

IMPROVES WORKING CONDITIONS

COLLABORATION

- **Industry:** Coltraco provides commercial and technical leadership,
- **Academia:** Durham University contributes deep academic knowledge and experimentation resources
- **Government:** Public funding from the UK government through the Clean Maritime Demonstration Competition 6 (CMDC6)



MARITIME UK

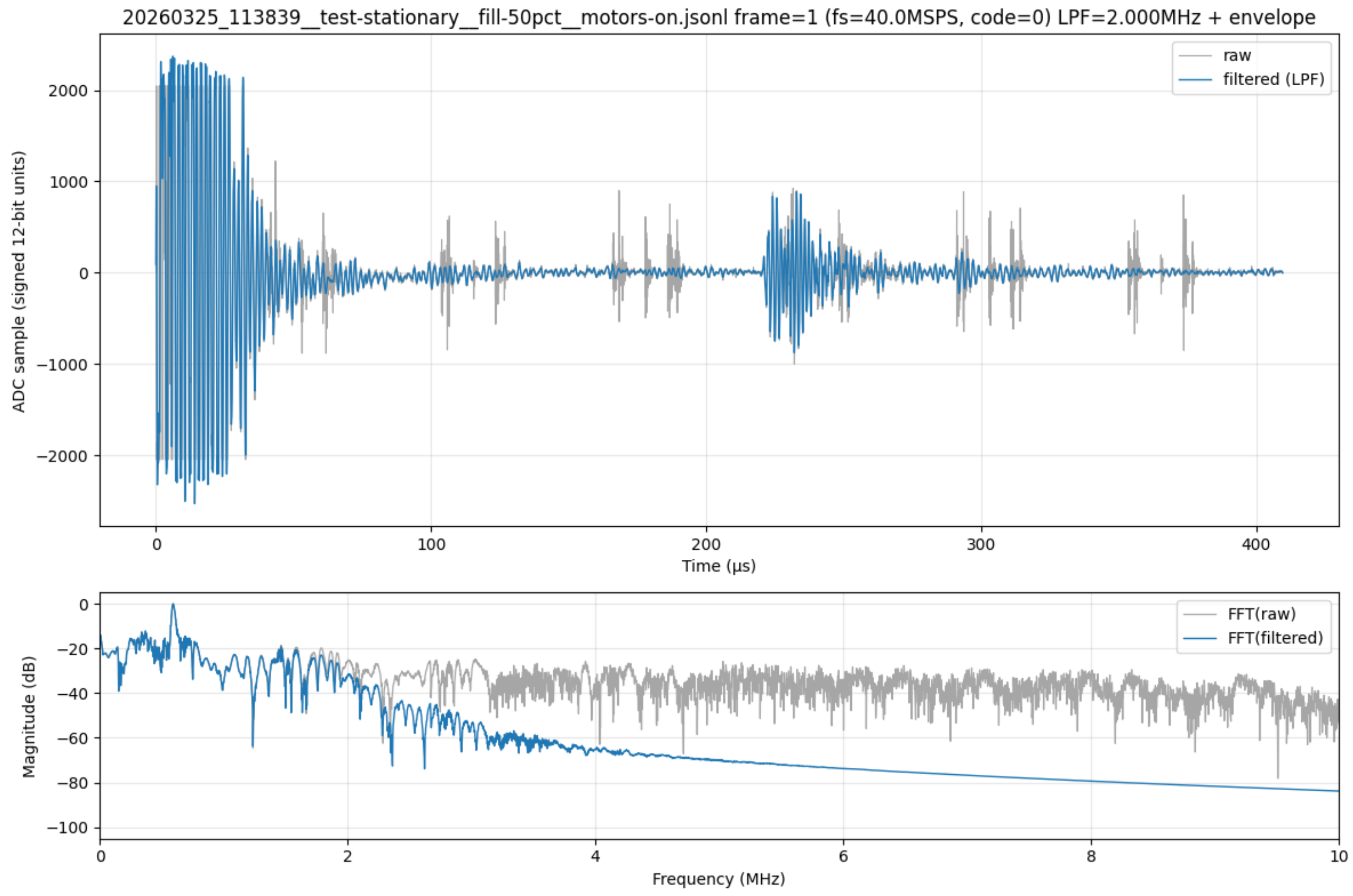
Source: Mehta, A. (2023, December 18). *Pioneering ammonia-powered ship shows off a greener future for shipping at COP28.* Chemistry World. https://www.chemistryworld.com/news/pioneering-ammonia-powered-ship-shows-off-a-greener-future-for-shipping-at-cop28/4018648.article

RESULTS

TEST SETUP: Stuart Platform

CHALLENGE:

- Signal Interference: Platform motors introduced high-frequency EMI that reduced echo clarity, requiring a 2 MHz low-pass filter for mitigation.



Plot showing the observed High-frequency EMI from motors in both time- and frequency-domains, and its removal using a 2MHz low-pass filter.

Industry / Academic / government collaboration

INDUSTRY
- Delivery
- Capacity
- Funding
- Innovation

ACADEMIA
- Cutting edge science
- Knowledge
- Research
- Innovation

UNITING PRIVATE AND PUBLIC SECTORS

GOVERNMENT
- Strategic direction, prioritisation
- Funding

Durham University
UK National Clean Maritime Research Hub
Durham Institute of Research, Development, and Invention DIRDI
Department for Transport
UKRI Innovate UK

COLTRACO
Ultrasonics | since 1987

Thank you for listening.

If you have any questions, please contact me at ola.adamowicz@coltraco.co.uk

ISO 9001 Certified ExVeritas

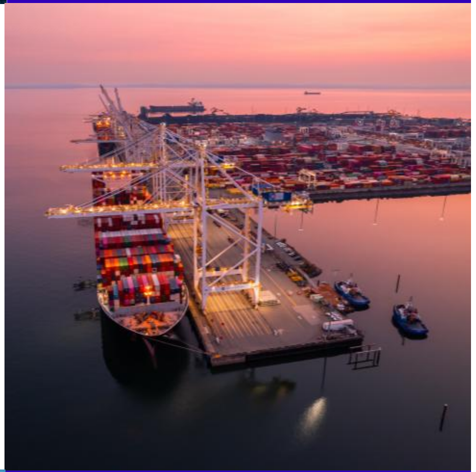
ISO 14001 REGISTERED FIRM

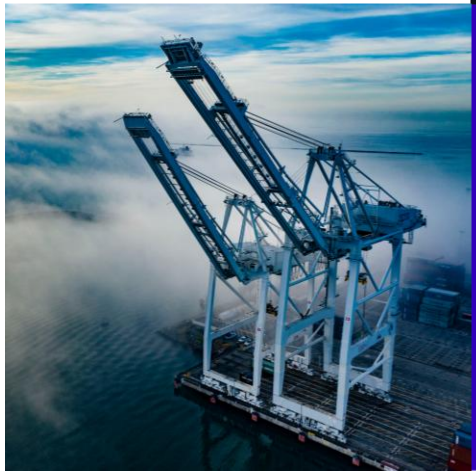
Highlights and Headlines

Session 2

AI, Digitalisation and Data-Driven Decision Making

- Robbie O’Neill, Ada Mode
- Tim Munn, Marine Zero





Ada Mode

Taking Up the Slack: Bringing AI to Bear

Ada Mode

UK Clean Maritime Research Hub

Shipping is the world's 6th largest emitter of GHG.
And progress is slowing.

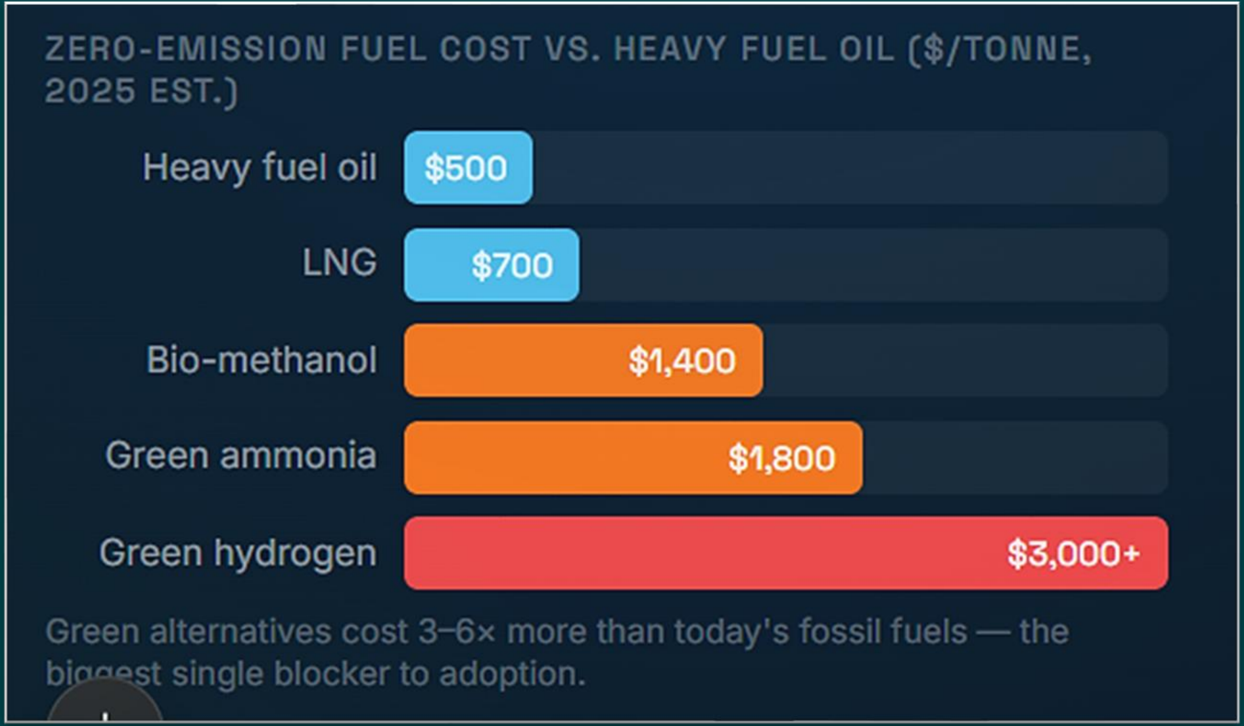
Shipping is the world's 6th largest emitter of GHG. And progress is slowing.

