



CMAL
Caledonian Maritime Assets Ltd
Stòras Mara Cailleannach Eile



A Journey to Net Zero

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IMarEST Maritime Industry Decarbonisation Symposium 2025

30th October 2025

CMAL owns 37 vessels for the Clyde, West Coast and North of Scotland



**Caledonian
MacBrayne**

CalMac Vessels:

- 32 Vessels for the Clyde and Hebrides contract
- Operated by CalMac Ferries Limited
- Vessels range from 12m to 117m
- 3 Battery Hybrid vessels in operation – *first RoPax Hybrid in the world*
- 12 new build vessels currently under construction
- 1 vessel in process of being recycled



Northlink Vessels:

- 5 Vessels for the Northern Isles Ferry Service (NIFS)
- Operated by Serco NorthLink
- Vessels range from 112m to 125m
- 3 RoPax Vessels and 2 RoRo Freight Vessels
- 2 new build vessels are currently in the procurement phase



New Vessel Projects

CMAL has a major renewal programme underway for vessel replacement over the next decade

We plan to build or replace 21 vessels in the next 10 years.

Our plan is backed by a £700million commitment from the Scottish Government for a five-year period from 2021/22 until 2025/26.

We are working with Scottish Government to assure that there are the appropriate funding streams from 2026/27 and beyond.

We continue to seek new ways to power vessels by adopting further advances in battery technology and electrifying our fleet.

Ultimately, our goal is to build a carbon-free ferry fleet.



New Islay/Little Minch Vessels



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Four sister vessels

Under construction in Cemre Shipyard, Türkiye

Main Particulars/Capacities:

- 94.8 / 18.7 / 4.0m
- 100 Cars of 14 HGVs
- 450 Passengers
- 15.7 knots design speed/ 16.5 knots max speed

Net Zero:

- Diesel electric battery hybrid vessels
- 1MWh NMC Lithium-Ion Battery Banks
- Low sulphur MGO for main engines
- Integrated premium efficiency propulsion motors for eVSP propulsors
- DC Grid
- Shore power from the grid for overnight hotel load and charging batteries (1000A)

Batteries/ hybrid system to be primarily used for peak shaving and black out protection



Northlink Freight Flex Vessels



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Two sister vessels

Currently in the procurement phase, with four shipyards shortlisted

Main particulars, capacities, and speed:

- 140 / 23.4 / 5.2m
- 1400 lane metres (approximately 100 trailers)
- 12 Passengers in Freight Only Mode
- 200 Passengers in RoPax mode
- ECO Speed 14 knots and Max Speed 20 knots

Net Zero:

- Methanol Ready Diesel Mechanical/ Battery Hybrid vessel
- 4.5MWh **Lithium-Ion Battery Banks** (chemistry TBC)
- Methanol ready main and auxiliary engines
- Main DC Switchboards
- Shore power from the grid for overnight hotel load and charging batteries (1600A)
- Smart technologies for propeller, rudder and transvers thrusters

Methanol ready engines will also be capable of operating on low sulphur MGO as well as Bio-Fuels

Batteries/ hybrid system to be used for peak shaving and black out protection



Small Vessel Replacement Programme Phase 1



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Seven sister vessels

Under construction at Remontowa Shipyard, Poland

Main Particulars/Capacities:

- 49.9 / 12 / 4.0m
- Design A: 24 Cars, 150 Passengers
- Design B: 16 Cars, 250 Passengers
- 9 knots service speed

Net Zero:

- All electric battery vessels that utilise zero emission operation
- 5.75MWh NCA Lithium-Ion Battery Banks
- Low sulphur MGO for back up generators
- Premium efficiency propulsion motors for Schottel azimuth thrusters propulsors
- DC Grid
- Shore power from the grid for charging batteries (1000A)

Vessels will utilise zero emission operation

Diesel generators will provide for range extension



Way Forward for Decarbonisation



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Small and Intermediate Vessel Fleets

CalMac

- Electrification is seen as most viable option
- Other options such as Hydrogen being investigated
- Small Vessel Phase 2 concept design in progress, focusing on all electric operation with optimised hull form for shallow water operation
- Intermediate vessel concept design to kick off in 2026 with focus on all electric
- Gourock Dunoon Passenger only vessels looking at hybrid/ all-electric options



Major Vessel Fleets

CalMac / Northlink

- Hybridisation most likely option for CalMac major fleet – all electric unlikely due to vessel size and operational profiles
- Other fuel options to be investigated for CalMac major fleet
- Methanol ready will be most likely option for Northlink RoPax vessels in line with Freight Flex vessels
- Other options such as Hydrogen and Ammonia to be considered but unlikely to feature in vessels within next decade

Decarbonisation Challenges



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Port
Infrastructure

Shallow Waters

Timetables

Vessel
Requirements

Space Onboard
Vessels

Shore Power/
Charging

Alternative Fuel
Supplies

Alternative
Fuels Shoreside
Infrastructure

Existing Vessels



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Case Study: Kongsberg Promas Lite Upgrade on MV's Hjatland and Hrossey

Design

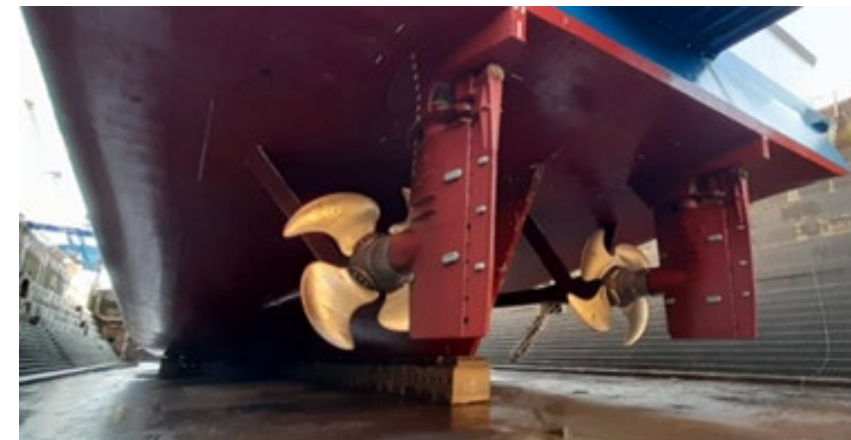
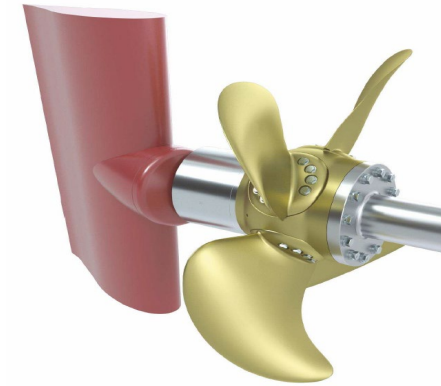
- Redesign of the blades reducing their size/shape
- Installation of a new rudder bulb
- Upgrades the vessels propulsion control system
- Detailed calculations (model, CFD, alignment, whirling and torsional vibration)

Installation

- System successfully installed on both vessels during their 2025 dry docks
- Removal and replacement of the vessels propeller blades with the new design
- Installation of a new stainless steel hub cap – extends to the newly installed rudder bulb
- The vessel control systems also upgraded

Results – 6 months in operation

- Reduction in fuel bunkered of **891.6 metric tonnes** – equates to 30 road tankers
- Reduction in fuel consumed by main engines is **1026.1 metric tonnes** – 13% reduction compared to last year
- Reduction in total fuel consumed on both vessels is **910 metric tonnes** – 10% reduction of 9.9% compared to last year



Thank You For Listening



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