Onboard Microgrid
Overcome your power distribution challenges

Onboard Microgrid is a new, pre-engineered power distribution solution that supports hybrid power setups so vessels can operate more efficiently and comply with environmental regulations. The compact, ready-made solution contains all the control, power and energy management systems vessels need for more sustainable operations.

### Features
- Connection to multiple energy sources, including generator incomer, battery storage, shore connection, propulsion, other drives, and future support for fuel cells
- Compact size
- Standardized architecture
- Configurable control software for all the above
- Support for up to five converters from AC to DC power distribution
- Water-cooled
- Robust design/construction
- ABB knowledge and expertise
- Support for one or two multi-drive units

### Benefits
- Versatile hybrid solution adaptable to varying customer needs; more efficient operation helps comply with regulations
- Small footprint leaves more room for payload; no separate electrical room required
- Shortened installation time, no advanced competency required, fewer resources needed
- Improved control, power and energy management
- Allows connected assets to operate at variable power consumption, leading to increased efficiency, reduced costs, and less consumption overall
- Ideal engine room conditions
- Sturdier construction than standard marine boards and drives; long-lasting and upgradable
- Trusted, reliable technology and support
- Higher power or redundancy to support varying load demands depending on customer need
Propulsion drive options
The electric propulsion drive may be configured as a single drive using a standard motor with single 3-phase winding. The motor may be of asynchronous or permanent magnet type.

Achieve higher power or redundancy by installing two HES modules to run either a single motor with two winding systems, or two motors coupled to the same shaft directly or through a reduction gear.

AC-power generation
A dedicated module for AC network supply connects to a distribution switchboard through a transformer and filter unit. This ensures proper suppression of harmonics and electromagnetic interference to a safe level in accordance with IEC 60533 requirements for general distribution zone.

The converter can also supply sufficient short circuit current to ensure selective protection in the AC distribution system.

Integrated power management and propulsion control system
Built-in control system hardware and software configured according to customer need:

- Propulsion control
- Power and energy management system (PEMS) supporting engine, electric, hybrid and shore modes
- Energy storage control system
- Graphical user interface and propulsion essential control panel at one or two bridge control positions
- Interface to engines, rotating machines, battery management, shore connection, AC network and propulsion remote control system.
- Modbus TCP interface to automation / alarm system

Fit for the future
ABB Onboard Microgrid allows reconfiguration of the number and types of power sources, consumers and power levels. Alternative energy sources are becoming increasingly important and, as vessels age, the ability to upgrade and alter power sources will be a significant benefit for operators seeking to extend the life of their fleet while reducing costs.
### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of protection</td>
<td>IP54</td>
</tr>
<tr>
<td>Ambient design conditions</td>
<td>Air 0°C - 50°C, Water 10 °C - 45°C, no condensation</td>
</tr>
<tr>
<td>Overall dimensions</td>
<td>Height 1294mm, Depth 827mm, Length 2154mm</td>
</tr>
<tr>
<td>Service space</td>
<td>Front 600 mm, above 200 mm, behind 20 mm, sides 200 mm</td>
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<tr>
<td>Weight</td>
<td>OMD880LC unit: 900 - 1200 kg (excluding transformer, filter parts, motor(s) and power source(s))</td>
</tr>
<tr>
<td>Cooling</td>
<td>Liquid cooled, connects to external dedicated closed-loop cooling circuit</td>
</tr>
<tr>
<td>Basic configuration</td>
<td>Off-grid converter and distribution transformer with LCL filtering, DC-link 750VDC, propulsion motor interface, power source interface(1pc)</td>
</tr>
<tr>
<td>Optional configurations</td>
<td>Three configurable HES module slots for use as power source, 2nd propulsion system, consumer</td>
</tr>
</tbody>
</table>
| External active parts                  | - Propulsion drive braking resistor (1 pc/OMD880LC – when needed)  
- Battery inductance (1pc / battery),  
- Power source filtering (1pc/source - when needed)  
- Distribution transformer (1 per OMD880LC) |
## Technical Specifications Continued

<table>
<thead>
<tr>
<th>Voltage</th>
<th>500VAC, 750VDC (230-500VAC)</th>
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### Ratings
- DC-link 1360A, Transfer DC-link 400A
- 5 pcs HES module branches 100-650kW
- Electrical network supply 500VAC 330kVA 600 A for 3s

<table>
<thead>
<tr>
<th>HES module sizes and current ratings</th>
<th>Generator AAC</th>
<th>Motor AAC</th>
<th>Shore AAC</th>
<th>Battery ADC</th>
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<tbody>
<tr>
<td>S</td>
<td>318</td>
<td>350</td>
<td>350</td>
<td>383</td>
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### Control hardware platform
- ABB (B&R) X20-system

### Control system interfaces
- Capitalize interface to engines, generators, motors, shore connection, battery management system and remote-control system
- Modbus TCP to automation system (statuses, measurements, alarms)
- Internal ethernet control network

### Human Machine Interface
- 1 or 2 graphical operator panels and hardwired propulsion essentials panels
- Local start / stop control for AC and DC power generation

### Power generation modes in the integrated PEMS

<table>
<thead>
<tr>
<th>Engine</th>
<th>Electric</th>
<th>Hybrid</th>
<th>Shore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engines only</td>
<td>Battery only</td>
<td>Battery &amp; engines with selectable priority</td>
<td>Battery charging</td>
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</tbody>
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