

Containerized energy storage systems

Complete battery storage systems for retrofit and newbuilt vessels



ABB offers a turnkey hybrid power solution which improves power plant safety and availability. The solution reduces fuel consumption and pollutant emissions, improves crew comfort and reduces noise, and reduces engine maintenance.

What is containerized ESS?

ABB's containerized energy storage system is a complete, self-contained battery solution for large-scale marine energy storage. The batteries and all control, interface, and auxiliary equipment are delivered in a single shipping container for simple installation on board any vessel. The standard delivery includes batteries, power converters for shore connection and connection to the ship's power system, Energy Storage Control System, cooling and ventilation, and fire protection. The solution is ideal for both retrofit and newbuilt applications.

How does containerized ESS work?

The energy storage system stores energy when demand is low, and delivers it back when demand increases, enhancing the performance of the vessel's power plant. The flow of energy is controlled by ABB's dynamic Energy Storage Control System. It enables several new modes of power plant operation which improve responsiveness, reliability, safety, and fuel consumption. The system also provides a shore connection with frequency conversion, allowing the vessel to connect to 50 or 60 Hz shore power.

What are the benefits?

The energy storage system supports the following functionality:



Peak shaving: Level power seen by engines and offset need to start new engines. Benefits include reduced fuel consumption and engine maintenance.



Enhanced dynamic performance: Instant power in support of running engines. Benefits include reduced fuel consumption and enabler for "slower" sources like LNG and fuel cells.

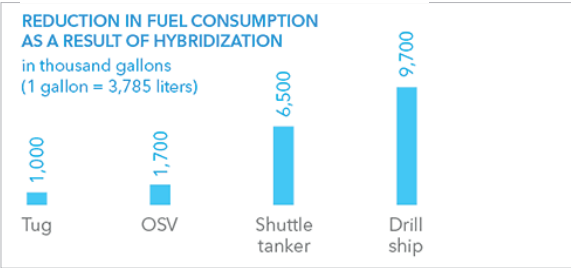
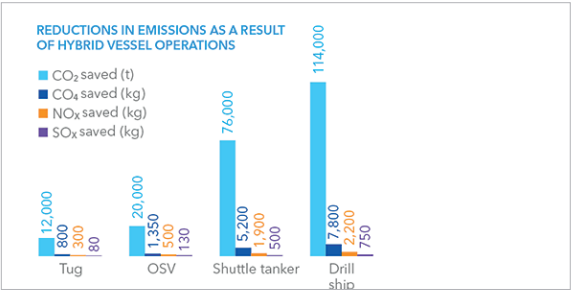


Spinning reserve: Backup power to running generators. Benefits include improved safety and reduced fuel consumption and engine maintenance.

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01 A JIP formed by DNV GL, Taratec Corporation, BG Group, Seacor Marine, ABB, Samsung Heavy Industries, Cummins, C-Rate Solutions and the University of Sao Paulo. Source: DNV GL www.dnvgl.com/article/battery-power-improves-performance-86095

Significant results

According to the joint industry project Hybrid Power, fitting a typical offshore support vessel with energy storage can result in significant reduction in fuel consumption and pollutant emissions, as well as economic benefits through reduction of operating expenses.



System integration

Drawing on our decades-long experience as an industry leader in marine power systems, ABB takes the uncertainty out of marine energy storage.

ABB’s holistic approach includes complete mechanical, electrical, and control design, resulting in a simple, standardized package. The complete system is fully tested before delivery, allowing quick and easy integration once it is installed on board the vessel. The streamlined mechanical, electrical, and control interfaces require minimal work to integrate into any vessel, new or old.

ABB Ability™ for the marine industry

ABB Ability is our unified, cross-industry digital capability. ABB Ability provides the services and solutions that integrate systems on land, sea and air. From collaborative operations to remote monitoring, motion forecasting and energy management, ABB Ability enables vessel operators to know more, do more, and do better, together.

With our ABB Ability Collaborative Operation Centers we enable next generation vessel and customer onshore operations. We bring advanced analytics, portals, and the possibilities of digital twin technology, to drive the digitalization of ship operations. ABB’s containerized energy storage system includes monitoring, diagnostics and data logging of the batteries and converters through ABB Ability Marine

Remote Diagnostic System. The onboard data logging computer is ready for connection to ABB Ability Collaborative Operation Centers and ABB Ability Marine Fleet Portal, enabling global access by the vessel’s owner and by ABB’s experts when required.

Typical specifications

Batteries	
Energy capacity	565 kWh
Battery type	Lithium ion
Cooling	Air or fresh water
Power converters	
Type	ABB ACS800
Cooling	Fresh water
Container	
Dimensions	20’ container (6050 x 2862 x 3100 mm)
Mass with equipment	23 000 kg
Cooling	Fresh water
Ambient temperature range	-20°C / +40°C
Internal climate control	Air to water heat pump
Safety equipment	Smoke detectors, manual alarm call point, PA/GA loudspeaker
Fire fighting	Water mist
Marine class approval	Yes - as deckhouse

Options

- The following options are available:
- Main power coupling transformer in an additional 10’ container
- Increased battery capacity
- 5 or 10 year battery design life
- Extended ambient temperature range

For more information, please contact:
www.abb.com/marine