



DP-2 Class Vessel Power Generation System

TYPE OF VESSEL

DP-2 Class Diving Vessel for offshore inspection, repair, and maintenance, sub-sea pipeline installation and valve operations.

- Overall Length 240 ft
- 4500 ft² Clear Project Deck
- 12 Man ABS SAT Dive System

TYPE OF PLANT

Prime Power Generation

PRIME MOVERS

(5x) Caterpillar 3512B Diesel Engine-Generators Each 1360 kW, 480 V @ 1800 RPM

CONTROL TECHNOLOGIES

Woodward Atlas

Generator Control Package for synchronizing, load-sharing, protection, and monitoring.

Basler DECS-200

Automatic Voltage Regulators

Woodward SPM-D

Bus-Tie Automatic Synchronizer

Woodward UMT

Load Transducers for Dynamic Positioning System

Ethernet Network

Inter-control network including remote I/O expansion modules, switches, and Modbus converters.

HMI System

Touch-screen terminal in the switchgear for primary system operation including available remote system access.

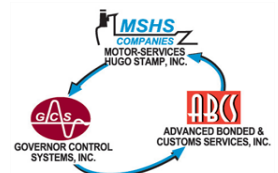


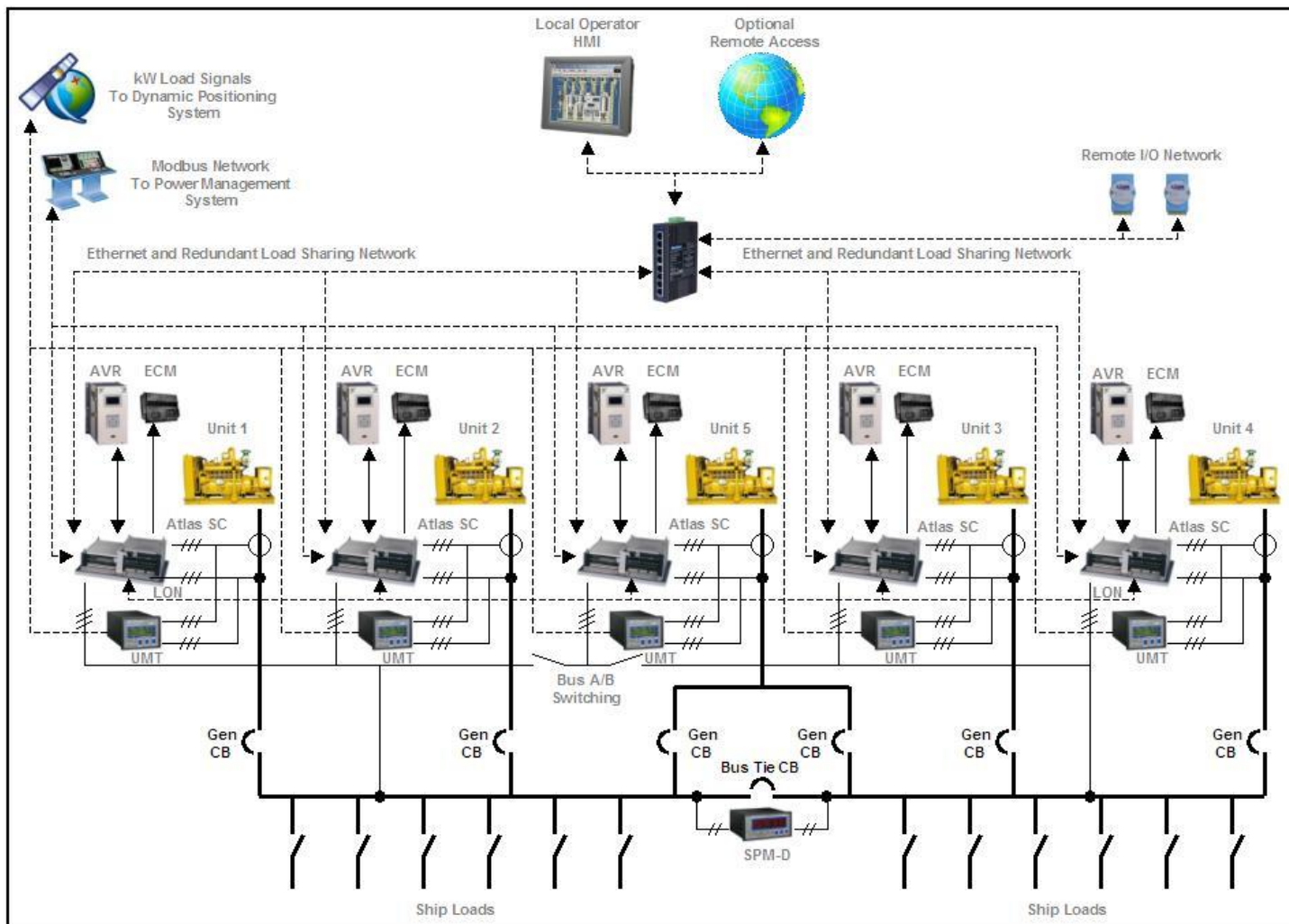
PROJECT OVERVIEW

GCS has supplied an engine-generator control and monitoring system for a DP-2 Class dive vessel. The vessel utilizes five Caterpillar 3512B electronic diesel engines each rated for 1360 kW @ 1800 RPM. The generator sets are used for vessel prime power generation.

The control system features custom application software performing automatic synchronization, load control, custom breaker control logic, and system alarm and monitoring functions. Due to the vessel ABS DP Class 2 rating, this system requires redundant inter-control networks for load sharing between engines. System load sharing is primarily carried out via the traditional Echelon LON network. In the event of a primary network failure, the control system alarms and automatically switches to the backup Modbus over Ethernet network in a bump-less fashion. Central monitoring and control is performed via a custom, GCS designed HMI system featuring a touch-screen terminal in the switchgear cabinet. The HMI provides the operator with complete system control including starting and stopping of the engines, synchronization, breaker control, and primary/secondary network status. Remote control of the generators is also performed via interface to the vessel power management system.

