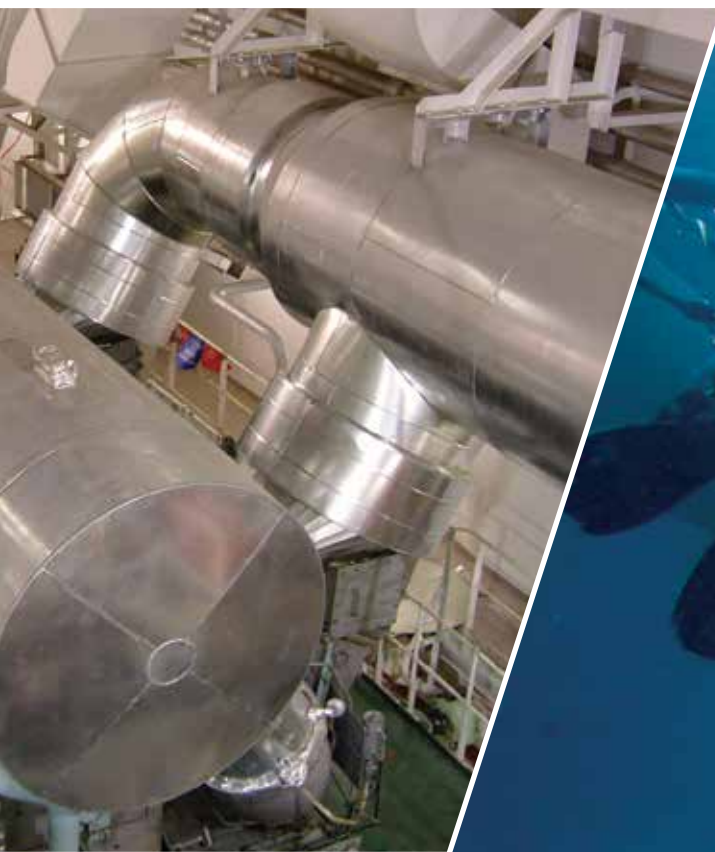




# Vessel Performance

Technical Solutions for  
Operational Challenges



# Analyzing Vessel Performance



The operator of a ship is tasked with safely performing a challenging job at the highest level of efficiency. The owner is responsible for maintaining costs to maximize profitability, coupled with an adherence to safety for crew and environment. These critical relationships are enhanced by the services ABS delivers, offering guidance to promote improved vessel performance. Data monitoring and collection provide the raw material to drive fuel efficiencies at all levels.

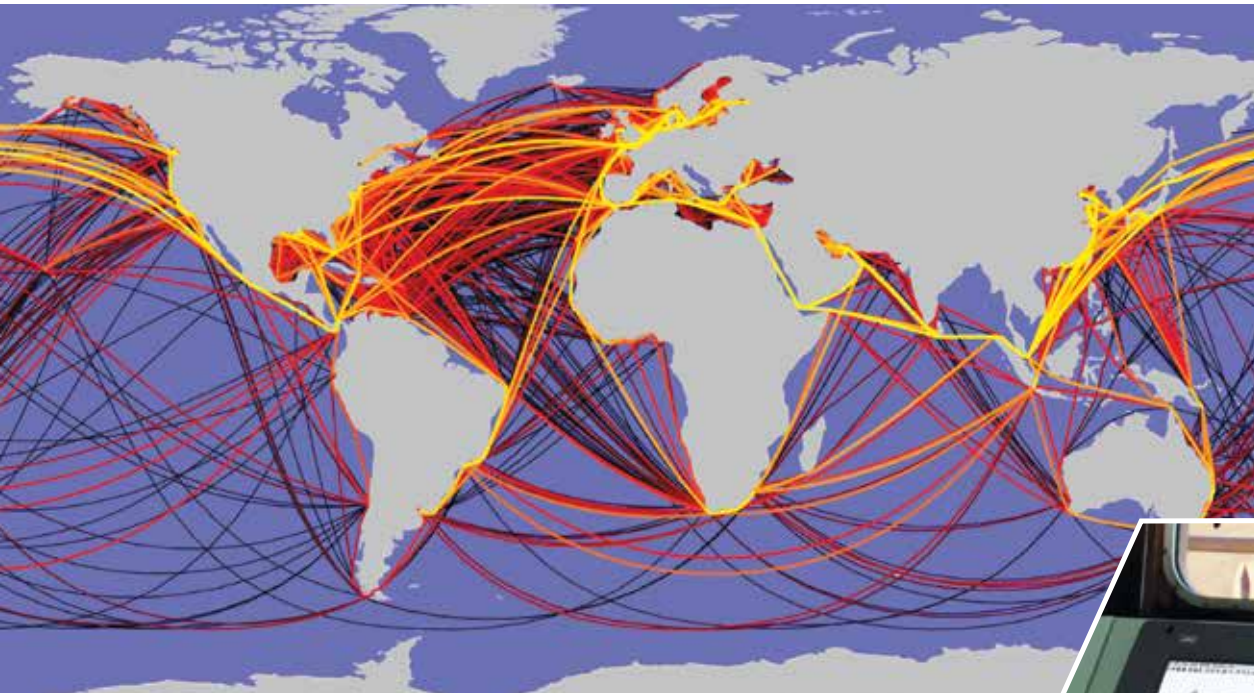
Information is analyzed for application to a single vessel or across an entire fleet. Key performance indicators (KPIs) provide a steady stream of data that can be applied to raising the level of onboard management. A series of carefully designed audits keep a fleet true, abiding to sound safety and Ship Energy Efficiency Management Plan (SEEMP) standards.

