



## 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 400+ 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

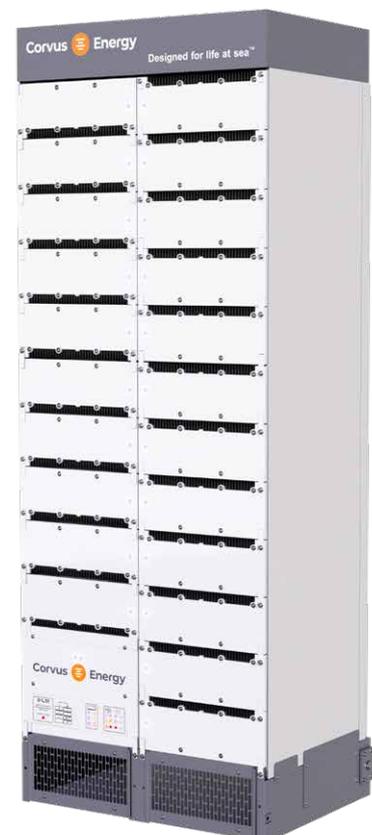
### Corvus Energy safety innovations

#### 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 TR Gas venting

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



## Technical Specifications | Corvus Orca ESS

### Performance Specifications

C-Rate - Peak (Discharge / Charge)	Project Specific Values
C-Rate - Continuous (Discharge / Charge)	Up to 3C / Up to 3C

### System Specifications

Single Module Size / Increments	5,6 kWh / 50 VDC
Single Pack Range	38-136 kWh / 350-1200 VDC
Max Gravimetric Density - <b>Pack</b>	77 Wh/kg   13 kg/kWh
Max Volumetric Density - <b>Pack</b>	88 Wh/l

### Example Packs

Energy	124 kWh
Voltage	Max: 1100 VDC   Nom: 980 VDC   Min: 800 VDC
Dimensions - Vertical Pack - 124 kWh	Height: 2241 mm   Width: 865 mm   Depth: 738 mm   1628 kg
Dimensions - Horizontal Pack - 124 kWh	Height: 1260 mm   Width: 1730 mm   Depth: 738 mm   1726 kg

### Example System - 8 Vertical Packs

Energy	992 kWh
Voltage	Max: 1100 VDC   Nom: 980 VDC   Min: 800 VDC
Dimensions - 8 x 124 kWh	Height: 2241 mm   Width: 6920 mm   Depth: 738 mm   13 024 Kg

### 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, Lloyds Register, Bureau Veritas, ABS, RINA
Type Approval	DNV, Bureau Veritas, ABS, RINA
Ingress Protection	System: IP44
Cooling	Forced air
Vibration and Shock	UNT38.3, DNV 2.4, IEC 60068-2-6
EMC	IEC 61000-4, IEC 60945-9, CISPR16-2-1

2023-09-05