93%
of the global fleet is still running on fossil fuels

22.5yrs
average age of a ship – those built now will still operate by 2050

Slowing
DNV reports show stalling progress on emissions

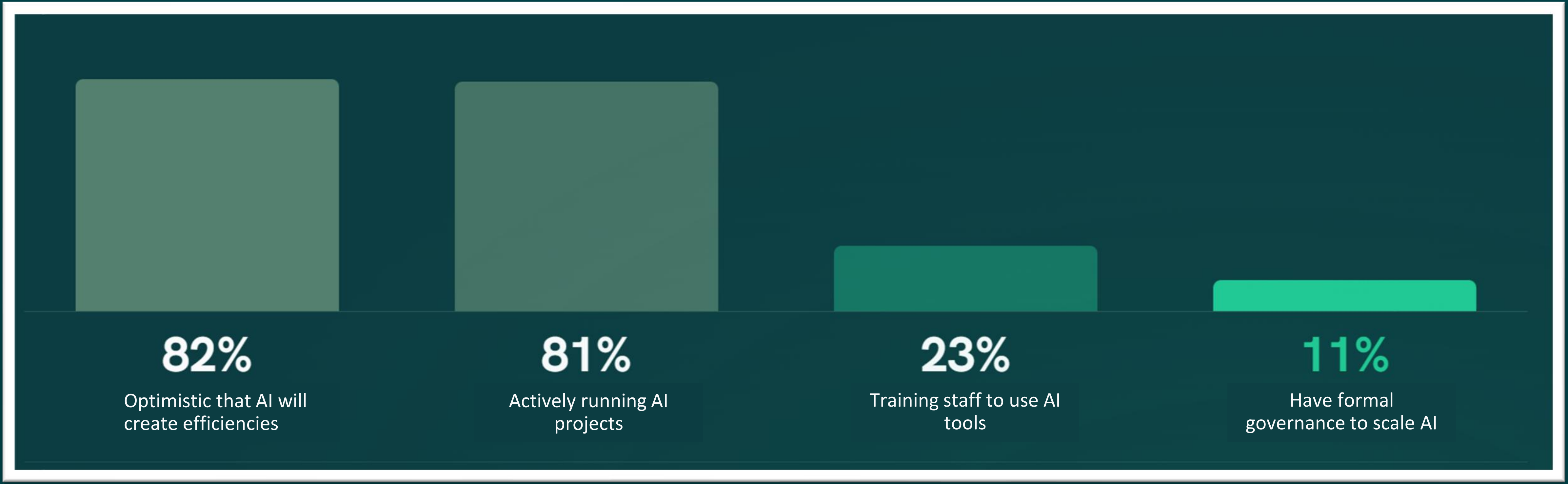
2040
Peak carbon emissions from shipping



Sources: ClimateWorks Foundation report (March 2025), IEA's "The Role of E-fuels in Decarbonising Transport"

High Ambition - Low Deployment

Research shows that as an industry Maritime is ready to utilise AI but very few have established processes and governance to scale use.

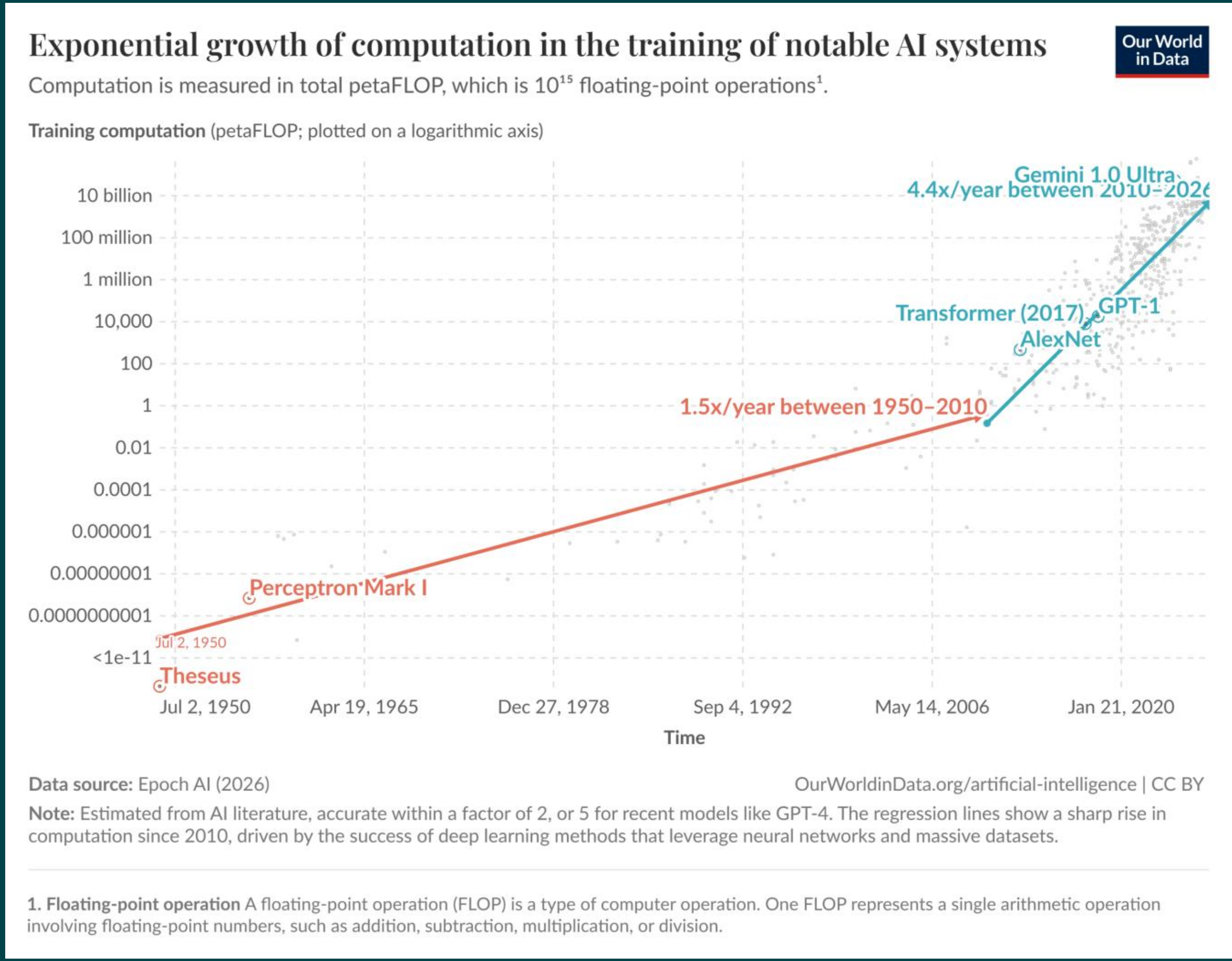


Source: Beyond the Hype: What the maritime industry really thinks about AI" by Thetius in partnership with Marcura

Modern AI and Digital tools are exceptionally powerful.

The growth curve of current models is so steep that new, more powerful models, are being released every 3-4 months.

This rate has increased by an order of magnitude in just 10 years.



Ada Mode x Clean Maritime Research Hub

Ada Mode is driving adoption of AI and Digitisation in the nuclear sector. Nuclear and maritime share many common issues.

