

## Corvus Orca

The Corvus Orca ESS represented a shift in the maritime industry when launched in 2016. No other Energy Storage System can compete with the installation count of the Corvus Orca. Offering outstanding results and the highest level of safety, it set the new industry standard for maritime batteries.

Corvus Energy combined industry-leading research and development capabilities with its experience as the leading provider of marine ESS with the most installations worldwide to build the industry's safest, most reliable, high-performing and cost-effective ESS.

### Applications

The Corvus Orca ESS is ideal for applications that need both energy and a high amount of power, moving large amounts of energy at an inexpensive lifetime cost per kWh.

#### Typical Vessel Types:

- Ferries
- Cruise ships
- Ro/Ro – Ro/Pax
- Yachts
- Offshore vessels
- Rigs
- Tugs
- Fishing vessels
- Merchant vessels
- Port cranes
- Shore charging
- Fish farms

### Features

- High C-Rate – up to 3C continuous
- Installed on 700 vessels around the world
- Designed for voltages up to 1200 VDC
- Low installation and commissioning time
- Low life cycle cost
- Enhanced reliability with contained power connections
- Flexible and modularized design
- Passive single-cell Thermal Runaway protection
- Scalable capacity and voltage according to vessel requirements
- Industry-proven Battery Management System (BMS)
- Remote monitoring capabilities
- Enhanced EMI immunity design for maritime environments

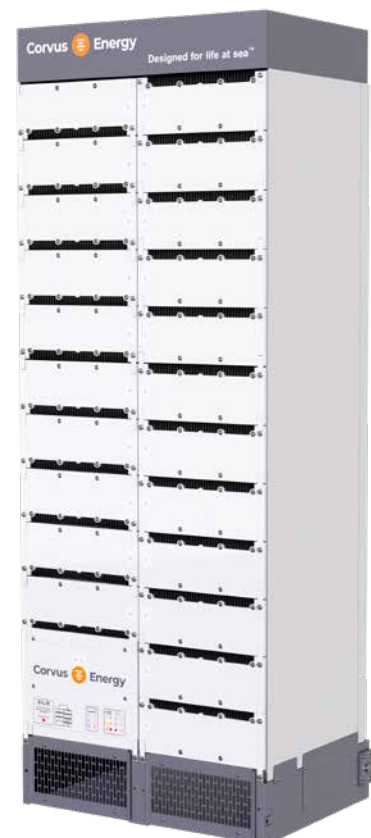
### Corvus Energy safety innovations

#### Passive Single-cell-level Thermal Runaway (TR) Isolation

- True cell-level thermal runaway isolation
- TR does not propagate to neighbouring cells
- Isolation NOT dependant on active cooling

#### Exceeds Class and Flag Standards for TR Gas Venting

- Integrated thermal runaway gas exhaust system
- Easily vented to external atmosphere



## Technical Specifications | Corvus Orca ESS

### Performance Specifications

C-Rate - (Discharge / Charge) Up to 3C / Up to 3C

### System Specifications

Battery Cell Chemistry Lithium ion NMC / graphite  
 Single Module Size / Increments 5,6 kWh / 50 VDC  
 Single Module Capacity 128 Ah  
 Single Pack Range 38-136 kWh / 350-1200 VDC  
 Max Gravimetric Density - **Pack** 77 Wh/kg | 13 kg/kWh  
 Max Volumetric Density - **Pack** 88 Wh/l

### Safety Specifications

Thermal Runaway Anti-Propagation Passive cell-level thermal runaway isolation with exhaust gas system  
 Fire Suppression Per SOLAS, class and Corvus recommendation  
 Disconnect Circuit Hardware-based fail-safe-for over-temperature and over-voltage  
 Short Circuit Protection Fuses included on pack level  
 Emergency Stop Circuit Hard-wired  
 Ground fault Detection Integrated  
 Disconnect switchgear rating Full load

### General Specifications

Class Compliance DNV, Lloyd's Register, Bureau Veritas, ABS, RINA  
 Type Approval DNV, Bureau Veritas, ABS, RINA  
 Cyber Security Approval DNV  
 Ingress Protection System: IP44  
 Cooling Forced air