ABS is dedicated to consistently updating and improving on the services it provides to the owners and operators of vessels to make the optimization of performance a key fleet asset.





# Mining Voyage Data for Operations



In the 21st century information will be a shipowner's most useful tool for improving vessel performance. The operational decisions made on a daily basis – how to plan and conduct a voyage, perform regular maintenance, monitor fuel consumption efficiencies and comply with regulations – impact all outcomes.

ABS provides services to help owners optimize vessel performance, including systems monitoring, management and optimization of voyage details ranging from speed and fuel consumption to route selection and weather conditions, draft and course efficiency and hull and propeller maintenance cycles.

Accurate and regular energy consumption monitoring across an individual vessel or an entire fleet can highlight inefficiencies and provide a mechanism for continual improvement. Sharing energy use data can promote best practices for fuel efficient operations among crews to improve performance. These, and other similar efforts, are in line with the IMO guidelines on developing a SEEMP framework in which commitment is required by the entire shipping organization, from chief operating officer to the entire crew, to motivate the corporate commitment to energy conservation.



# Performance Monitoring

Ship performance monitoring by ABS includes data collection, analysis, reporting and dissemination to relevant stakeholders. This provides owners and operators with the information necessary to understand current fuel efficiency performance. Data analysis and reporting can be done for an individual vessel, a class of vessels, or the entire fleet.

The fleetwide analysis provides comparative performance indicators and gives the owner or operator the data necessary to determine if ships have been deployed in the most efficient manner.

Beyond fuel consumption figures, data collection also includes voyage information; machinery operating parameters such as fuel consumption, engine load, and specific fuel oil consumption; hull and propeller inspection reports; and maintenance and cleaning events.

By linking information and confronting issues from machinery, propulsion resistance and operational decisions, initial ship design, and resistance due to hull and propeller fouling, it is possible to obtain a holistic view of energy efficiency and the fully integrated nature of the energy consumption puzzle.





