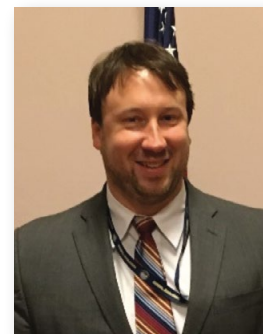


Balancing Shipboard Energy with Warfighting Needs

12 November 2019 / ME Auditorium / 1200–1300

With Guest Lecturer Dr. John Heinzl

Senior Engineer at the Naval Surface Warfare Center, Philadelphia Division, and a Technical Warrant Holder within the Marine Engineering Division of the Naval Sea Systems Command (SEA 05Z35)



Dr. John Heinzl

Abstract

Future Joint Force kill chains are enabled via electric power. The generation, distribution, storage and control of this power is critical to affecting warfighting capabilities, and other requirements that a platform must meet. Central to these considerations is the integration and employment of energy storage. Like the automotive sector has seen improvements in economy, and in many cases, performance with the inclusion of energy storage in automobiles, electrification and integration of storage in ships offers great promise for performance and efficiency, but creates a larger set of considerations as well. This brief will discuss a variety of considerations associated with integration and application of energy storage—how it will notionally be employed aboard future platforms, and what design and engineering considerations need to be made. It is intended to spur discussion and Q&A related to these technologies and their integration or other associated matters.

Biography

Dr. John Heinzl is a senior engineer at the Naval Surface Warfare Center, Philadelphia Division, and a Technical Warrant Holder within the Marine Engineering Division of the Naval Sea Systems Command (SEA 05Z35). He has over fifteen years of experience working increasingly challenging projects related to a wide variety of Hull, Mechanical and Electrical systems, and has also had a strong focus on integration with various weapons systems. Over this time, he has been involved in the development of a wide variety of advanced technology systems such as large-scale fuel cell generators, reverse osmosis plants, fuel polishing adsorbents, flywheel and battery systems, hybrid energy storage, pulsed power, electric guns and directed energy weapons, and others. A chemical engineer by training, his focus has primarily been on power and energy, and integration of chemical-electrical-mechanical systems from a multiphysics basis. Amongst his various assignments, Dr. Heinzl has served as the technical lead for the Navy component of the ASD(R&E) Hybrid Energy Storage Module program and the ONR Multi-Function Energy Storage FNC, both of which strive to combine multiple energy storage types together to gain greatest effect. He also serves as the Power and Energy IPT lead for the Multimission Railgun programs, as well as serves as the Technical Warrant holder as System Integration Manager for Future Power and Energy Storage Architectures. Dr. Heinzl also provides insight into Warfare-Center investments as the Knowledge Point Champion for Integrated Power and Energy Sciences. Dr. Heinzl has a BS from the University of Delaware, an MS from Rowan University and a Ph.D from Auburn University.



NAVAL
POSTGRADUATE
SCHOOL