

# Green Ships Workshop

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Heriot-Watt University  
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# An Analysis of the Maritime Sector in Scotland

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# Overview

## An Analysis of the Maritime Sector in Scotland



A report prepared for the Scottish Maritime Cluster (SMC) and Scottish Enterprise



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Appendix A: Study Participants

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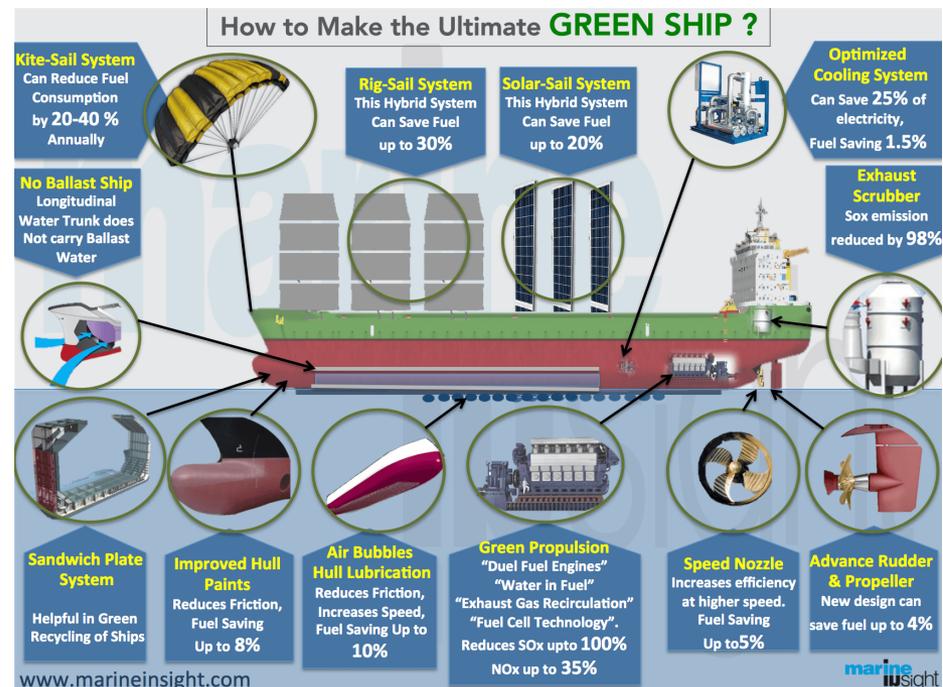
# Section 3: Market Overview

Demand for alternative energy sources and energy efficient systems, driven by both cost and regulatory pressures from e.g. the IMO. As a result there is a significant drive towards the development of the 'green ship'.

Some useful stuff at

[www.marineinsight.com](http://www.marineinsight.com)

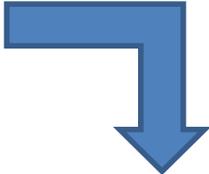
- 14 Technologies to Make the Ultimate Green Ship
- 10 Important Points To Comply With Ship Energy Efficiency Management Plan
- Top 5 Zero Emission Ship Concepts Of The Shipping World
- Top 7 Green Ship Concepts Using Wind Energy



# Section 5: SWOT Analysis

## *Regulatory-driven innovation*

There are already examples of smaller Scottish companies that are developing new products or services to help the maritime industry comply with environmental regulations. The **Malin Group**'s new venture mentioned above (**Cleanship Solutions**) is one example. **Ferguson Marine** has collaborated with **CMAL** on the pioneering development of hybrid/electric and LNG ferries and is currently exploring hydrogen propulsion. Another is **SMAR Azure**, which is applying its aerodynamic expertise from the yachting sector to develop a smart, wind-assisted propulsion system to reduce fuel consumption and emissions in large vessels. **Heriot-Watt University** also has a strong interest in this subject and is leading an Innovate UK funded project (HyFES) on more environmentally-friendly marine propulsion and power systems involving two Scottish companies (**Denchi Power and Ferguson Marine**).



**Skills, digitisation, automation and green shipping are key issues for the future and can be regarded as areas of both opportunities and/or threats for Scotland.**

**Establish special interest groups (SIGs) for skills, digitisation, autonomy and green ships**

# Other clusters are very active

## Danish Maritime Cluster

- BSR Innoship (reducing ship and port emissions)
- North Sea Maritime Cluster (fostering green growth)
- MarTech LNG (ERDF South Baltic Programme)

## Marine South East

- CLINSH: Clean shipping for inland waterways
- HEVIMA: Hybrid Electric Propulsion systems for small commercial vessels
- PLXX: innovative new marine fuel

## Interreg project on 'Clean North Sea Shipping' (2011-2013)

- Partners from Belgium, Germany, Netherlands, Norway, Sweden, UK
- UK partners include Newcastle University, Shipbuilders & Shiprepairers Association and SEEDA

## Interreg project on 'Developing Hydrogen Ports in the North Sea Region'

- Conference was held in Edinburgh on Tuesday (26<sup>th</sup> March 2019)

# Workshop objectives

1. Build awareness of the opportunities & threats for Scottish businesses with respect to the market & regulatory pressures for cleaner and greener shipping
2. Increase the visibility of potential solution providers in Scotland and the need for new solutions
3. Identify at least three options for collaborative actions and/or SMC-led activities

# Workshop agenda

## **Current & emerging trends and technologies**

Babcock International, Ferguson Marine

## **Perspectives from the vessel owners and operators**

Contributions from Anglo Eastern and CMAL

Open discussion

## **Perspectives from solution providers**

Malin Group, Marine Design International, SMAR-Azure, ZEM Fuel Systems, Scottish Hydrogen Fuel Cell Association

Open discussion

## **Perspectives from experts at Heriot-Watt University**

## **Perspectives from the public sector**

Scottish Enterprise, other public sector representatives

## **Open discussion on implications and options for the Scottish Maritime Cluster**

Identify at least three options for collaborative actions and/or SMC-led activities