GLO Marine

RETROFITS

Marine hydraulic system upgrade for FPSO

CLIENT BLUEWATER ENERGY

YEAR 2025

PLATFORM TYPE

Floating production storage and offloading unit (FPSO)

CLASS

SOW

Turnkey upgrade of the marine hydraulic system


23/27 PIERCE
bluewater

CLIENT CONTEXT

Life extension through system upgrade

To extend the operational life of the FPSO Haewene Brim by more than 10 years, Bluewater Energy identified the marine hydraulic system as a critical focus area. This system powers essential subsystems like ballast, bilge, cargo handling, and inert gas operations. The existing setup was outdated, lacked diagnostic capabilities, and posed growing maintenance and reliability risks. GLO Marine was engaged to deliver a complete system redesign that would enhance reliability, maintainability, and monitoring — with the added challenge of integrating the new system during phased dry dock interventions.

THE WORK TO BE DONE

Project phases

To address reliability, maintainability, and upgrade challenges, GLO Marine would address 4 key aspects:

- Modular DCV Stack: A flexible, service-friendly valve system that reduced component variety and simplified the hydraulic layout.
- Smart Diagnostics: Real-time leakage detection and predictive maintenance enabled by advanced flowmeter integration.
- Built-In Redundancy: UPS-backed modules and fail-safe controls ensured operational continuity without adding a secondary HPU.
- Phased Implementation: A legacy-compatible design allowed for installation during scheduled dry dock, avoiding full system shutdowns.

THE CHALLENGE

Modernisation within existing constraints

The aging hydraulic system faced several key limitations:

- Decreasing spare part availability
- Poor system cleanliness and degraded performance
- No predictive maintenance or remote diagnostics
- Difficult access and servicing offshore
- High operational risk from system failures GLO Marine’s task was to design a modern system that was reliable, resilient, and diagnosable — while remaining compatible with legacy infrastructure and installation constraints.

Process structured into two key phases to ensure technical robustness and execution confidence

01. Phase 1 – Feasibility and Engineering Design

- Redesign of the entire system with updated P&IDs and deck box layouts
- Development of a modular DCV stack
- Selection of standalone control architecture and UPS-backed modules
- Firmware upgrades for leakage detection
- Architecture planning and functional requirement capture

02. Phase 2 - Validation Workshops

- Component Validation: Review of supply chain and standardization
- Workshop Test 1: Integration of new DCVs with legacy actuators
- Workshop Test 2: Verification of leak detection and overall system performance

The outcomes

Final results

- Proven Reliability: The upgraded system passed all flow and pressure tests under load and fault scenarios.
- Smarter Monitoring: Real-time leakage detection and fault code visibility enabled predictive maintenance and faster interventions.
- Flexible and Future-Ready: Designed for phased retrofitting with full documentation and crew training for smooth adoption.
- Easier Maintenance: Standardized components and simplified layout reduced spares and eliminated over 400 solenoid valves.

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