

USNS Montford Point (T-MLP-1)

Class Vessels

BACKGROUND

The Mobile Landing Platform is a new concept, part of the Maritime Prepositioning Force of the future. To control costs, the ships will not be built to combat vessel standards and are designed primarily to support three military hovercraft (such as the Landing Craft Air Cushion), vehicle staging with a side port ramp, and large mooring fenders. A decision was made to eliminate helicopter capability and ship-to-ship transfer of heavy equipment. An auxiliary support ship, Montford Point's role would be a seagoing pier for friendly forces in case accessibility to onshore bases are denied. Such flexibility would be useful following natural disasters and supporting US Marines once they are ashore. The MLP supports a vehicle staging area, side port ramp, large mooring fenders, and up to three landing craft air cushioned vessel lanes.

The propulsion motors are of a commercial design and build. A single well known firm designed and provided the Integrated Power Systems which supply the electric power, propulsion and vessel automation system.

The solution includes the tandem propulsion motor powered by variable frequency drives, as well as the harmonic filters, generators, high voltage switchboards, transformers, automation, an azimuthing thruster that can be swiveled for dynamic positioning, and the associated thruster drive and motor.

The power quality of distributed service power, which powers the vessel's navigation, alarm, communications, and information technology equipment has high levels of harmonic content and significant voltage excursions during variable frequency drive actuation. The problem is amplified by the distribution system having a limited number of parallel branch distribution circuits.

This has resulted in a power quality level that is not able to support reliable operation of the Vessel's communications, and information technology equipment.

Naval Sea Systems Command attempted to alleviate the situation by adding a line-interactive Uninterruptable Power Supply (UPS) to provide power conditioning for the information technology equipment. The line-interactive UPS did not have the ability to condition either the voltage excursions or correct the harmonic content. This forced the line-interactive UPS to continually run from battery. The batteries were unable to sustain the information technology equipment. operations. This resulted in the line-interactive UPS shutting down and to operate in a by-pass mode, leaving the information technology equipment subject to the full voltage excursions and harmonic content of the distributed power, causing the equipment to shut down and restart at various times.

SOLUTION

The solution for this power issue was to provide a power conditioner and battery back-up with a wide input range, capable of correcting for a full range of power quality conditions. During completion only the NOVA Power Solutions systems were capable of consistent operation across the full range of tested power quality conditions. A NOVA Power Solutions, UPS1-2.5K-1G-SRNDTIX-K2E was selected to condition the power. This solution allowed the Naval Sea Systems Command to restore the information technology equipment to full operating capacity.



Case Study



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