	Applications	Case Study	Client
Theme 1 & 2	**Fuel Systems & Low Carbon Propulsion**	Predictive Maintenance	Sellafield
Theme 3	**Port & Shore Power Emissions**	Optimising Production to Reduce Energy Demand	GEO
Theme 4	**Vessel Efficiency & Aging Fleet**	Reactor Outage Optimisation	EDF
Theme 5	**Digitalisation Gap**	AI Strategy & Roadmap	Sellafield

Theme 1 & 2: Fuel Systems & Low Carbon Propulsion

New zero-emission fuel systems and advanced propulsion technologies require real-time machine health monitoring and predictive maintenance to ensure safety and maximise uptime across fleets in transition.

Where can AI and Digitisation help?

1) **ML Predictive Maintenance**
2) **Digital Twins**
3) **Machine learning & simulation**

37 %
of ships ordered in 2025 were alt-fuel compatible*

50%
Potential reduction in unplanned downtime through PdM**

Ada Mode expertise: Modelling, Simulation & Analytics

Predictive Maintenance

Sources: SMI "LNG remains alternative fuel of choice: Clarksons Research", SmartSeas AI "The Rise of AI-Driven Solutions for Maritime Predictive Analytics in Ship Maintenance"

Case Study

Predictive Maintenance

Challenge

Ada Mode worked with Sellafield to develop a predictive maintenance proof of concept (PoC) for their Waste Vitrification Plant (WVP). WVP is responsible for processing the highly active liquor (HAL) waste into a vitrified glass product that is easier and safer to handle and store. HAL represents a significant hazard at Sellafield and processing it into its glass form is one of Sellafield's highest priorities.

Approach

By applying a range of data processing and machine learning techniques Ada Mode was able to successfully predict critical downtime events in sufficient time to enable intervention. The model outputs were integrated into a simple dashboard to represent longer-term system integration.

Sellafield have now decided to move this into a full production scale application. Ada Mode is leading the development of this solution.

Outcome

It was shown that the adoption of a predictive maintenance capability on WVP would significantly increase plant availability and dramatically increase the rate of HAL throughput - representing a substantial reduction in risk for the Sellafield site. Having proved the concept on WVP, Ada Mode is now working to develop a production grade predictive maintenance capability for Sellafield.

Sellafield Ltd

KBR

Optimisation

Time Series Modelling

Data Engineering

App Dev

Theme 3: Power & Shore Power Emissions

Around 30% of operational emissions occur while vessels are stationary, driven by onboard power generation.

Where can AI and Digitisation help?

1) **Grid use optimisation**

2) **Micro grid management**

3) **Digital twins**

2 GW
Estimated peak power to provide shore electrical connections at UK ports

730 GW
The sum of the grid connection backlog in UK

Ada Mode expertise: Digital Operations and Maintenance

Optimising Production to Reduce Energy Demand for GEO Speciality Chemicals

Case Study

Optimising Production to Reduce Energy Demand

Challenge

Ada Mode work with a chemical manufacture to reduce the energy demand of their manufacturing processes through the development of a digital optimisation tool.

Approach

Comprised from a pair of ML regression models, the tool was designed to accurately predict monthly gas and electricity consumption from a representation of plant activity alongside environmental data. When combining the energy model with a constrained optimisation algorithm, an initial planned production schedule was produced with the objective of minimising a user selected KPI, such as average daily energy consumption (MWh or GBP), average daily emissions (Te), or total production output. The constraints applied to the optimisation algorithm were designed by plant experts to ensure realistic and achievable solutions are returned that meet production objectives and prevent exceeding imposed production limits.

Outcome

When optimising the past years production schedule, with the goal of minimising average daily CO_2, the optimised schedule was found to reduce emission by ~5%, corresponding to 400Te of CO_2 across the year. This result was achieved while simultaneously reducing energy costs by 5% and hitting all required production milestones.

GEO SPECIALTY CHEMICALS

Time Series Modelling

Energy Reducti on

Data Engineering

Theme 4: Vessel Efficiency & Aging Fleet

With a 28-year lifecycle, digital twins and advanced simulation are needed to extract efficiency from hard-to-retrofit existing assets.

Where can AI and Digitisation help?

1) **Predictive Maintenance**
2) **Asset management**
3) **Optimising critical path during maintenance periods**

28 yrs
from construction to end of operational life for a cargo carrier

30%
of maintenance tasks are performed too early*

Ada Mode expertise: Modelling, Simulation & Analytics

Outage Optimisation for EDF Nuclear Generation Ltd

Sources: ARC Advisory Group's Enterprise Asset Management and Field Service Management Market Study

Case Study

Outage Optimisation

Challenge

EDF Energy aimed to reduce the risk of planned outages overrunning and lower outage execution costs across its UK nuclear fleet. The goal was to decrease the volume of bulk outage work without compromising safety or quality, and to move towards a more targeted, condition-based approach to outage planning driven by plant data.

Approach

Ada Mode partnered with EDF to develop a suite of advanced analytics tools that enabled data-driven decision-making for maintenance and outage optimisation.

A plant health assessment tool was created to ingest sensor data and detect anomalous behaviour across operational cycles, informing maintenance prioritisation.

In parallel, a scope optimisation tool was built to analyse over 400,000 tasks from 60 historical outages. Using large language model (LLM) techniques, each task was scored according to historic condition and performance data. This scoring enabled tasks to be categorised as low, medium, or high risk—allowing low-risk activities to be deferred or removed from the outage scope while maintaining operational safety.

Outcomes

- £28 million recovered in lost generation through critical path reduction
- £6 million reduction in outage execution costs
- Over 10% reduction in average outage task count through targeted scope optimisation
- Data-driven condition assessment framework embedded into major plant maintenance strategy
- Outage optimisation process formally integrated into EDF governance

Optimisation

Time Series Modelling

Data Engineering

LLM

Theme 5: Digitalisation Gap

Maritime lags most industries in exploiting data, AI and digital operations to reduce emissions and cut costs at scale.

Where can AI and Digitisation help?

1) **Edge computing**

2) **Drive adoption standardised solutions**

3) **LLM adoption to slash paperwork costs**

22.2 yr

Average age of an asset in operation currently.

50%

Of transport costs are driven by the paperwork burden*

Ada Mode expertise: AI Adoption & Digital Strategy

AI & Strategy Roadmap for Sellafield

*Source: Mariou, P., 2018. Digitalisation of Maritime Supply Chain. Emerging Challenges in a Complex Future, 28th Global Supply Chain Forum by ISLI – KEDGE Business School, Bordeaux. France, 30 March.

Case Study

AI and Strategy Roadmap

Challenge:

Develop a strategy and roadmap for adoption of AI technology at Europe's largest and most diverse nuclear site.

Approach:

Thorough review of current business priorities, challenges and opportunities. Understand personnel attitudes and interest in AI adoption, current state of data acquisition, and specific AI value propositions.

Outcome:

Detailed enterprise-level strategy for AI adoption in a challenging environment, with due consideration of significant regulatory complexity. Associated roadmap detailing 5- and 10-year action plans to achieve an ambitious set of objectives.

The strategy is publicly available here -

https://www.gov.uk/government/publications/sellafield-ltd-ai-strategy

Sellafield Ltd

AI Adoption & Strategy

Thank you.

robbieoneill@ada-mode.com
ada-mode.com

CfA Centre for Assessment ISO 9001 UKAS MANAGEMENT SYSTEMS Quality Management 0120

CfA Centre for Assessment ISO 14001 UKAS MANAGEMENT SYSTEMS Environmental Management 0120

CfA Centre for Assessment ISO 27001 UKAS MANAGEMENT SYSTEMS Information Security 0120

