

Ship Energy Performance Framework

Case Study: Estimation of Performance Reference Values with Lower Friction Coatings

Tier 2: Performance Health Check



Case

A vessel owner is considering applying low-friction coatings to a vessel built in 2012 during its forthcoming drydocking to improve hydrodynamic performance. The owner asked ABS to estimate the vessel's nominal speed-power curves and propulsion fuel consumption at design and ballast drafts, across a range of speeds and under different weather conditions.

Methodology

ABS used the vessel's performance-related design information, including speed trial analysis reports and model test reports, together with the methodology in IACS Recommendation 172, Revision 1, to estimate the propulsion performance improvement resulting from reduced hull roughness after applying low-friction coatings. The methodology converts the coating roughness characteristics into an estimated reduction in frictional resistance. ABS then applied this reduction to the vessel's propulsion power prediction to produce updated speed-power and fuel consumption reference values. ABS performed the calculations for the drafts, speeds and weather conditions selected by the owner.

Deliverables

ABS provided a report identifying the information used, explaining the applied methodology and presenting the results in tables and graphs.

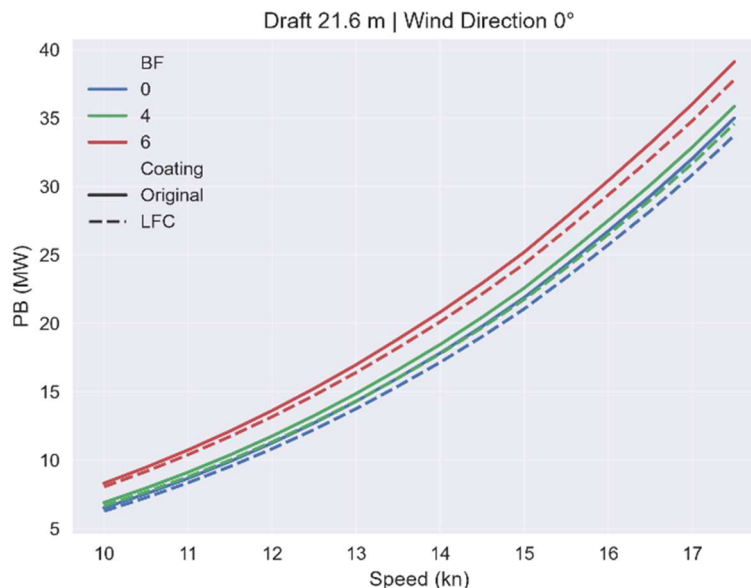


Figure 1: Sample speed-power results by sea state and hull coating

Conclusion and Recommendations

- Applying low-friction hull coatings can reduce hull resistance, propulsion power demand and fuel consumption across the vessel's operating range.
- Updated speed-power and fuel consumption curves for various drafts, speeds and weather conditions provide an important basis for the vessel's commercial representation, operational planning and future performance assessments.
- Further revisions to the EEXI Technical File and SEEMP Part III may be considered as applicable.
- The performance reference values should be calibrated using in-service operational data.
- The vessel's performance management practices should incorporate post-coating performance assumptions and account for them in subsequent compliance and commercial evaluations.

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