New Technologies Drive Demand for More Power Aboard Ships

NATIONAL HARBOR, Md. – The rapid growth of power-hungry new technologies and the accelerating drive for directed-energy weapons is requiring the Naval Sea Systems Command (NAVSEA) to put increasing efforts into new means to generate, control and store electrical energy aboard Navy ships, the director of the electric ship office said April 11.

Although NAVSEA has been working on providing electrical power to Navy ships for more than a century, what is different from the past are the "notion of directed energy," and the need for higher power radars and other sensors that reach out farther, said Stephen P. Markle, director and program manager of the electric ship office.

So the concern for designing new ships is "not only the hull, but at the end of the day, it's a combat system. The real focus has to be on the warfighting capability," Markle said at a briefing at the Sea-Air-Space Exposition.

Markle noted the extensive effort in his office over the last several years on meeting the higher energy demands for the DDG 51 Flight III ships, with the powerful SPY-6 radars and other sensors. That was in addition to the ongoing work on the energy requirements for the still undefined future surface combatants, which he said would be a "family of systems," including both large warships and unmanned vessels.

Markle referred the industry representative in the audience to the upcoming 2018 Naval Power and Energy Technology Development Road Map, which would describe "the product areas we're interested in."

Those include control, energy storage, generators, motors, prime movers and power converters.

A major problem with electrical energy on warships, he noted, was the frequent and massive surges in power demands with activation of sensors, which requires means to stabilize the electrical systems.

There also are increasing needs to reduce the size of the electrical generators and to meet the demand for directed-energy weapons – such as lasers and the proposed electromagnetic railgun – that require instant bursts of massive amounts of power and much greater ability to store energy, he said.

Current batteries able to provide those high-levels of power would be too large, so they are experimenting with new batteries made with lithium iron and phosphate, and with fly wheels, Merkle said.