CYBER ESSENTIALS CERTIFIED PLUS

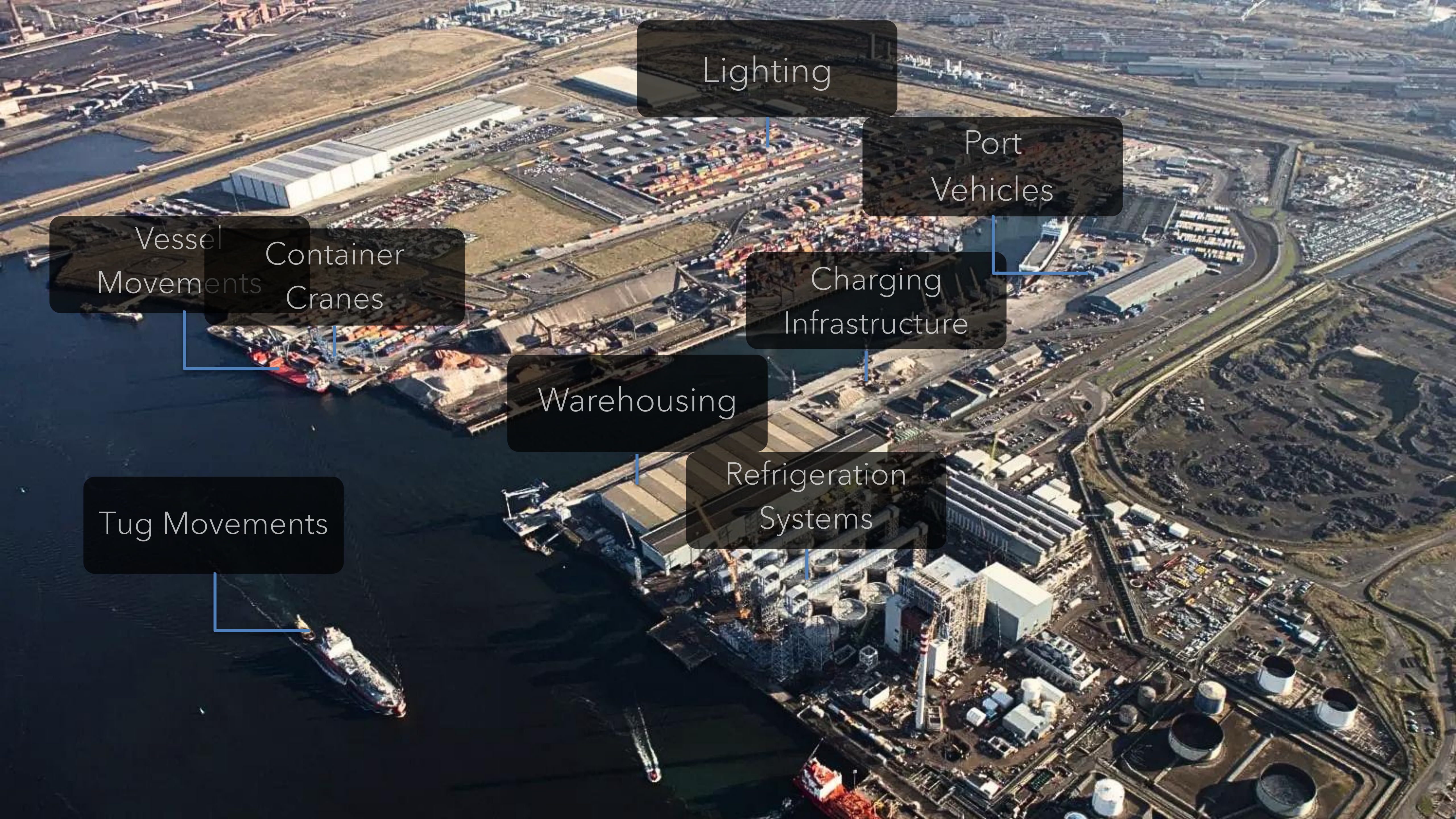
JOSCAR REGISTERED

ARMED FORCES COVENANT

The Missing Link in Maritime Decarbonisation: **Visibility, Insights and Efficiency**

Presented by: Tim Munn, MD Marine Zero

What are we really looking at?



Lighting
Port Vehicles
Vessel Movements
Container Cranes
Charging Infrastructure
Warehousing
Refrigeration Systems
Tug Movements


Operational Data
Infrastructure Data
Commercial Data
Energy Data
Vessel Data

Different stakeholders see different realities.

Decarbonisation requires a shared operational truth.

Operational Data

Infrastructure Data

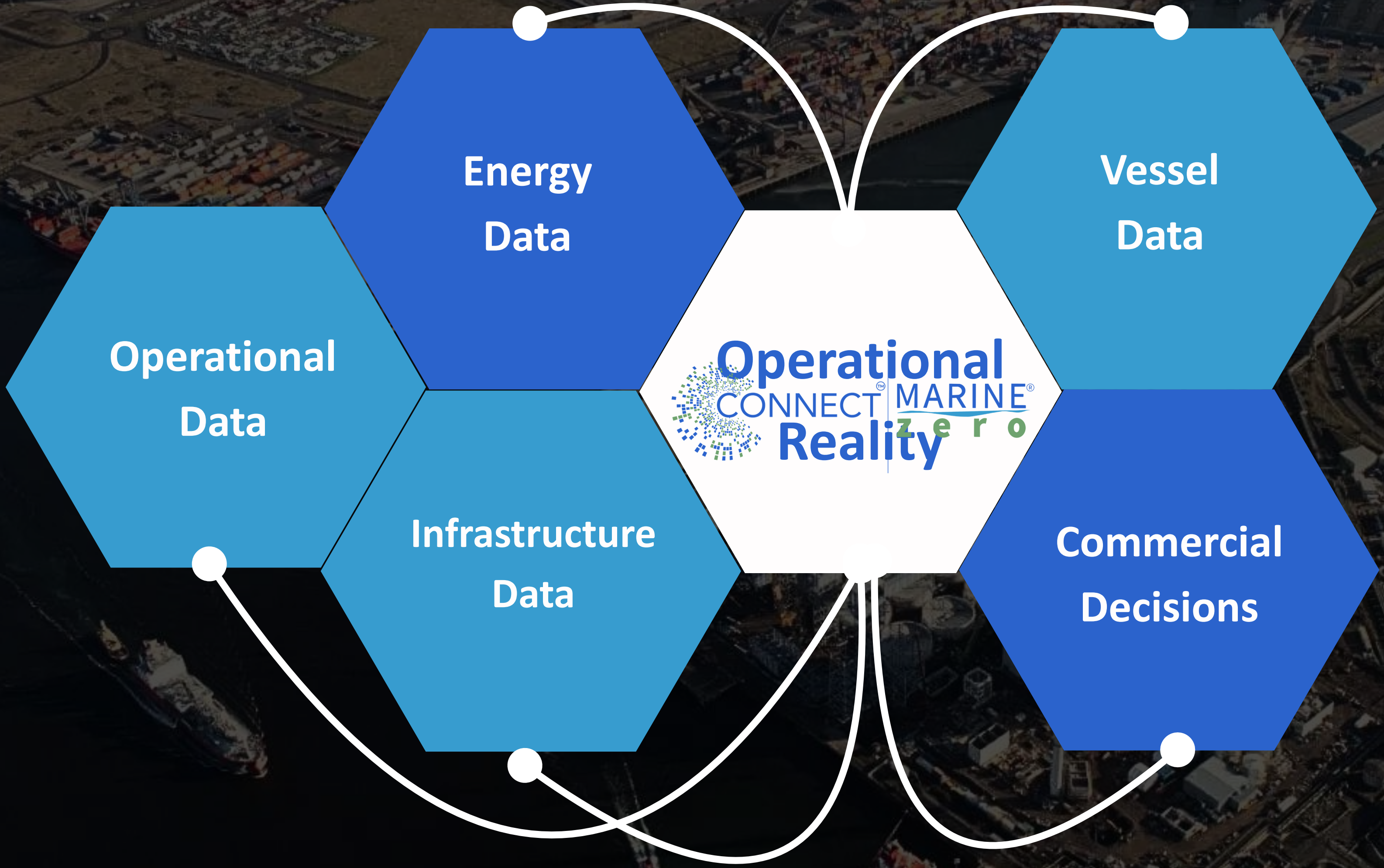
Energy Data

Vessel Data

Commercial Decisions

One trusted operational reality

An end to siloed datasets.

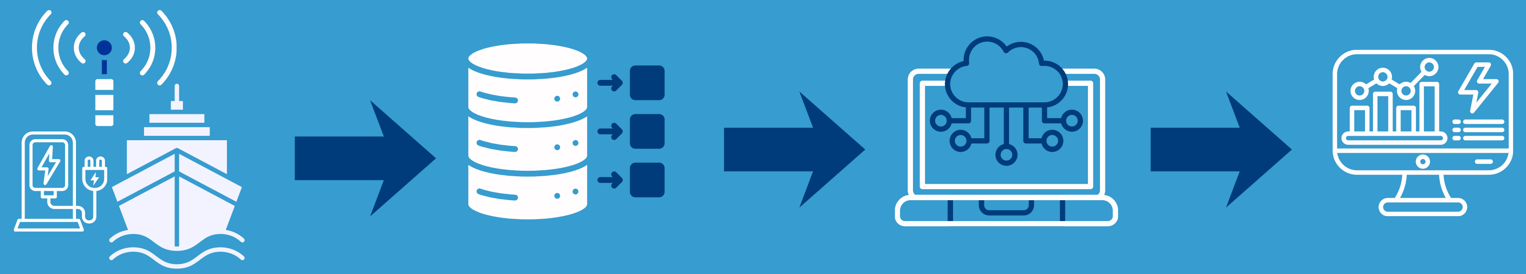


CONNECT | MARINE zero

Creating a shared operational reality.