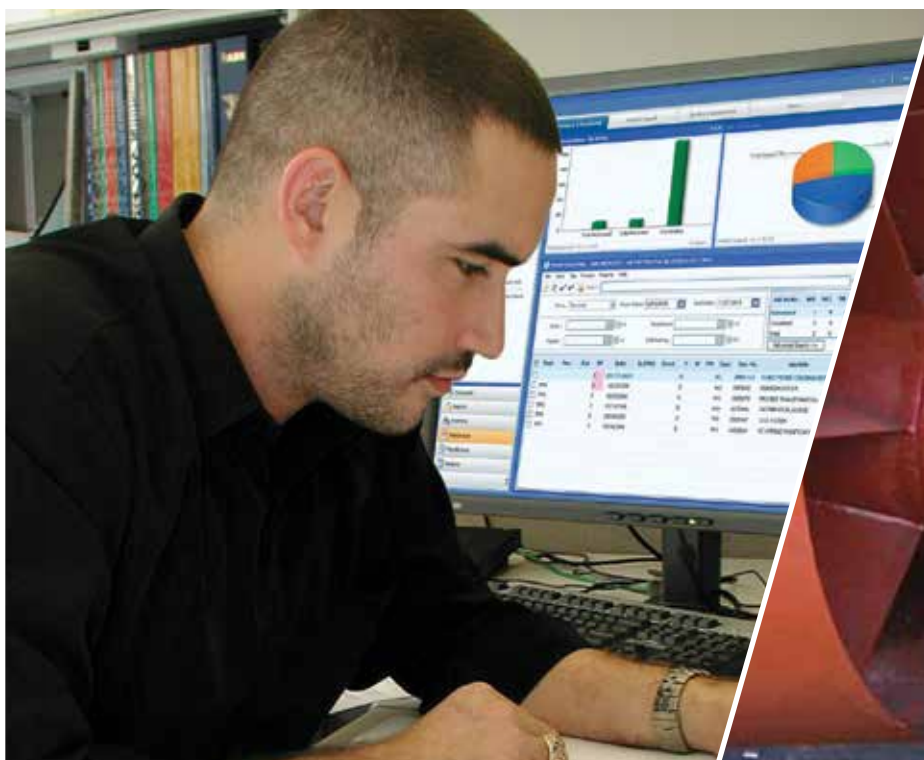
# KPIs to Augment Information

Using the vast trove of information derived from performance monitoring systems, ABS performance management analyses interpret data into meaningful KPIs that can then be utilized by an operator, manager or the ship's crew to improve the vessel's operational performance.

KPIs are also used by ABS to benchmark vessels in a fleet. The benchmarks are provided as feedback by ABS to operators and crews on a regular basis and the information is used to promote best practices across the fleet with regard to energy efficiency.

The derived KPIs create dashboard displays that provide an overview of the vessel's performance. Indicators include vessel base load and total energy consumption, main engine condition, added fuel consumption, hull and propeller condition management and trim optimization.

The dashboard information is then used by the owner as decision support for actions taken to improve a vessel's performance and efficiency, always with a focus on safety.

