

Technical Specifications

Batteries

Energy capacity	Up to 700 kWh
Battery type	Lithium ion
Cooling	Air or liquid
Battery life	10 years

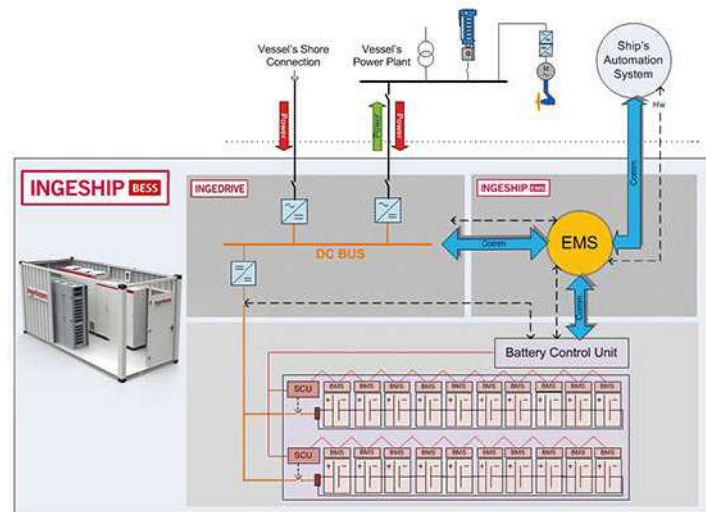
Frequency Converter

Type	Ingecon Storage
Rated AC Voltage	380-690 Vac
Rated Frequency	50/60 Hz
Rated Output	Up to 2200A
DC Bus Voltage	530-1100 Vdc
Cooling	Air or fresh water

Container

Dimensions	6050 x 2862 x 3100 mm
Mass with equipment	22000 kg
Cooling	Fresh water
Ambient teperature range	-20 °C / + 45 °C
Internal climate control	Air to water heat pump
Safety equipment	Fire detection system
Firefighting	Yes

The technical data in this catalogue is subject to change without prior notice. /000/0618 NZC



Components and Installation

Ingeship BESS is delivered in a standard 20 feet container designed for quick and easy integration on board any vessel.

Self-Contained solution includes all control, interface and auxiliary equipment:

- Battery packs
- AC/DC converters for connection to Shore / Ship's power system
- Control System including Energy Management System and interface with ship's automation system
- Cooling and ventilation systems
- Fire protection system

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INGESHIP BESS



Containerized Energy Storage Systems
 FOR HYBRID SOLUTIONS

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Working principle and design

Ingeship BESS stores energy during low demand conditions, returning it back to the grid when the demand increases. The Energy Management System is the responsible brain to obtain the minimum fuel consumption for the possible combination of energy sources, complying with the restrictions inherent in the system.

Functionalities and capabilities

Adaptable to each vessel's characteristics, Ingeship BESS allows the following modes of operation:

- **Peak Shaving:** level power seen by engines and offset need to start new engines
- **Fixed load:** optimal rate of load change mode for fuel consumption reduction obtaining optimal efficiency
- **Load Sharing:** balance for enhanced power plant stability
- **Dynamic Boost:** enabling instant power support to running engines and utilization of alternative energies such as solar panels or fuel cells
- **50/60 Hz shore connection:** allowing cheap energy to be used and reducing running hours for generators, which can even be avoided during harbour operations
- **Spinning reserve:** backup power to running generators on DP operation mode or during full electric operations

Functional Benefits

- Increased power plant stability and availability
- Greatly enhanced responsiveness and safety, specially operating on safety-critical situations
- Increased redundancy
- Less GHG emissions
- Improved working environment by reducing the noise and vibration levels on board

Economical Benefits

- Reduced fuel consumption
- Increased diesel engines efficiency
- Reduced engine running time and maintenance costs

Traditional marine electrical systems are primarily designed for safety conditions. The redundancy required by Classification Societies does not favor the energy efficiency on those vessels having highly variable load profiles, such as Offshore Supply Vessels, Ferries or Tug Boats.

Ingeship BESS offers a compact and optimal solution, to be installed in a newbuilt vessel or to upgrade a standard electric plant. Designed for an easy integration, reaches considerable fuel savings, improving safeness and enabling efficient operation while reducing environmental impact.

