Marine Scotland Case Study

Verifying Fishing Vessel Engine Power Using a Shaft Power Measurement Kit

The Client: Marine Scotland

Scotland is amongst the largest sea fishing nations in Europe, with its fishing vessels landing around two-thirds of the total fish caught in the UK.

Marine Scotland was responsible for monitoring and controlling the activities of fishing vessels operating within Scottish waters, as well as Scottish-registered vessels wherever they may fish. This included oversight of fishing capacity, defined in terms of vessel tonnage and engine power.

Under the Common Fisheries Policy (CFP) and associated fisheries control regulations, fishing vessel operators were required to ensure that declared engine power was accurate and verifiable. Engine power, recorded in kilowatts (kW) for registration and licensing purposes, had to be declared to the Maritime and Coastguard Agency (MCA) and reflected on the fishing licence. It was prohibited to fish with a propulsion engine whose power exceeded the value stated on the licence.

> "What we needed was a temporary and relatively inexpensive system to carry out physical engine power testing within our verification process."
>
> Marine Scotland

The Challenge

Where documentary checks and initial vessel inspections were insufficient to verify declared engine power, Marine Scotland had to carry out physical engine power testing. This required equipment capable of temporary installation on working fishing vessels, reliable operation in harsh marine environments, and use across a wide range of vessels without permanent modification.

Testing also required measurement data to be reliably logged and retained for further analysis ashore. Limited space around propeller shafts, combined with demanding operating conditions, meant the equipment needed to be compact, robust, and protected. In addition, the system had to be reusable across multiple vessels and straightforward enough to be installed, operated, and removed by fisheries representatives within a single inspection visit.

The Solution

To support physical engine power testing during vessel inspections, Marine Scotland acquired a Datum Electronics **Shaft Power Measurement Kit** designed for temporary installation on working fishing vessels, without permanent modification. Installation is straightforward and supported by documentation and technical guidance.

The Datum SPMK measures engine power by combining torque and rotational speed data taken from the propeller shaft. Shaft strain is measured using a bonded strain gauge, while shaft speed is measured using a non-contact sensor. Measurement data is displayed and logged via a software interface during testing, and retained for subsequent review and analysis ashore.

"I would recommend Datum Electronics as they have experience in working with several European member states involving fishing vessel engine power measurement. They also offer training for their products and make technical advice available either by a phone call or email."

Marine Scotland

The Outcome

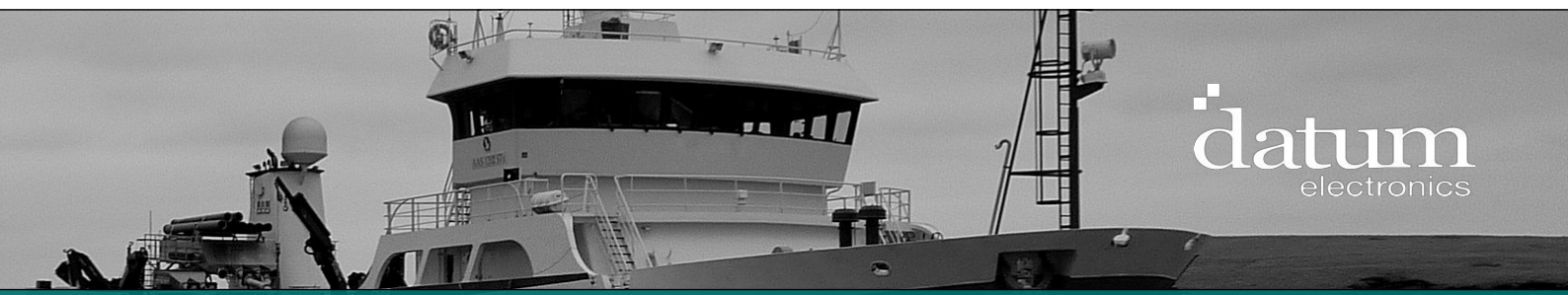
Following a pilot trial across nine fishing vessels, Marine Scotland confirmed that physical engine power verification could be carried out during vessel inspections using a temporary shaft power measurement system, with measurements obtained under operational conditions.

The compact, portable nature of the system allowed equipment to be brought on board as required, enabling data to be collected during inspections and retained for subsequent review without the need for permanently installed instrumentation.

The verified power data provided a basis for use within the regulatory process, including where corrective actions were required in relation to declared engine power.

In June 2023, Marine Scotland was renamed the Marine Directorate, visit their webpage here.

Discover the Datum SPMK and other measurement solutions at datum-electronics.com.



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