



**LEHMANN
MARINE**

COBRA
BATTERY SYSTEM



**BUREAU
VERITAS**



COBRA FEATURES

- DNV, RINA & BV Type Approval
- ESTRIN compliant (IEC 62619 & 62620)
- Superior energy density
- Compact and light-weight
- Integrated Battery Management System
- Air or water cooling
- Scalable rack system up to several MWh
- Modular design with plug & play installation
- Inherently safe LFP battery chemistry for highest safety

LFP BATTERY RACK

Marine batteries as energy storage and power supply for propulsion significantly reduce fuel consumption, maintenance costs and emissions. With improved capacity-to-weight ratio from lithium-ion technology and growing demand for lower emissions, batteries have become an ever-increasingly attractive option for the large-scale supply of energy in the maritime sector.

COBRA is an advanced battery system employing inherent safe and environmentally friendly lithium iron phosphate cell technology and taking the special requirements of maritime operation and classification into account. Any scale of power storage is available by freely configuring

modular units in standardised racks of up to 1,000 V DC. They include integrated Battery Management System (BMS), gas exhaust and air or water cooling for safe and reliable operation.

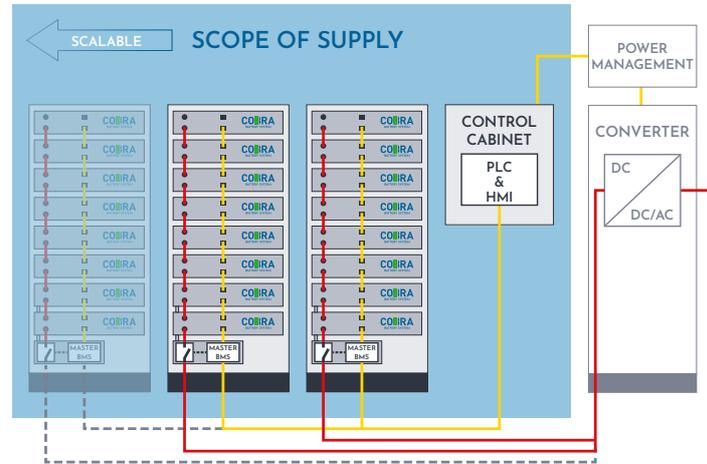
The Compact Battery Racks are being assembled and tested in their own built production facility near the city of Hamburg.



COBRA PROPERTIES

- Battery Modules with high-energy cells or high-power cells
- Up to 94 kWh and 1,000 V DC per Battery Rack
- Battery Clusters with up to 16 Battery Racks and 1 Control Cabinet
- With 1 to 8 Battery Modules per rack
- Fulfills highest safety requirements with no propagation in case of thermal runaway on cell level
- Flexible interface to Power Management System (CanBus, ModBus or others)

COBRA provides a robust and reliable modular battery design with a superior energy density. A Battery Cluster with up to 16 Battery Racks and 1 Control Cabinet provides a capacity of 1.5 MWh at a length of 8.4 meters and a depth of 0.68 meters. The COBRA system is freely scalable from a few kWh to several MWh by adding as many Battery Racks or Clusters as required.



High-quality and inherent safe LFP battery cells and a permanent monitoring by Battery Management System on cell, module and on rack level guarantees the highest standards for safety. LFP battery chemistry does not catch fire during thermal runaway, short-circuit or mechanical damage which makes the COBRA system the safest solution for the use at sea where safety is essential.



Picture © Flotte Hamburg / Schmidt-Wiethoff

APPLICATION

- Electric drives
- Hybrid drives
- Peak shaving
- Hotel load
- Load leveling
- Energy storage

TECHNICAL DATA

Battery Module

Max. Voltage: 125 VDC
Energy: 11.7 kWh



Exemplary Battery Rack (8 modules)

Max. Voltage: 1000 VDC
Energy: 93.6 kWh
Weight: 900 kg
Dimensions (HxWxD): 2023 x 522 x 675 mm
Energy density: 132 Wh/l & 104 Wh/kg
Cooling: Liquid or forced air
Battery Management System: Included
Approvals: DNV, RINA, BV, IEC 62619, IEC 62620