CONNECT MARINE zero

How CONNECT Works



CAPTURE

Operational, energy and asset data

CONNECT

Vessels, infrastructure and operations

UNDERSTAND

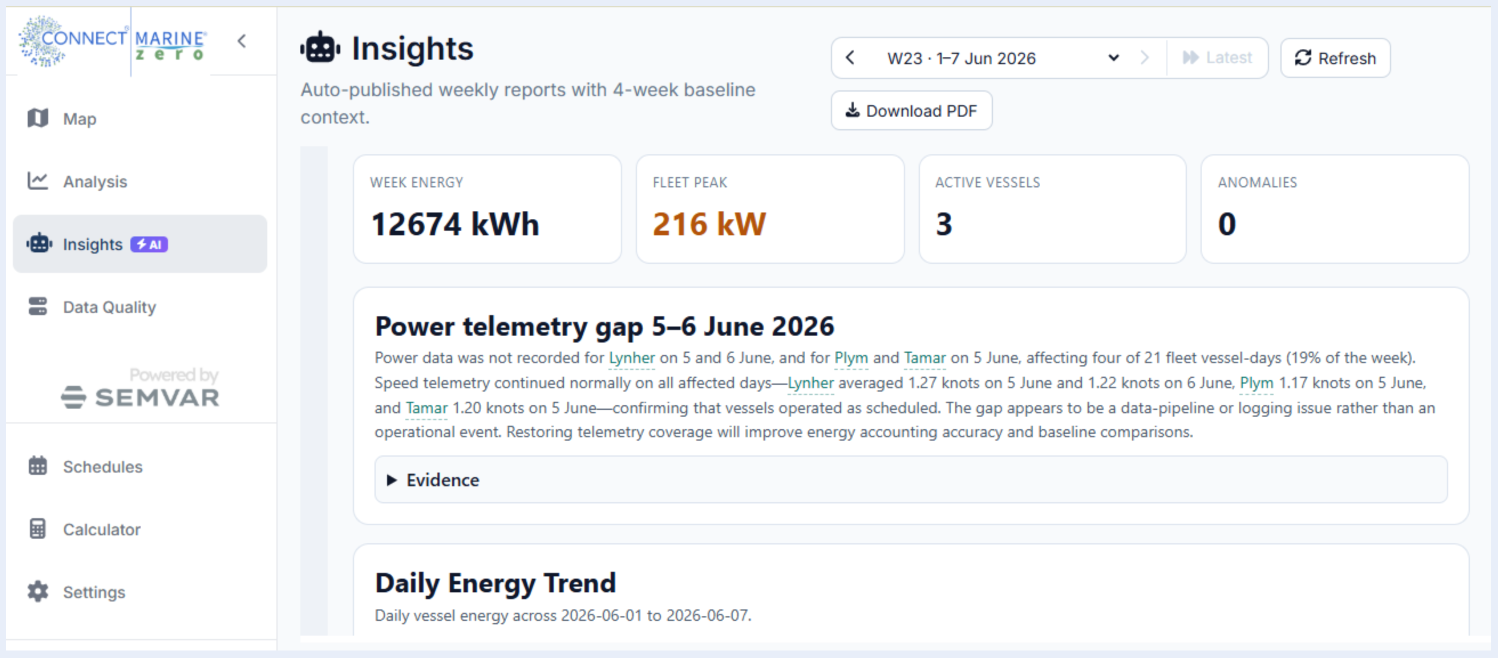
Shared operational reality

IMPROVE

Better performance and decisions

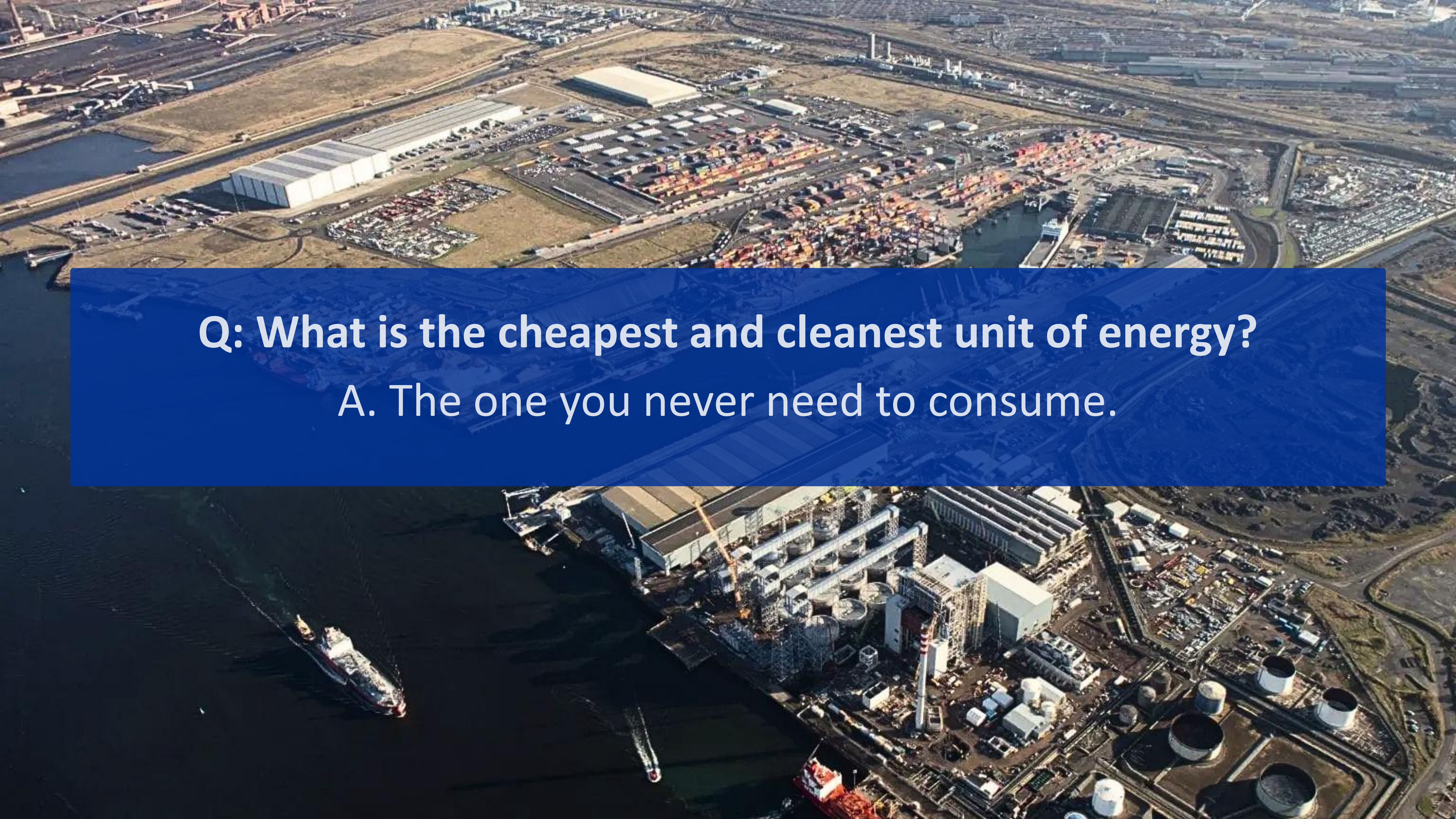
AI-powered digital twin intelligence

Operational reality | Energy intelligence | Predictive insight | Decision confidence



What do we see now?

But why does it matter?



Q: What is the cheapest and cleanest unit of energy?

A. The one you never need to consume.

Understanding demand creates

opportunities to **improve** efficiency
reduce emissions,
and **lower the cost** of decarbonisation

