

SS7 Seven Borealis Complete Electrical Healthcare for Five Year Class Renewal



MJR Power & Automation's marine service team were commissioned by Subsea 7 on multiple major electrical maintenance projects aboard the Seven Borealis, a pipelay and heavy-lift construction vessel operating globally on critical subsea campaigns.

This case note summarises two significant work packages delivered by MJR Power & Automation:

- **VSD Preventative Maintenance** – Extensive preventative maintenance and lifecycle servicing of ABB ACS800 inverter drives, supporting crane and tensioner systems.
- **5-Year Electrical Healthcare** – Inspection, testing, and certification of all HV/LV electrical generation and distribution systems.

Together, these projects demonstrate Subsea 7's ongoing investment in asset reliability and MJR Power & Automation's capability to deliver specialist electrical engineering support across multiple regions and operational phases.

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Preventative Maintenance – ABB ACS800 Drive Systems

Scope of Work

MJR Power & Automation delivered a structured preventative maintenance programme targeting ABB ACS800 inverter drives used for the stinger overhead crane, S-Lay EPU (Port & Starboard), as well as the main crane systems.

The objective was to ensure lifecycle compliance, reduce downtime risk, and maximise operational safety during subsequent offshore projects.

The scope included:

- Full removal, overhaul, and reinstallation of drive modules
- Installation of ABB 6-year and 9-year Preventative Maintenance (PM) kits, covering:
 - Replacement of DC capacitors, discharge resistors, insulation kits, cooling fans, interface & branching boards, and updated power supply boards.
 - Renewal of air-to-water heat exchangers in liquid-cooled modules.
 - Drain, flush, and replacement of coolant with corrosion inhibitor.
- Software and firmware backups for each drive.
- Condition reporting and functional testing, including pressure tests of cooling systems and verification.



Work Execution and Key Outcomes

The maintenance was performed across two voyages:

- Port of Spain, Trinidad to Takoradi, Ghana – Full servicing and installation of inverter modules of stinger crane and S-Lay EPU.
- Takoradi, Ghana to Rotterdam, The Netherlands – Main crane drives overhauled, bench-tested (1000V), and returned to service.

The work delivered:

- Restored operational performance across all serviced drives.
- Fully verified cooling system and heat-exchanger functionality.
- Removal of obsolete parts to align with ABB updated module compatibility.
- Recommendations for annual servicing and continued adherence to ABB lifecycle intervals.

This campaign extended drivetrain lifespan, reduced unplanned downtime, and ensured safe operation during Subsea 7's high-priority offshore campaigns.

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Five-Year Electrical Healthcare Survey

Scope of Work

MJR Power & Automation was contracted to execute a vessel-wide 5-Year Electrical Healthcare packages, supporting the DNV class renewal survey and OEM maintenance schedules. The work package covered all major HV and LV power generation, distribution, and propulsion support systems.

Activities included:

- Switchboard, wiring, and general condition inspections.
- Cleaning of HV/LV switchboards, alternators, and transformers.
- Busbar continuity and milliohm testing.
- Insulation resistance (phase-phase & phase-earth).
- Secondary injection testing of protection relays.
- Metering and instrumentation calibration.
- MV & LV Breaker operation verification.
- OEM-level alternator, thruster motor, and transformer inspections and testing.
- Functional testing of protection, control, and interlock systems.



Work was executed over multiple locations, including a 14-day dry dock in Abu Dhabi, along with transit phases from Abu Dhabi to South Africa, and South Africa to Barbados, with scaled engineering teams for each phase.

Systems Covered included:

- 6.6 kV Distribution: Main HV switchboards, thruster HV boards, alternators, transformers.
- 440/230 V Distribution: MSBs, emergency/harbour switchboards, LV transformers.
- Rotating Machinery: 6 main alternators, 1 emergency generator, 7 thruster motors.
- Drives & Power Electronics: Thruster VFDs, fibre optics, PCBs, batteries, heat exchangers.
- All MCCs: Port, starboard, pipelay, ROV, thrusters.

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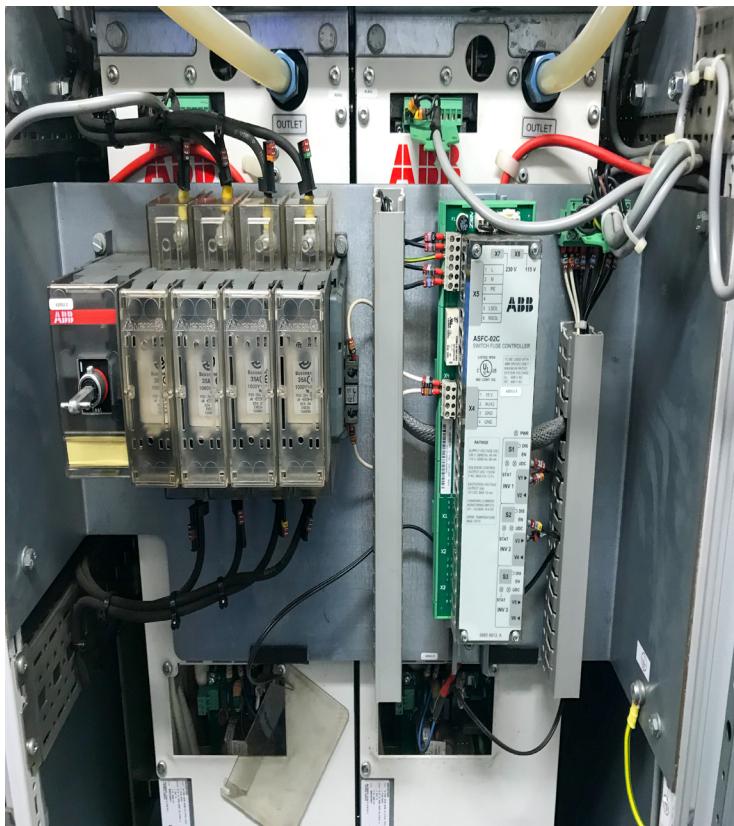
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Combined Project Outcome

The work packages for Seven Borealis collectively ensured:

- Enhanced reliability of both electrical distribution networks and drive systems.
- Compliance with Class and OEM lifecycle requirements.
- Reduced operational and safety risks during high-stake offshore campaigns.
- Improved long-term asset integrity for critical systems including:
 - HV/LV power generation and distribution.
 - Crane/tensioner drive systems.
 - Propulsion support and thruster systems.

These projects reaffirm MJR Power & Automation's long-term partnership with Subsea 7 in maintaining safe, compliant, and high-performance offshore assets.



"Our role was to ensure every safety-critical electrical system on Seven Borealis continued to perform at the highest standard. By combining planned preventative maintenance with class-compliant electrical healthcare, we've supported Subsea 7 in sustaining reliable operations on challenging offshore campaigns."

Ryan Reilly, Sales and Business Development Manager at MJR Power & Automation

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