

Fuel Efficient Ship Operation: how to optimize Speed, Routing and Trim

The Shipping industry has made considerable progress on optimization of fuel consumption and emission reductions in the face of increasing fuel costs and pressure to reduce the environmental impact of sea transport. Key factors in this success have been

- Changes to hull form e.g bulbous bow modification or addition of appendages such as ducts or fins to influence the flow of water to the propeller
- Operational changes such as slow steaming
- Economies of scale as shown by the continuous advances in ship capacity in the container segment

These areas have rightly received early attention for a number of reasons.

- The savings potential of these changes is high and is well-understood, so without risk
- The associated costs (in the case of larger ships and structural modifications) are a one-time investment and can be built into the companies investment and operational planning

The next challenge is how to progress to sustainable improvements in nautical voyage execution and onboard energy management within the framework of operational constraints.

This presentation firstly puts the typical energy losses due to factors such as trim, speed profile and route management into the context of the overall energy consumption of container ships.

Current experience with systems based on data collection platforms and software-driven decision support tools for bridge personnel is shown. In the opinion of the authors the use of data supplied by automation systems provides the necessary fact-based platform for improving transparency within the organization and enabling benchmarking of current performance. On this basis the effects of all energy-saving tools and initiatives can be measured and tracked.

In addition the use of regular reporting and feedback to crews to measure usage of the tools and promote acceptance in a structured way is described.

The further goals of increasing interaction between shore-based operational centers and nautical personnel will also be discussed.

The Presenters

Christoph Gessner, Columbus Shipmanagement GmbH

Melvyn Mathews