

Title: Improved and Efficient Power and Thruster System for DP Drilling Vessels with New Generation Protection System and Azipod® CZ

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ABB

Abstract

IEC 61850 Communication standard is introduced for marine medium voltage switchboards. This communication standard enables the possibility for the protection relays and controllers related to power management and variable speed drive control to have a direct bus communication.

Using this system in DP drilling vessels has a range of advantages for the installation and operation:

- Reduced internal and external wiring in and to/from the main 11kV SWBD, hence increasing the reliability.
- Enables possibility for fast zone protection (less than 70ms), which can replace traditional busbar differential protection system with its HW components.
- Enables fast communication to Power Management System and Diesel Generator Monitoring Systems. Actions in case of failures can be done faster to prevent unintentional tripping of generators.
- Enables fast communication to drilling and thruster drive systems for fast and accurate load reduction in case of generator and engine failures.
- Simplifies the transfer of statuses, measurements, and logs to supervisory systems to support fault diagnostics and maintenance.

Azipod® CZ is an electric podded thruster with a low voltage permanent magnet electric motor, nozzle, and the whole unit can be tilted to optimize the bollard pull. The unit is available up to 4.7MW and well suited for DP drilling vessels.

The Azipod® CZ design is targeted to maximize the efficiency within the optimization constraints, as well as reducing complexity and simplify installation and maintenance. Considering efficiency of all components and aspects from electric motor and auxiliaries to the hydrodynamic effect of tilting, an annual energy saving of 15% compared to mechanical thrusters can be anticipated given a typical operation profile.

In combination with the new IEC 61850 communication scheme enables an efficient and reliable power and thruster plant for DP Drilling vessels.

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