



Electrical & Mechanical Systems - Vessel Repair - Ship Structures

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Shipboard Thermal Energy Management (STEM) Flexible Infrastructure HVAC System

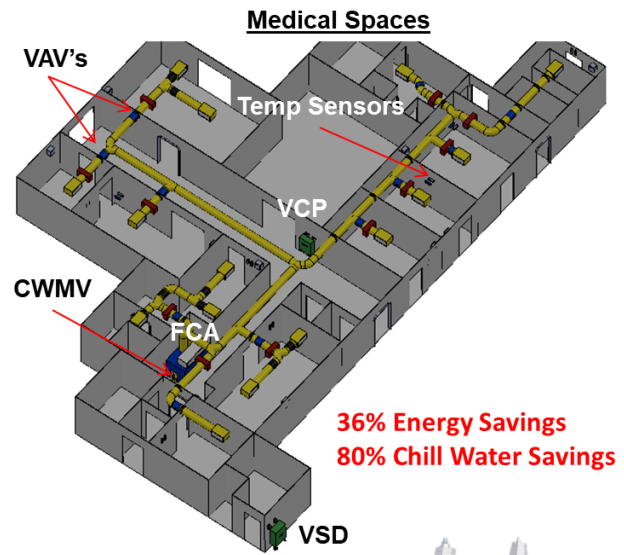
Fairlead installed the next generation Heating, Ventilation and Air Conditioning (HVAC) system onboard LPD-19 (USS MESA VERDE).



Variable Speed Drive



Ventilation Control Panel



36% Energy Savings
80% Chill Water Savings



Full 48 week Data Set USS Mesa Verde (LPD-19)					
Energy Source	Legacy (kWh)	TMS (kWh)	Savings (kWh)	% Savings	% of Total System Savings
Air Cooling	42,167	28,008	14,160	-33.6%	66.44%
Fan Energy	10,664	7,525	3,139	-29.4%	14.73%
Reheater*	5,065	1,051	4,014	-79.2%	18.83%
Total	57,896	36,584	21,312	-36.8%	100.0%

* Intermittent operation of some re-heaters

A power monitoring and data collection system was installed to compare energy usage between the new and old systems.

Fairlead's STEM capabilities are demonstrated in the installation and integration of the Variable Speed Drive (VSD) Motor Controller, a Ventilation Control Panel (VCP), (11) Thermostats, (12) electrically actuated Dampers, and various Temperature and Pressure Sensors that configure the Flexible Infrastructure HVAC system in the medical spaces onboard LPD-19.

Unlike the existing system, the new system controls the volume of air being supplied to each space and modulates the supply air temperature. These changes reduce the power consumption of the re-heaters, the fan motor, and the chill water system. In total, these changes yield energy savings of 36%! The new system provides a "green energy" solution for shipboard use.

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