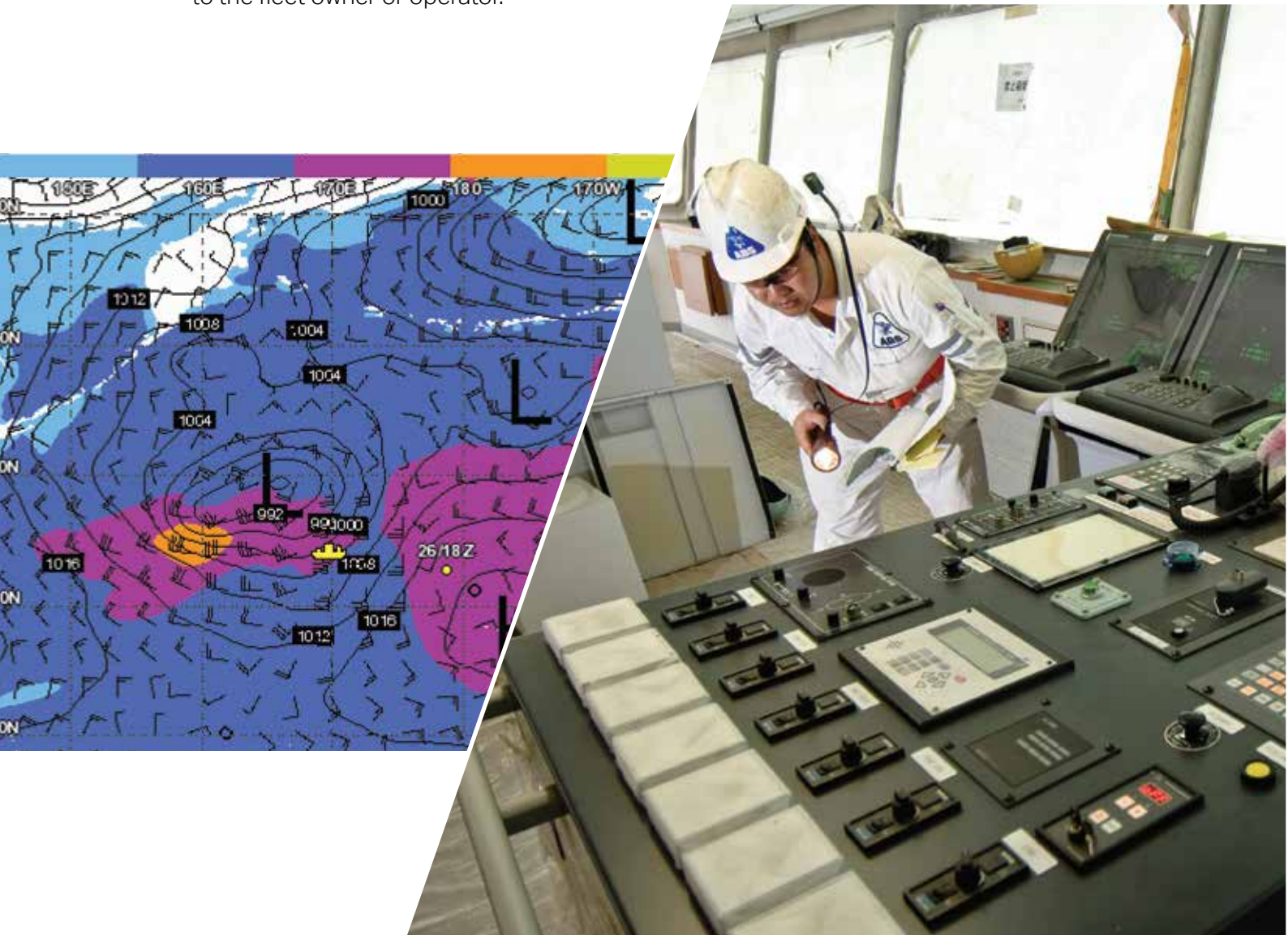


# Charting Voyage Analyses

Based on the development of a baseline of KPIs, ABS has the ability to provide shipowners, operators and fleet managers with a decision support tool designed for optimizing operations of one vessel or an entire fleet. Information derived from the analyses makes it possible to optimize operations in a number of areas.

Voyage analyses and performance monitoring identify the most favorable operating conditions for vessels in motion with respect to operating speed, draft, trim and engine load. Performance analyses can also contribute to the selection of fleet composition, applying specific data resources to various routes.

ABS provides shipowners with an overview of the utilization of the entire fleet, taking into account the varying factors that impact energy efficient operations. The most efficient vessels chartered and operated in specific cargo pools can be identified, placed throughout the world, and managed at their maximum operational performance, providing value and cost savings to the fleet owner or operator.





# Performance Audits for Consumption

Energy audits are conducted by ABS to assess a vessel's performance with respect to fuel consumption and efficient operations. ABS provides guidance in implementing best practices on board one or multiple assets, and operations are assessed to identify areas for improvement.

The audit, based on an onboard inspection, includes measurement of main engine and auxiliary engine performance, fuel consumption during various load cases, and the electrical load of various consumables.

An audit may lead to an optimization of the energy consumption on board and improves the overall operational performance of the vessel.

## Developing SEEMP Guidelines

ABS evaluates a Ship Energy Efficiency Management Plan by establishing a baseline for energy consumption derived from the performance system on board. From key performance indicators, ABS identifies potential improvements and actions that should be taken, updating the SEEMP and adjusting goals.

ABS provides guidance to operators and shipboard personnel on the activation and maintenance of the SEEMP, as well as advising on new initiatives to improve the ship's overall energy strategy.

By keeping the SEEMP active, shipowners and operators demonstrate commitment to improving the energy efficiency of the vessel.





ABS Asset Performance Management services build on the benefits of classification, assisting owners and operators with evaluating and optimizing their assets for maximum performance from initial design to decommissioning.



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