

Project Location

Kilchoan Melfort Trust
Loch Melfort, Scotland

Customer

Open Climate Solutions

Request More Information

Kelson Marine

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Marnik Van Cauter • 1st
Marine Assets Manager
1w •

Storm Éowyn brought winds of 78 knots (144 km/h), hitting the farm directly from the west. Over the last four years of seaweed cultivation at Kilchoan, this has by far been the biggest storm to hit us. Like much of the West Coast, I think it safe to say we are lucky this happened on neap tides. Pleased to see the IMTA farm handling these conditions so well!

Talking about luck, our boathouse seemed to just dodge the worst possible scenario!

Marnik Van Cauter • Author
Marine Assets Manager
1w

Toby Dewhurst It was days like that one I was very pleased with the engineering work! Thanks again! [Kelson Marine Co.](#)

Bojan Martin • 2nd
Regenerative Carbon Removal
2h

Toby Dewhurst Thanks for the excellent work on this!! We're super happy we got some proper engineering done on this design.

Project Highlights

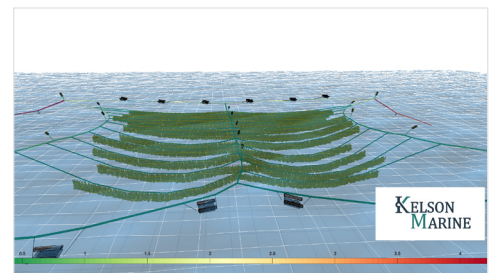
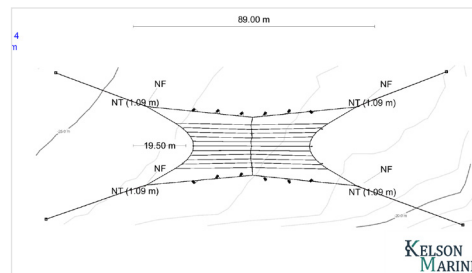
- **Multi-Trophic Approach** – Integrating seaweed and oyster farming enhances water quality, improves nutrient efficiency, and supports ecosystem resilience.
- **Engineering & Design** – Stability was achieved through optimized mooring systems, structural reinforcements, and material selection to minimize impact and wear. Design refinements included adjustments to line lengths and strength to enhance longevity under extreme conditions.
- **Storm Resilience** – In January 2025, Storm Éowyn hit with winds of 78 knots (144 km/h). The IMTA farm remained fully intact and operational, while trees were uprooted and structures on land sustained damage.



The IMTA Farm at Kilchoan Melfort Trust had a spectacular 2023-2024 harvest of kelp.
Photo Credit: Kilchoan Melfort Trust

Project Overview

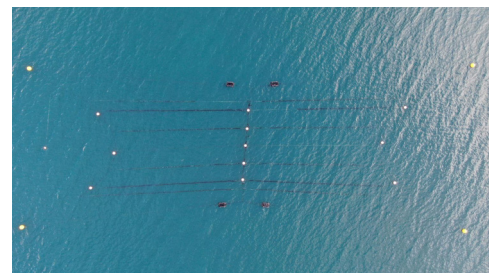
The IMTA (Integrated Multi-Trophic Aquaculture) Seaweed Farm integrates seaweed cultivation with oyster farming. Kelson Marine prepared a model based on the client's design. Kelson then applied its validated dynamic Hydro-Structural Finite Element modeling approach to quantify loads and motions of the macroalgae and oyster farm in waves and currents using site-specific metocean data. Kelson applied these methods to evaluate its design alternatives in typical (mean), storm (1-year return period), and extreme (10- and 50-year return period) conditions. From this analysis, Kelson advised on farm design modifications to maximize performance and specified gear requirements for storm survival.



Plan and profile views of the IMTA farm design in still-water conditions, as modeled and prescribed by Kelson. The color bar is representative of the tension on the farm lines, with green representing the least tension and red representing the most tension.



While the farm system in the water survived Storm Éowyn unscathed, trees were ripped up by the storm nearby on the shore next to the farm's boathouse.



The IMTA farm system fully operational immediately after Storm Éowyn.