

becker marine systems

COBRA
Compact Battery Rack



MARITIME BATTERY SYSTEM

By significantly lowering fuel consumption, maintenance costs and emissions, batteries for hybrid power supply, storage and main propulsion provide extraordinary benefits. 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 concept employing tried and tested 18650 lithium-ion 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 cabinets of up to 1,000 V DC including integrated and individually controlled cooling equipment.



The Compact Battery Racks are being assembled and tested in their own newly built production facility near the Hamburg headquarters of Becker Marine Systems.

ESPECIALLY SUITED FOR:

- Ro/Pax ferries
- Shuttle ferries
- Tug boats
- OSV/PSV
- Cruise vessels
- Mega yachts
- Harbour & service vessels



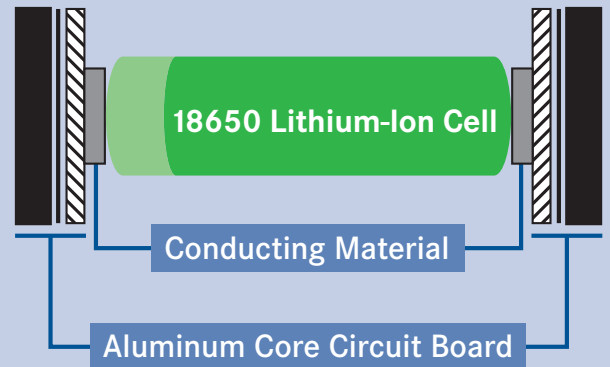
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COBRA PROPERTIES

- Battery modules with energy cells (4.4 kWh) or power cells (3.8 kWh)
- Conchifera technology for compact storage
- CAN bus battery management system (BMS)
- IP54 battery rack
- Efficient air cooling
- Wide range of battery chemistry options
- Example rack configurations:
 - 35 kWh capacity at 340 V
 - 66 kWh capacity at 600 V
 - 88 kWh capacity at 860 V

Additionally a multilayer safety scheme of thermal and current safety devices for each cell as well as a permanent monitoring by battery management systems on module level and power management systems on rack level guarantees the highest standard of safety. COBRA provides a robust and reliable modular battery design employing tried and tested Conchifera connecting technology. This ensures the secure connection of a large number of small-size, high-



energy standard cells. Elastic cell bonding provides a secure contact for the entire service life as well as maximum resistance to vibration. Employing standard, high-quality 18650 cells with high energy density, COBRA is able to generate outstanding performance by interconnecting a high number of cells using only a few robust assembly components and connectors.



COBRA APPLICATIONS

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

COBRA KEY FACTS

Performance

- Up to 1000 V
- Energy-optimised modules (4.4 kWh)
- Power-optimised modules (3.8 kWh)
- Air cooling system
- Integrated heating system

Reliability

- Standard 18650 battery cells
- High cycle life
- Buy back guarantee
- High quality battery system

Safety

- Low fire hazard from small cells
- Single cell fuse protection
- Integrated active battery management system (BMS)

Service

- Modular design, easy replacement
- Low weight of modules for easy handling
- Plug and play installation

Environment

- Second life application
- Optional recycling of battery modules