This project is part of a major overhaul done to upgrade the vessel to DP-2 class. Due to this classification, reliable power was necessary to supply the Z-Drive azimuth thrusters. With its modern control platform, the new control system provides this reliability and required redundancy not available with the old system.





CONTROL SYSTEM FEATURES

Engine Control: Woodward Atlas Controls (x5)

- Custom Breaker Control and Bus Switching Logic
- Custom Breaker Lockout Logic
- Dead Bus Control or Live Bus Synchronizing
- Isochronous Loadsharing or Baseload Control
- Load / Unload Control and VAR / PF Control
- Protection and Alarm Handling
- Interface to Caterpillar ECM
- Interface to Automatic Voltage Regulators
- Load Signal Interface to Vessel DP-2 System
- Modbus over Ethernet Network to HMI System
- Remote Generator Control via Interface to Vessel PMS

HMI / SCADA System

- Switchgear Mounted Touch-screen HMI
- Redundant Generator Load Sharing Network
- System Monitoring and Control
- Integration of Generator Controls and Remote I/O
- Direct Control over Remote I/O Network
- Bus Tie Breaker Control via Remote I/O Network
- Automation of Switchboard Sync Meters / Lights
- Alarm Handling and Performance Data Trending
- Modbus and Direct Ethernet Comm. to Control
- Multiple User Access Levels
- Available Remote Access via the Internet

As a part of the MSHS group of companies, GCS offers comprehensive control system support, from engine and turbine systems integration to turnkey project management for a broad range of marine, power generation and industrial projects. GCS engineers have experience with control system retrofits in all of these industries and aftermarket applications. Learn more at GOVCONSYS.COM.

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