ABB Ability™ Marine Advisory System – OCTOPUS
Offshore
ABB’s OCTOPUS Suite is a comprehensive motion monitoring, forecasting and decision-support toolkit which improves efficiency, availability and safety of offshore vessels during weather-sensitive operations. The OCTOPUS suite offers a broad variety of modular functionality and is the industry leader in vessel motion prediction and monitoring solutions.

ABB’s OCTOPUS suite

ABB’s Marine Software OCTOPUS suite combines wave measurements, weather forecasts and navigation data like speed, course, RPM 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. Warnings can be instigated for possible hazards and their consequences.

For offshore vessels, ABB offers several modules within the software that maximize the operational window, safety and efficiency during offshore operations. OCTOPUS is able to provide data through secure links to shoreside ABB Ability™ Collaborative Operations Centers, providing additional visibility to all stakeholders, ensuring end to end transparency. The OCTOPUS shore tools provide a fleet view, which don’t just provide basic data but also enable Fleet Managers to plan key maintenance tasks, such as hull and propeller cleaning. OCTOPUS based technology has been installed on hundreds of ships.

Optimization modules

Operation and response forecast

This solution gives a clear advice for safe operation in difficult weather conditions. The weather forecast(s) and measurements are transferred in an actual response forecast. OCTOPUS-Onboard automatically imports the needed information, calculates the hydrodynamic properties and displays the expected responses. OCTOPUS can give a forecast for any location onboard the vessel and any type of motion and acceleration. This means the master has a powerful tool to increase the safety and workability. Examples of the possibilities:

- forecast of helideck roll and heave motions
- accelerations in the COG of topsides
- Gangway motion monitoring & forecast
- Vessel roll motion and bow slamming.

As the system can be adapted to the vessel operational needs, the OCTOPUS response forecast system is used by almost any kind of oceangoing vessel.

ABB Transport Monitoring System (TMS)

TMS comprises a very reliable set of instruments designed for the measurement of ship motions. OCTOPUS-TMS was developed in cooperation with MARIN and end-users. OCTOPUS-TMS is designed to deliver highly stable measurements with a minimum of internal disturbance.

TMS is the perfect cost-efficient solution when it comes to measuring motions, velocities and accelerations of vessels with a high degree of accuracy and a large flexibility. The three-sensor set-up provides measurement of motions on any desired location or cargo on the vessel.

DP-Capability forecast

For vessels equipped with a Dynamic Positioning system, the DP Capability forecast software includes a prediction if the vessel is capable to maintain her DP position during an operation. This leads to maximized workability, less fuel consumption and more productive hours during operations where the DP system is used.

- A clear and complete indication of the operational windows for weather-sensitive operations at sea including vessel motions and DP Capability
- Reduced fuel consumption because of efficient usage of DP thrusters
- Better and efficient preparation and execution of projects
- Less damages and stress to the vessel
- Optimal use of man and machine in a safe environment, leading to significant cost reductions.

Advanced Energy Management and Monitoring

Energy Diagram

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.

Cleanhull 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.

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.

ABB Ability™ Marine Fleet Portal:

Easy access to vital information

- Measured and forecasted vessel motions and accelerations
- Sailed routes and location
- Fuel & performance KPI’s for individual vessels and benchmarking within the fleet
- 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 impact on the cargo can be analyzed. The database can be made accessible for all parties required. It can be used to tune motion calculation (specifically 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, 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 preventatively and continuously monitors critical equipment onboard of a ship. Furthermore, ABB has invested heavily in shore side expertise, analytics fire power 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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