



Hybrid Electric Drive



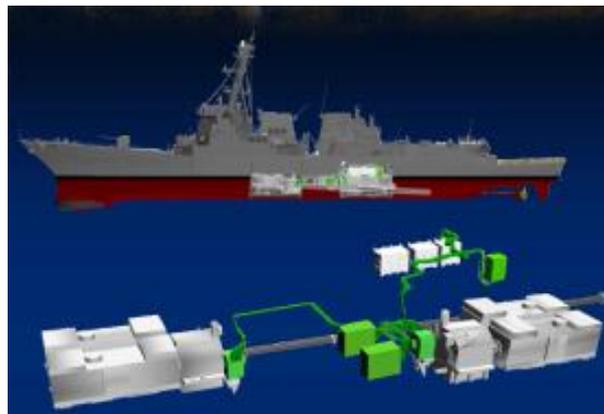
USS Arleigh Burke (DDG 51). The Navy plans to backfit DDG 51 class ships with Hybrid Electric Drive.

What is it?

Hybrid Electric Drive (HED) is a Propulsion Plant Modification that utilizes an electric motor attached to the Main Reduction Gear, allowing DDG 51 Class Ships to operate at higher efficiency.

Description

In electric propulsion mode, the main gas turbines are secured and gas turbine generators are electrically connected to a motor attached to each main reduction gear. The propulsion load is removed from the main gas turbines and placed onto the gas turbine generators. This mode allows the gas turbine generators to operate optimally, lowering fuel consumption.



Benefits

By utilizing Hybrid Electric Drive, the ship can optimally load the gas turbines to take advantage of their better fuel efficiency, as well as reduce their operating time. Through the integration of mechanical and electrical systems, the ship can operate at most speeds at a lower fuel consumption, providing fuel savings and longer time on station.

At a Glance

How Does it Work?

The use of an electric motor on each main reduction gear improves engineering plant efficiency by enabling the shut-down of propulsion gas turbines and/or gas turbine generators, thereby improving the specific fuel consumption of the on-line prime movers.

What Will it Accomplish?

Hybrid Electric Drive increases ship mission effectiveness by enabling longer time on station and has the potential to generate additional electric power for future sensors and weapons.

Metrics

- Potential fuel savings: 5%
- 5,000 bbls per ship, per year



For More Information

Chief of Naval Operations
Energy & Environmental Readiness
Division (OPNAV N45)
2000 Navy Pentagon, Room 2E258
Washington, DC 20350-2000
Kenneth Hess
703-695-5077
kenneth.hess@navy.mil

Technical Point of Contact

Naval Sea Systems Command
1333 Isaac Hull Blvd
Washington Navy Yard, DC 20376
202-781-4123
NSSC_Public_Affairs@navy.mil