

# Seven Viking

## Distributed Power Management System for Award Winner

*DEIF has a proud record of integrating innovative Power Management Systems for award winners, including the Ship of the Year 2012, Far Solitaire, and most recently the 2013 Ship of the Year, Seven Viking.*

A subsea inspection, maintenance and repair (IMR) vessel, one of the main success and classification criteria for Seven Viking is her ability to safely master the North Sea's unruly high seas and hold her position steady during maintenance operations.

The IMR vessel is propelled by three contra-rotating azimuth electric thrusters with an output of 3 MW each. The propulsion system employs two main diesel generators with a capacity of 4,320 kW, two main diesel generators with a capacity of 1,824 kW, and an emergency generator with 250 kW capacity.

Designed and constructed for environmentally sound operations, Seven Viking is certified by Det Norske Veritas according to its latest rules for class CLEAN DESIGN; a Green Passport has also been issued, and the main generator engines in combination with SCR catalysts fulfil IMO Tier III requirements for exhaust emissions.

### Application Challenge

The solution was required to offer intuitive, one-touch automatic sequences in an application design for four diesel generators and two bus tie breakers.

The power management solution should also generate outstanding fuel-saving and system safety in situations where fewer gensets run at full load: Seven Viking's power system is divided in three independent operating systems, and includes three propulsion thrusters aft and three fore as well as three auxiliary systems. With a three-way main switchboard in case of a single major failure, the vessel will still have thruster power available.

DEIF's turn-key power management solution had to meet the DNV DYNPOS-AUTR (DP-2) classification requirement and support Seven Viking's DP operations in five meters significant wave height securely and unflinchingly.

### Ulstein

Norwegian ULSTEIN is an internationally renowned provider associated with quality and innovation in design and delivery of ship design, shipbuilding and system solutions.

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### Data

- Approved for DP-2 operation with closed bustie breaker
- Isochronous load sharing with compensated droop
- Blackout prevention
- Thruster control and reduction interface
- Load reduction for heavy consumers in case of overload
- Integrated control from the Alarm and Monitoring System
- Triple Master PMS can be split into three independent systems

### Product



Power Management System, DM-4 Marine

### DEIF Solution

The Delomatic 4 Marine solution engineered for Seven Viking by DEIF included a class-approved DP-2 operation with closed bus tie breaker and isochronous load sharing with compensated droop as fall back including special speed governor interface. For safety reasons, the DEIF solution has special blackout preventive protection methods implemented, including thruster control with fast load reduction and trip of non-essential load groups in case of overload. To be able to supervise and control the DEIF power management system from multiple locations, it is fully integrated in the vessel's Alarm and Monitoring System.

Operational one-touch auto sequences have been implemented in the solution covering SEMI-AUTO mode and PMS-assisted operational modes. PMS-assisted operational modes for optimised engine usage include the safety AUTO 1.4 plant modes, which ensure a minimum number of connected gensets to the main busbar, and the ECO operational sub-plant modes MAX1.4 that ensure a maximum connection number to the busbar.

### Case Diagram

