ABB

ABB Ability™ Marine Advisory System - OCTOPUS

Passenger vessels

OCTOPUS Suite
Passenger vessels

ABB offers a wide portfolio of marine software and optimization systems to the maritime market. Its performance management solution consists of a modular and comprehensive decision support toolkit to optimize the safety of a ship, and to minimize the overall fuel and energy costs for the whole fleet.

ABB's OCTOPUS suite
The OCTOPUS suite offers a broad variety of modular functionality that helps to increase the efficiency, safety and workability of a single vessel or entire fleet. OCTOPUS based technology has been installed on hundreds of ships.

Optimization modules

Power plant optimization
Assists onboard staff configuring the optimum energy balance onboard. It calculates and advises the optimum load sharing between the various producers such as auxiliary engines, shaft generator, waste heat recovery- and energy storage systems.

SFOC Monitor
The Specific Fuel Oil Consumption (SFOC) Monitoring module gives dynamic view to the performance of diesel generators. The performance is evaluated by calculating how much fuel the engine uses to produce certain amount of energy in g/kWh (SFOC). The performance is visualized with three SFOC curves. Grey is the static factory baseline reported by engine manufacturer.

Dynamic Trim & Propulsion Analysis
With dynamic trim optimization, the operating crew will receive advice on the optimum trim in any condition, includingvariations in speed, draft, water depth, wind and waves.Depending on the vessel type and operational profile, the savings potential can be up to 5% of propulsion energy cost. The ABB propulsion power analysis tool allows to understand where shaft power is used to and to breakdown power losses (fouling, trim, squat, wind, rudder).
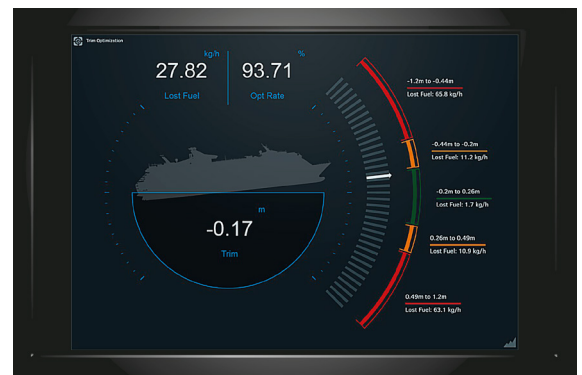
Clean hull module
Estimates hull and propeller fouling based on an advanced data model of the vessel. This helps shore staff to coordinate the cleaning schedule and the calculation of return on investment.

Motion monitoring & response forecasting
The OCTOPUS software suite is the industry leader in vessel motion prediction solutions. It combines wave measurements, weather forecasts and navigation data such as speed, course and the voyage plan, with ship characteristics, loading conditions and motion sensor measurements. This facilitates continuous monitoring as well as simulation and forecasting of the ship responses and performance.

As a result the captain and operating crew can select the most favorable heading and speed in order to provide maximum passenger comfort and prevention of seasickness. The OCTOPUS motion forecast can also be used as a decision support tool for more conservative usage of the fin stabilizers, leading to fuel savings.

Advanced Energy Management and Monitoring

Energy flow
This system minimizes overall energy costs. It compares and analyzes the historical and current operational data of the vessel, then provides decision support on where to focus energy efficiency efforts. The solution consists of onboard & onshore modules for energy monitoring and optimization.

Performance monitoring
Depending on the wishes of client, there is a choice between a performance monitoring set-up which enables data collection and visualization for a set of signals to help monitoring the vessels operations/ daily operational costs and to work as a supporting tool for the Ship Energy Efficient Management Plan (SEEMP). The advanced performance monitoring set-up provides unlimited amount of signals that can be monitored and provides dynamic KPI (key performance index) targets which can be used to follow the performance of the vessel subsystems.

ABB Ability™ Marine Fleet Portal:
Easy access to vital information
- Fuel & performance KPI's for individual vessels and benchmarking within the fleet
- Clean hull module estimates hull and propeller fouling based on an advanced data model of the vessel. This helps shore staff to coordinate the cleaning schedule and calculation of return on investment.
- Measured and forecasted vessel motions and accelerations
- Sailed routes and location
- Alarms and notifications in case of sensor time-outs or failures
- Authorized users can access their own part of the
- protected website to retrieve the latest information.

After the voyage, the recorded data is evaluated and the performance of an individual vessel or entire fleet can be evaluated. The database can be made accessible for all parties required. It can be used to tune motion roll motion and for various other purposes, such as fatigue analysis.

Advanced analytics
ABB offers a broad range of analytics and consulting services:
- Energy Analytics
- Operation Modes & Movement Analytics
- Customer training
- Feasibility studies
- Sea-keeping and wave analysis
- Remote support, data health checks and troubleshooting.

Our holistic approach
The total offering from ABB's digital portfolio is the most comprehensive suite available within the maritime industry and provides seamless exchange of data, full integration of sensors, automation and ship software and cloud solutions. Important elements within the suite are decision support software for safety and comfort and energy efficient operations, and remote diagnostics technology that preventively and continuously monitors critical equipment onboard of a ship.

Furthermore, ABB has invested heavily in shore side expertise, analytics firepower and engineering availability to provide 24/7 support from our ABB Ability™ Collaborative Operations Centers that support troubleshooting, maintenance planning, benchmarking, and interventions based on predictive diagnostics.

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**ABB Ability™ Collaborative Operations
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