Warfare Centers, Industry Meet for High Energy Storage Conference

Professionals Focus on Safe, Affordable Batteries & Other Energy Sources

A RECENT SUMMIT in Newport, Rhode Island provided an opportunity for Navy energy storage professionals to discuss the future of affordable energy storage in the Navy.

From May 24–26, 2016, the Naval Undersea Warfare Center (NUWC) Newport hosted the third Naval Energy Storage Summit. Attendees included various Navy and Department of Energy personnel along with industry experts specializing in energy storage technology.

NUWC Newport's Technical Director Mary Wohlgemuth introduced the guest speakers.

Presenters included Mr. Joseph Bryan, Deputy Assistant Secretary of the Navy (DASN) Energy; Dr. Edward Ammeen, Director of Marine Engineering, Naval Sea Systems Command (NAVSEA); Dr. Tim Arcano, Technical Director, Naval Surface Warfare Center (NSWC) Carderock; and Joseph Vignali, NAVSEA Marine Engineering.

The goal of the summit was to provide an opportunity for the Navy's energy subject matter experts to discuss the future of energy storage affordability in the Navy. "It's all about commonality and making energy storage safe, reliable, and affordable," said Wohlgemuth.

The Navy needs advanced energy storage devices to enable a wide range of capabilities in the air, at sea, and on land. Unmanned systems, including those intended to ensure U.S. Navy underwater dominance, encompass a large number of these applications. Energy storage is an enabling capability for many shipboard systems as well.

Mr. Joseph Bryan, the Secretariat focal point for all matters pertaining to the Department of Navy (DON) energy initiatives, gave the first presentation, "Energy Storage Commonality and Perceived Cost Benefits." Bryan spoke about the Great Green Fleet and alternative energy sources as well as the safety and commonality issues of lithium ion batteries.

"We spend a lot of time thinking about the challenges of energy storage," said Bryan. "We need to identify opportunities to improve safety and reduce costs."

Dr. Ammeen's presentation was focused on systems safety from the NAVSEA perspective. "NAVSEA is responsible for lithium ion battery safety across the Navy," said Ammeen. "We have to start early with safety certification planning for testing and assessments. There are more high energy power systems coming online. We need to develop a strategic and comprehensive process to address the growing need for advanced energy storage systems."

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>
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Joseph Bryan, DASN Energy, kicked off the summit.
Richard Allen

Dr. Tim Arcano, Technical Director, NSWC Carderock.
Richard Allen

Dr. Joseph Fontaine, Undersea Vehicles Propulsion and Energy Branch Chief, NUWC Newport (left) and Joseph Vignali, NAVSEA Marine Engineering (right).
Richard Allen

With one of the key focus areas of Safe Common Affordable Power & Energy Storage (SCAPES), Dr. Arcano's presentation addressed the issues of commonality. He noted some of the challenges facing NAVSEA in regard to energy storage: the greater need for higher energy density, the proliferation of unique battery solutions, and the cost and time associated with certification.

"DASN (RDT&E) and DASN (Energy) called for the development of a plan to create a family of common lithium batteries to reduce acquisition, schedule, and cost," said Arcano.

As the signing authority of NAVSEA's safety certification memos, Mr. Vignali focused his brief on the safety challenges of high-energy storage systems. A single high-energy powered system (such as an unmanned undersea vehicle) is likely to require multiple certifications to cover varying users and host/platform environments. Vignali and his colleagues are working with the Systems Commands to ensure safe operations on all naval platforms.

For more than a decade, NUWC Newport has been researching fuel cells—both solid oxide fuel cells and proton exchange membrane fuel cells—both of which can produce an electric current directly from a chemical reaction. These fuel cells can be used to power vehicles such as underwater vehicles used for data collection. NAVSEA Marine Engineering recently started drafting technical instructions and requirements for their use in the Fleet.

"We're doing a lot of energy research at NUWC Newport so it was a good fit for us to host this summit. It gives us an opportunity to align what we're doing with the needs of the Navy," said Dr. Joseph Fontaine, head of the Undersea Vehicles Propulsion and Energy Branch at NUWC Newport. "Having many of the stakeholders together over several days also keeps us connected and maintains the working relationships necessary for getting products out to the Fleet." ⚓

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