Assessment of wind assisted ships using long term operational data

Background and motivation

In response to IMO's requirement of reducing green-house gas emissions from shipping, many ship owners now turn to wind propulsion. There are several technologies for wind assistance on the market, for example Flettner rotors and wings. After installation of a wind assistance technologies on a vessel, the actual fuel reduction needs to be assessed. This is important not only for the ship owner who made the investment, but also for future buyers of wind assistance technologies to take the right decision. Since the wind assistance industry is still young, there is no agreed way to carry out these full-scale assessments. One option is to carry out short, dedicated tests. Another way is to analyse the ships' operational logging data over a longer period of time. There are pros and cons of both strategies.

A ro-ro ship equipped with Flettner rotor (left) and a cargo ship equipped with two wings (right) with 1 year of performance monitoring data in this thesis project

Objectives and goals of the project

This project is connected to the EU Interreg North Sea Region project WASP (https://northsearegion.eu/wasp/). Operational data has been collected for a number of vessels quipped with wind assistance technologies. The research questions are:

- How accurate can the fuel reduction from the wind assistance be derived from operational data?
- Under which conditions is it a reliable method, and when is it not?
- Can we make any recommendations on the methodology?

Methods and tools

The work will be carried out at SSPA, Göteborg (www.sspa.se), which will provide office for this thesis work. The students will use and build on to our existing Phyton code at SSPA for performance analysis. Students interested in propulsion systems, data analysis, machine learning and naval architecture are welcome to apply.

Scientific fields: Mechanics, Naval architecture, and Data sciences.

Contact persons

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