Funded by UK Government

MARINE zero

Tamar Crossings

UNIVERSITY OF PLYMOUTH

Torpoint Ferry | Bridge to Zero

Before CONNECT

Limited operational evidence to support decarbonisation planning

Limited visibility of real-world vessel performance

Operational and energy data held across multiple systems

Increased uncertainty in planning and decision making

No validated operational energy baseline

Different stakeholders relying on different information sources

CONNECT Enabled

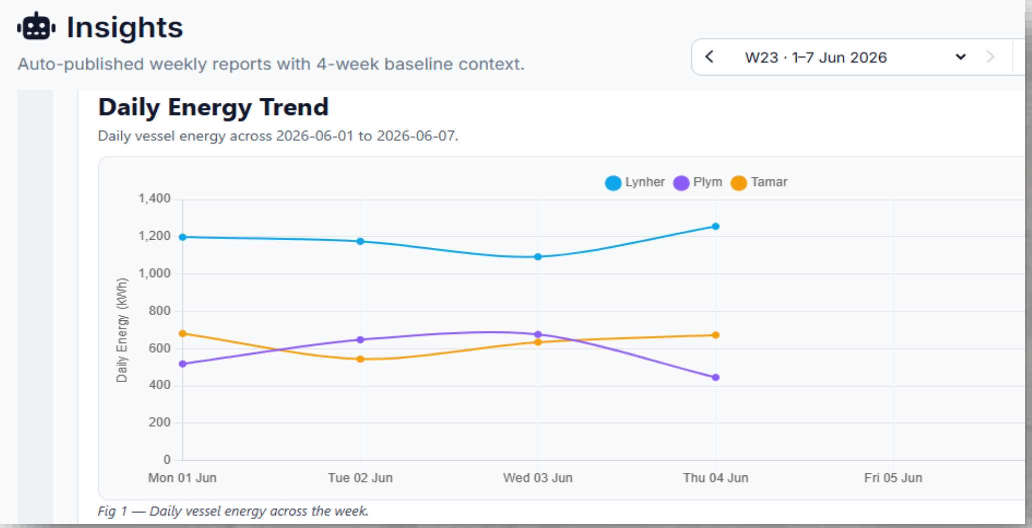
A trusted operational evidence base

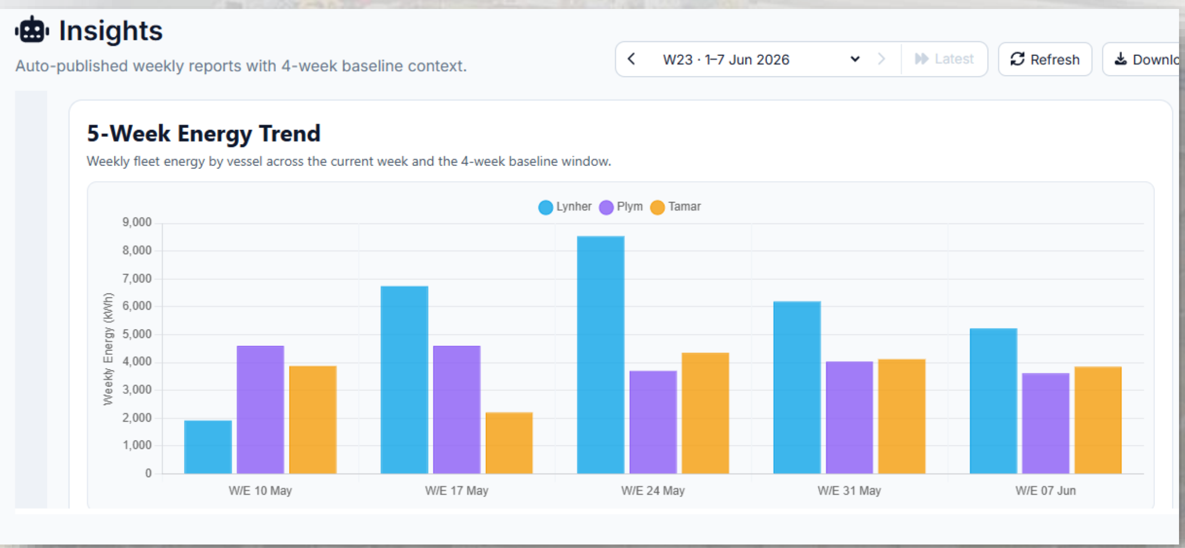
Live visibility of vessel energy use

Shared operational reality across stakeholders

Data-driven planning and decision making

Digital twin modelling of vessel operations





CONNECT: Project Snapshot

3 Vessels, 24/7
Torpoint Ferry fleet connected

100+ Million
energy datapoints collected

64,721 kWh
of energy analysed

4 Days
early warning before a critical motor failure

2.5 tonnes CO2
daily extra vehicle idling time due to one vessel being out of service

Maritime decarbonisation is a shared capability challenge.

We’re building the future together.












Let's continue the conversation

Download our CONNECT Product Information Sheet:

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marinezero.com

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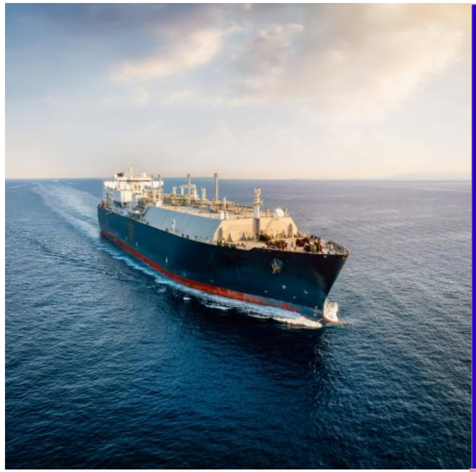
linkedin.com/company/marine-zero

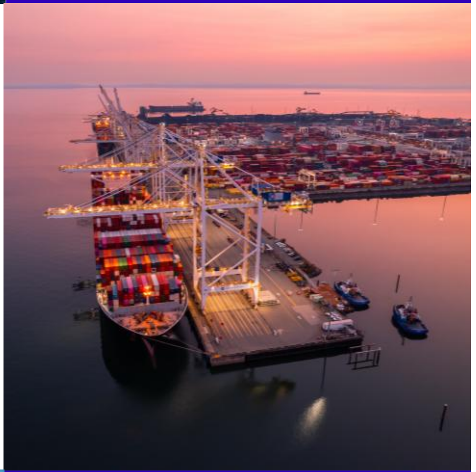
Highlights and Headlines

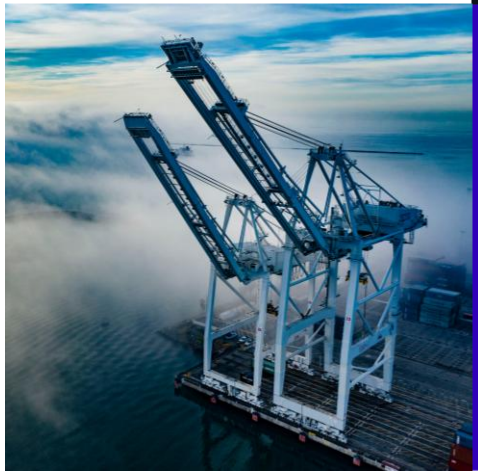
Session 3

Skills & Workforce Development

- James Tagg, South Shields Marine School
- John Chudley, MLA College







Skills & Workforce Development for Alternative Fuels

by

James Tagg

South Shields Marine School

SOUTH SHIELDS MARINE SCHOOL

Key Challenges

- **Training & Planning Gaps**
- Training often considered too late in shipbuilding lifecycle
- Final phase focus → crew not fully prepared at delivery
- Heavy reliance on OEM training for first crew only

- **Limited Training Availability**
- Insufficient global training provision for alternative fuels
- Lack of formalised guidance from MNTB (Merchant Navy Training Board)
- IMO interim guidelines still pending / incomplete

- **"Train the Trainer" Problem**
- No clear answer to: who qualifies the instructors?
- Limited pool of experts with operational alternative fuel experience

South Shields Marine School

Regulatory & Framework Challenges

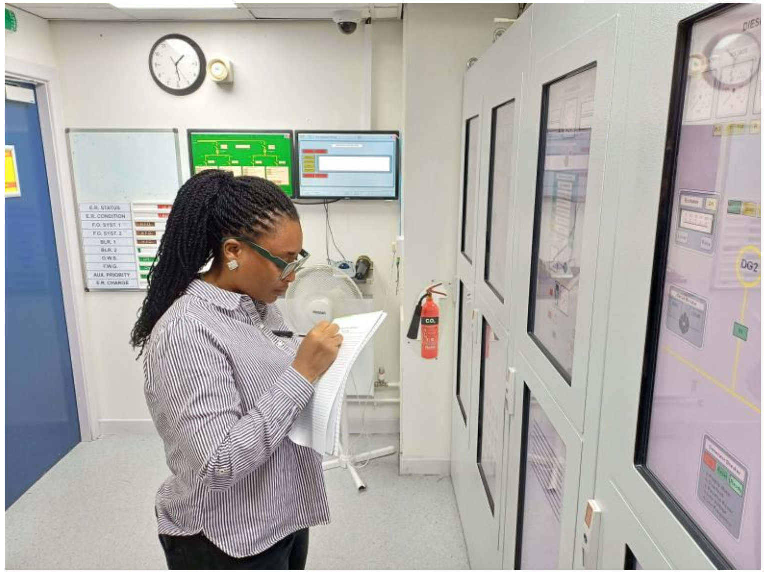
- **IGF Code Limitations**
- Current International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code) largely **LNG-focused**
- Significant technical differences with:
  - Methanol (toxic & liquid fuel handling)
  - Ammonia (high toxicity & safety risk)
  - Hydrogen (gaseous/liquid, high volatility)
- **Emerging Technologies**
- Battery propulsion rapidly expanding
- **No standardised training frameworks available**
- Gaps in:
  - Maintenance
  - Safety
  - Emergency response

South Shields Marine School

Overcoming Industry Challenges Through Simulation

- Close collaboration with Maritime and Coastguard Agency (MCA)
- Joint development of new training criteria and standards

