



Operational Fuel Efficiency

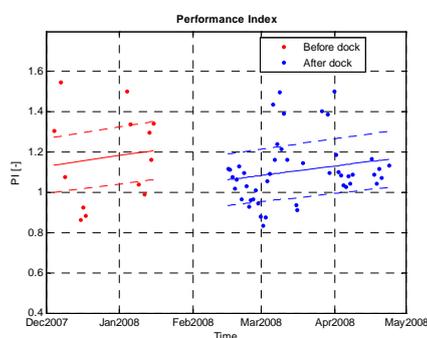
Increasing fuel costs inspire ship owners and operators in finding ways to reduce fuel consumption. In sight of recent developments in emission regulations, ship owners benefit from the proportional reduction of emissions with reduction of fuel consumption. For existing ships, a significant amount of fuel can be saved by improving the operational conditions of the vessel. The expected additional fuel savings can be as high as 5%.

From both research and commercial projects, MARIN is experienced in improving the performance of existing ships in perspective of fuel consumption. Full scale performance evaluation is done using the performance analysis tool developed in the Service Performance Analysis Joint Industry Project (SPA-JIP). This method corrects for environmental conditions so that performance results can be compared when one setting of the ship is varied.

Essential in fuel savings on board is crew awareness. Motivating the crew to act and react to fuel consuming conditions is essential. Important in this is displaying the effect of some operational choices on the ship performance.

Navigational conditions in which fuel is wasted are:

- Large speed variations
- Applying full power in shallow or restricted water
- Too sensitive auto pilot setting which initiates frequent rudder angles
- Suboptimal trims



Application

Using performance analysis tools already developed, full scale evaluations of the ship's performance can be conducted over a long period. An example of the effect of hull cleaning on performance is shown in the figure.

Using the same analysis tools, also dedicated tests can be done on full scale in which above mentioned performance influencing parameters are varied.

MARIN crew will sail with the vessel on its normal route and experiment with trim, autopilot and power settings in order to learn more about the actual ship performance. These tests will not influence the sailing schedule of the vessel.

These dedicated trials result in a custom made solution for the ship owner to reduce the fuel bill. The crew are made aware of the results when the tests are performed. A Fuel Optimisation Booklet is produced in which guidelines are stated for the crew to save fuel.

Expected results

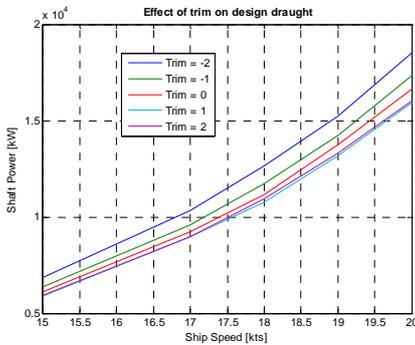
As illustrated by the adjacent figure, fuel consumption reductions of 5% are very realistic after implementation of the custom made results. MARIN will furthermore, build on the knowledge gained from these dedicated trials to develop more general calculation and design tools.

MARIN's service to the shipping industry utilises the analysis tools which are often developed in Joint Industry Projects. These projects themselves are often based on earlier research work.

Future projects

The custom made project will be dedicated for one ship owner or operator. Interested owners and operators are welcome to contact MARIN for further information.

Further background research will be done in close cooperation with interested parties. Development of knowledge and tools is done in Joint Industry Project (JIP) setup while practical applications are effected with ship owners directly. To stay updated of new projects and developments on the field of operational fuel efficiency, please contact MARIN.



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