CASE

Reduced propulsion engine power

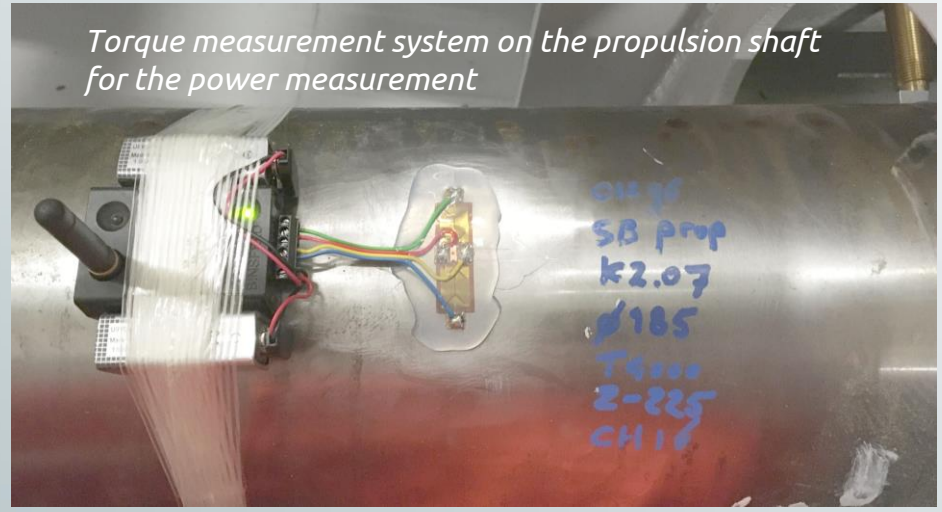
Solved by a shaft power measurement and teamwork troubleshooting efforts

Customers challenge
A client's TSHD experienced an issue while dredging upstream a river, since it was not able to reach the desired trailing speed. As a result, its full hopper capacity could not be utilized. The problem was reported 1 year after delivery of the new custom-built dredger. Interestingly, this issue did not occur on 2 sister vessels deployed on the same river. The relatively new 8-cylinder main diesel engines driving both the propulsion and the dredge pumps, were suspected to perform poorly.

Our approach
The dredger was visited by a measurement specialist from IHC MDS, supported by a naval architect colleague, and a representative from the engine supplier.

Strain gauges and special telemetry equipment were installed on both propulsion shafts. Accurate power measurements were taken in such a way that all parties including the client could real-time monitor the actual output. Similar measurements were also taken on copy vessels in the fleet for comparison.


Trailing Suction Hopper Dredger



Torque measurement system on the propulsion shaft for the power measurement

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Root cause

The power measurements confirmed indeed an actual main diesel engine output of only ~3.300kW instead of the nominal 4.100kW. However, no damage indications were found on the diesel engines and all control settings were correct. Furthermore, the sister vessels were performing better and did meet the specifications. During subsequent technical discussions, the fault tree was narrowed down to fuel, and it was confirmed by the customer that the vessel was refueled by another supplier.

Finally, the fuel was analyzed in a laboratory in close cooperation with the engine supplier. The results undeniably showed that the quality of the fuel was far below the requirements, causing serious power losses.

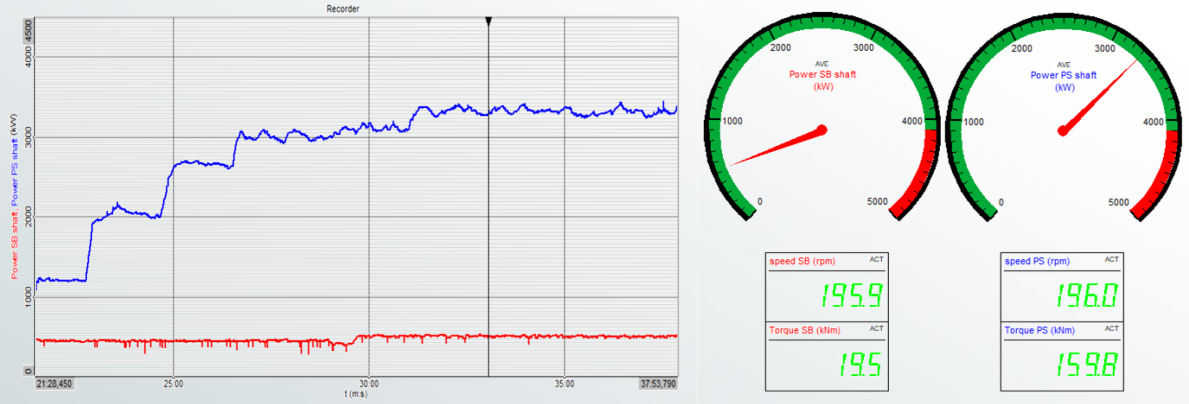
Results & key takeaways

Root cause resolved: inferior fuel quality was identified the root cause of lower main diesel engine output power, ruling out other technical issues.

Swift diagnosis: an effective shaft power measurement was done in 1 day on board with minimum disruption to ongoing operations.

Collaborative expertise: close cooperation with suppliers and specialists often proves effective for fault finding.

Onsite insight: being physically present onboard allowed our MDS engineer to perform an accurate and deciding measurement.



Measurement data showing the maximum power on the PS propulsion shaft

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MDS@royalihc.com
+31 88 015 25 35
www.royalihc.com/diagnostics

Royal IHC