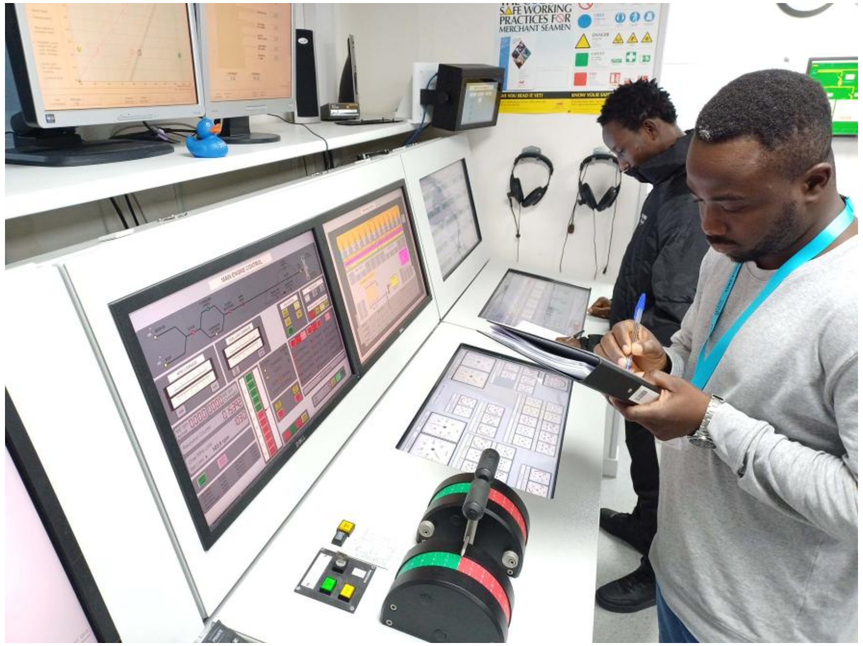
- **Simulation-Based Training**
- Reduces reliance on physical vessel access
- Replicates:
  - Engine operation
  - Bunkering procedures
  - Emergency scenarios
- Effective solution to seatime and cost challenges



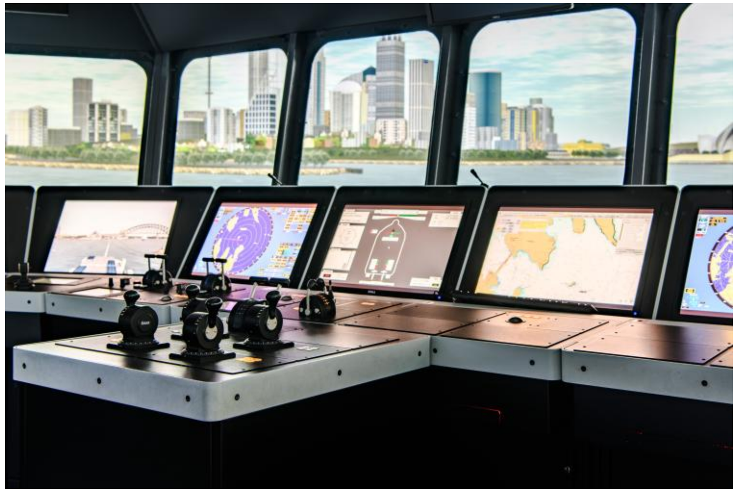
SOUTH SHIELDS MARINE SCHOOL

Overcoming Industry Challenges Through Simulation

- **Collaborative Development**
- Strong partnerships
- Co-development of new training programmes:
  - **30 Day IGF Sea time Remission Course -** MCA Approved
  - **Basic & Advanced Methanol -** MCA Approved
  - Basic & Advanced **Ammonia training - MCA Approved**
  - **Hydrogen IGF bolt-on course -** MCA Approved
  - **AEPC 1 Battery maintenance & operations -** MCA Approved



- **Training Delivery Approach**
- Blend of:
  - High-fidelity simulators
  - Practical workshops
- Hands-on experience in:
  - Bunkering operations
  - Fuel handling safety
  - Battery systems maintenance



South Shields Marine School

Moving Forward

- Workforce development must be integrated earlier in ship design & build
- Industry needs standardised global training frameworks
- "Train the trainer" programmes are essential
- Simulation will play a critical role in scaling training
- Collaboration across:
  - Regulators
  - Industry
  - Training providers is key to success

South Shields Marine School

Thank you

MLA COLLEGE

Clean Maritime Needs New Skills; But Do We Have the Right Education Models?

Professor John Chudley PhD CEng FIMarEST

Rector of MLA College and Chair of the Engineering Council (UK)

MLA College supports the United Nations SUSTAINABLE DEVELOPMENT GOALS

cifal City of London

unitar United Nations Institute for Training and Research

part of gedu GLOBAL EDUCATION

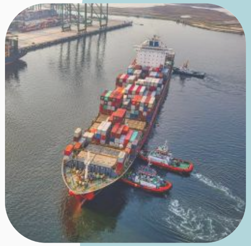
In partnership with UNIVERSITY OF PLYMOUTH

Office for Students OfS

The Engineering Council

Standards do not raise themselves

Engineering must keep moving forward - and so must the standards that support it. As the UK regulatory body for the engineering profession, we work with institutions, industry and individuals to uphold standards, respond to change and help ensure engineering remains trusted, responsible and fit for the future.



The Engineering Council holds the national register for the professional titles:

Chartered Engineer (CEng)

Incorporated Engineer (IEng)

Engineering Technician (EngTech)

Information and Communication Technology Technician (ICTTech)

Chartered Engineer HRB

Incorporated Engineer HRB

Engineering Technician HRB

Registration Route(s)

The route to assessment for all titles is evolving, with the **Individual route becoming more popular than Standard** for all titles except CEng

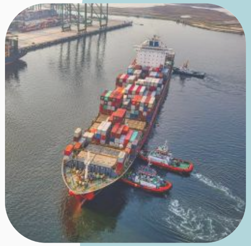
Registration Review

The MLA College Commitment

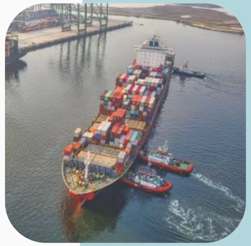
Deliver outstanding flexible education and training.

Promote the conservation and sustainable use of the environment for the advancement of the global community.

Develop people who are committed to values that benefit humanity.

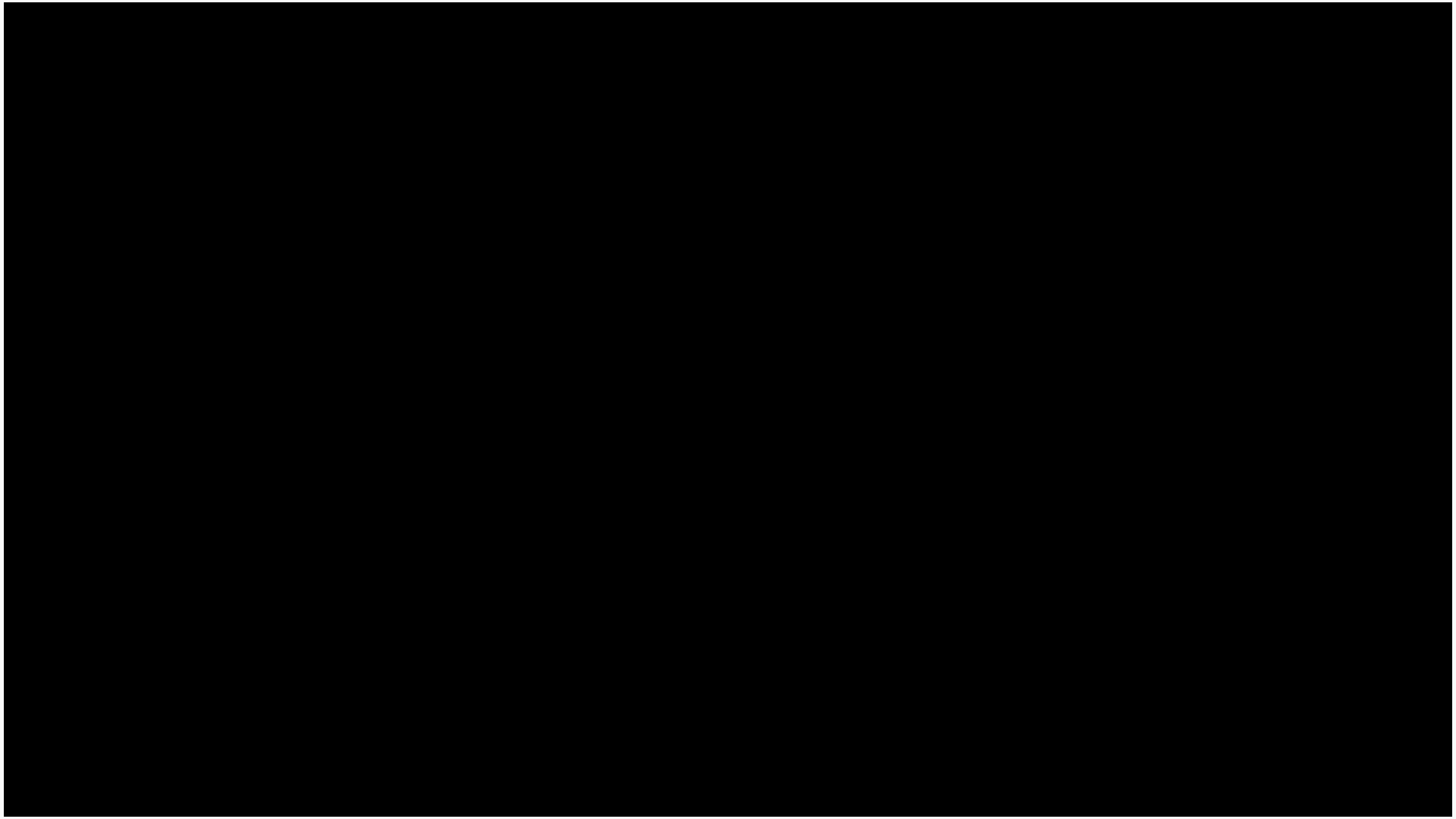


Total Learning Package



- Our programme delivery has been designed with the working professional in mind. Whether working at sea, or ashore, our Total Learning Package (TLP) allows you to study an undergraduate or postgraduate maritime UK degree, awarded by the University of Plymouth, regardless of your global location.

