



High-power energy storage device for warships

Does the Navy have a modular energy storage system?

US Navy Photo SAN DIEGO - The Department of Defense last month issued a small contract for a Navy project to develop and provide a modular energy storage system for its newest vessels including its all-electric DDG-1000 class of surface combatants.

How much power does a warship need?

Some 100,000 SHP is needed to push 10,000 tons through the water at 30+knots, although most Navy warships spend 90% of their life cruising on only one or two engines. Because power requirements rise with the cube of speed, each ship carries a few extra engines for those times when a little acceleration is necessary to stay out of harm's way.

What is shipboard hybrid energy storage system (HESS) integration?

Shipboard hybrid energy storage system (HESS) integration can combine the complementary advantages of high-power and large-energy capacities to provide sufficient operation flexibility at different time scales but also face many operational safety issues (Mutarraf et al., 2018).

What ships used electric propulsion?

The Jupiter had a prototype electric propulsion system that was later widely used in Navy capital ships built during the late 1910s and 1920s. For example, the 36,000-ton USS New Mexico, commissioned in 1918, was the first of three battleships that used electric motors to drive their propellers.

What is a proper power management strategy for a shipboard DC distribution system?

The IEEE std 1709-2018 guideline recommends that the continuous voltage variations for shipboard DC distribution systems should be within 10% (IEEE, 2018). Therefore, a proper power management strategy is required for AESs operating under harsh DP modes.

How does a warship generator work?

The typical warship's electric load (including lights and weapons) is supplied by three marinized Allison 501 gas turbine packages (called ship service turbine- generators or SSTGs), each augmented by a heat-recovery hot water generator.



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