



Energy Storage Module (Proof of Concept)



What is it?

Single Generator Operations (SGOs) allow for one Gas Turbine Generator (GTG) to power an entire ship at a more efficient level than two GTGs that are operating under 50 percent of their rated load. The Energy Storage Module (ESM) provides reliability of power, allowing for single GTG electric plant operations.

The ESM Proof of Concept (POC) is a 600 kW AC-DC bi-directional advanced power converter with associated battery strings. When multiple units are installed as a system, the ESMs provide enough backup emergency power to support the ship 450VAC bus following a loss of generation casualty. This ensures that a system fault does not result in a "dark ship", or loss of all onboard electrical power.

How Does it Work?

The ESM POC synchronizes with the 450VAC bus and monitors the bus voltage and frequency. When a loss of power is detected, the ESM draws energy from the batteries, and provides 450VAC electricity to support the 450VAC bus while a GTG is started and brought on-line.

What Will it Accomplish?

The ESM will create fuel savings by operating one GTG at optimized loading vice two inefficient, under-loaded GTGs. It also offers protection from loss of all electrical power during SGOs.

Applications

DDG 51-class destroyers.

Metrics

Potential fuel savings of 6% (5,000 bbl) per ship/per year.



For More Information

Contact via NAVSEA Public Affairs
at (202) 781.4123 or
NAVSEAPublic_Affairs@navy.mil