- The TLP allows you to download your course materials so you can study on or offline at a pace that suits you. There are no live lectures, which allows you to balance your career and other life commitments whilst pursuing your university online degree.



Entry Requirement: Bachelors in relevant "jointly approved" degree **and** CoC Class 3 *or*
Higher Diploma + "jointly approved" Top up Bachelors and CoC Class 3

Likely minimum 4 years

KNOWLEDGE & UNDERSTANDING

PgDip Sustainable Maritime Operations

MSc Sustainable Maritime Operations Research Project

Achievement of Technical Knowledge Qualification

OCCUPATIONAL COMPETENCE

Occupational Competencies as defined in framework. Activity delivered primarily by employer in the workplace

Or Occupational Competence Project

Up to 6 months industry attachment, if required, to address specific competency requirements

Portfolio based Occupational Competence Validation Interview

PROFESSIONAL COMPETENCE

Chartered Marine Technologist (CMarTech) Professional Competence as defined in framework.

Knowledge, skills and behaviours assessed in the workplace and verified using a variety of performance and job/work records

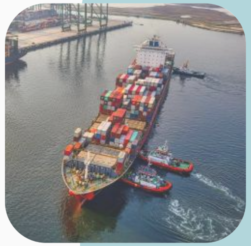
Portfolio stored on bespoke IMarEST "Echo" CPD tool. Uploading of relevant Knowledge, Understanding and Skills evidence

PROFESSIONAL REGISTRATION

CMarTech Professional Review Interview

IMarEST confirm Occupational and Professional Competence against CMarTech requirements

Employer sign off of Professional Training Standard



Maritime Decarbonisation (May 2026)

Regulatory Frameworks

- International Frameworks for Maritime Decarbonisation
- Regional Frameworks for Maritime Decarbonisation
- Role of Classification Societies
- Maritime Decarbonisation in the UK

Ship Design and Operation

- Energy Efficiency and Naval Architecture
- Energy Efficiency and Marine Engineering
- Energy Efficiency and Ships Operations
- Energy Efficiency and New Technology

Alternative Fuels and Propulsion

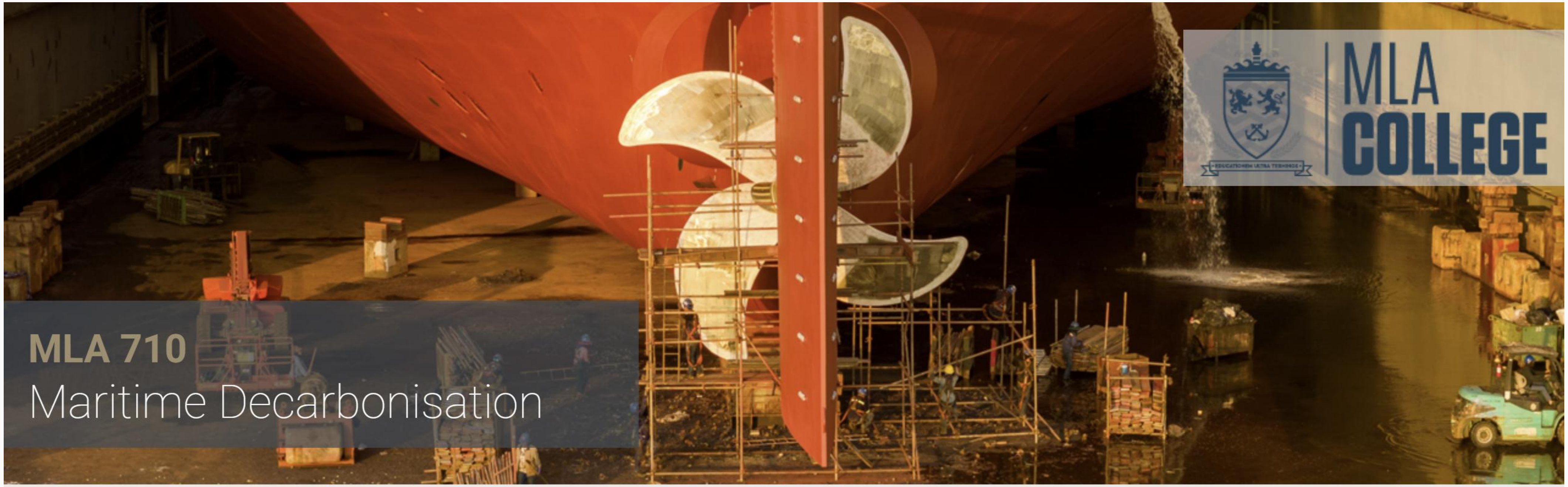
- Introduction to Alternative Fuels
- LNG, Methanol and Ammonia
- Hydrogen and Electric
- Nuclear and Wind Propulsion Solutions
- Synthetic Fuels and Biofuels: Demand vs Supply

Additional Decarbonisation Technologies

- Carbon Capture and Carbon Credits
- Voyage Optimisation Technology
- Energy Recovery for Marine Engines
- Digital Twinning and Technology Integration
- Autonomous Marine Vessels and Decarbonisation

Maritime Decarbonisation Implementation

- Financial Complexity of Maritime Decarbonisation
- Economic Feasibility of Maritime Decarbonisation
- Maritime Decarbonisation and Social Considerations
- Stakeholder and Community Involvement
- The Role of Education



Teaching and learning materials

Social Sustainability in the Maritime Industry (May 2026)

Introduction to social sustainability

- Social sustainability and related SDGs
- Understanding social sustainability
- Social sustainability in the maritime industry
- Corporate social responsibility and ESG

Social sustainability in the maritime industry

- Legal aspects of social sustainability
- IMO and social sustainability goals
- Peace and maritime security
- Cities and communities

Socially sustainable business practices

- Organisational leadership and culture
- Anti-corruption
- Sustainable HR management
- Human-centred approach
- Maritime organisations and alliances

Employees perspective

- Seafarers' labour
- Occupational health and safety
- Welfare and wellbeing
- Education, training and career development
- Diversity, equity and inclusion

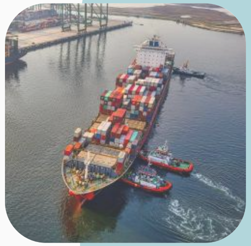
Current challenges

- Mental health
- Fatigue
- LGBT+
- Shore leave

Procedural aspects

- Justice in social sustainability
- Stakeholder engagement
- Just transition
- Seafarers' voice

MLA 711
Social Sustainability in the Maritime Industry



Teaching and learning materials

Chapter 1:
Introduction to social sustainability

Chapter 2:
Social sustainability in the maritime industry

Chapter 3:
Socially sustainable business practices

Chapter 4:
Employees perspective

Chapter 5:
Procedural aspects

Looking Forward

- Economic pressures must not diminish investment in people and sustainability.
- Digital learning is now mainstream, expanding access, flexibility and lifelong learning opportunities.
- Greater recognition of prior learning and professional experience can accelerate achievement and reduce barriers.
- Action Research enables learners to create organisational impact while gaining accredited qualifications.
- The future of Higher Education lies in recognising, validating and enhancing learning wherever it happens.

The challenge for Higher Education is no longer how to teach, but how to recognise and accredit learning that creates real-world value.

UNIVERSITY

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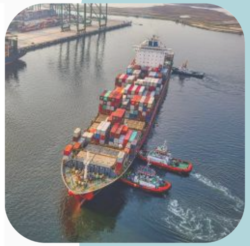
MLA College

Making Learning Accessible

Educationem Ultra Terminos



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www.mla.ac.uk

MLA College supports the **United Nations**
SUSTAINABLE DEVELOPMENT GOALS


UK National
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Thank You
Collaboration | Innovation | Transformation
UKRI
Engineering and
Physical Sciences
Research Council
Funded by
UK Government