Case Study:
Gardner 6LX DT and Scania D9
Dynomometer Testing with HVO fuel

Green Fuel Evaluation: Ferry Propulsion Engines Tested for Environmental Impact Reduction

Client Request:

To help contribute to Nexus' sustainability goals by reducing the environmental impact of its operations, they approached Royston to carry out two dynamometer tests on two of their Shields Ferry propulsion engines. The first test aimed to assess performance using standard fuel, while the second test aimed to evaluate performance using Hydrotreated Vegetable Oil (HVO) fuel.

HVO fuel closely resembles diesel fuel in chemical and physical properties. However, its composition devoid of fossil fuels and low carbon content make it an appealing sustainable fuel alternative.

Solution:

Royston took delivery of the engines and proceeded to set up the first engine, a Gardener 6LX DT, fuelled with standard diesel, within the dynamometer test cell. After positioning the engine and connecting the sensors, a 6 hour test commenced, with data recorded after the first 10 minutes and then at 30 minute intervals.

Recorded parameters included RPM, Power (BHP and kW), Torque (lb/ft and Nm), oil pressure, boost pressure and various temperatures such as oil, engine water, boost, exhaust, and ambient air.
Once the test was complete, the fuel system was flushed, and the diesel replaced with HVO. Another 6 hour test was conducted under the new fuel configuration.

The same process was replicated for a Scania D9 engine, and the results were analysed.

Outcome:

The analysis revealed that the performance disparity between the two fuel types was negligible, with minimum decreases in power and torque observed when transitioning to HVO fuel.

Royston successfully met the clients brief and provided valuable insights to inform their future decision-making process regarding fuel choices.