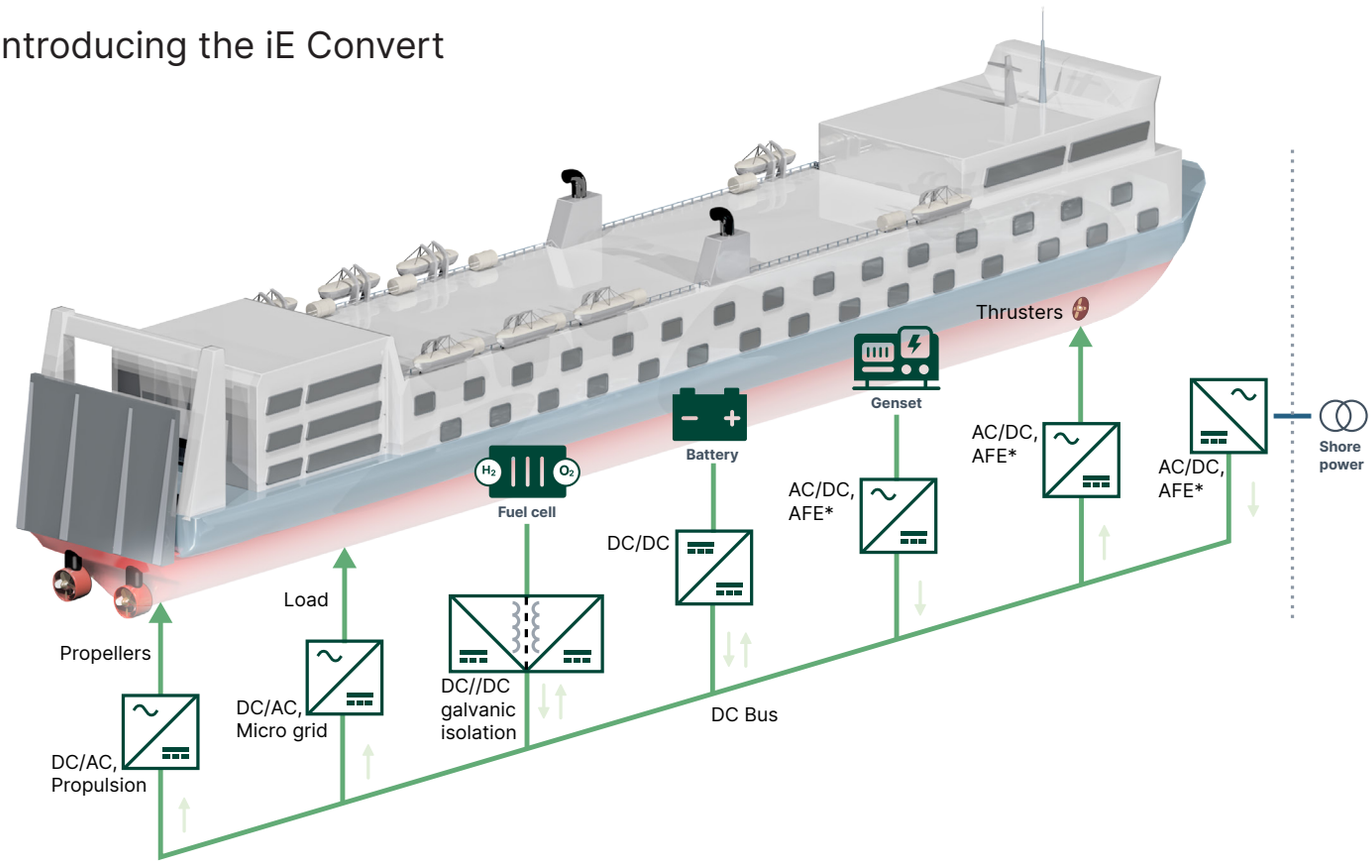
iE Convert Marine

Introducing the iE Convert



For almost 100 years, DEIF has provided reliable products to the marine industry. This includes bridge instrumentation and advanced controllers. DEIF provides customer support with a global presence.

We have partnered with Wolfspeed to create marine power converters based on the latest silicon carbide technology. Our collaboration with Wolfspeed ensures a steady supply of reliable silicon carbide MOSFETs.

Why silicon carbide?

Silicon carbide (SiC) enables high-frequency switching, reducing component size and energy losses. The result is a more compact, lighter, and more efficient power converter with excellent performance across a wide operating range.

Smaller: Up to 60 % less volume than comparable IGBT-based solutions, freeing up valuable engine room space.

Higher efficiency: Lower losses increase efficiency, reduce cooling requirements, and lower operating costs.

Galvanic isolation: Advanced soft-switching CLLC technology provides galvanic isolation and helps prevent circulating and stray currents in hybrid power systems.

Superior power quality: Fast switching enables highly accurate power conversion with very low harmonic distortion.

Lower weight: 30 to 40 % lighter than comparable IGBT-based converters, helping reduce vessel energy consumption.

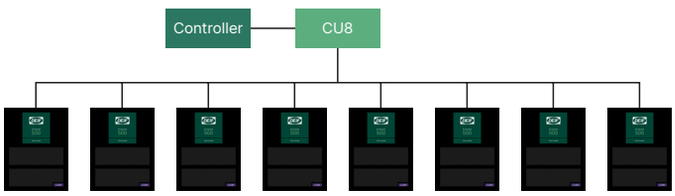
SiC technology has an almost flat efficiency curve. This means energy savings at all load factors (rather than at one sweet spot).

SiC MOSFETs can withstand a junction temperature up to 200 °C, which is much higher than IGBTs. This thermal performance enables operation at sustained higher loads and flexibility in handling peak loads.

Applications and specifications

How it works

iE Convert is easy to install and simple to use. The platform uses modular design, with three form factors. Up to eight power blocks can run in parallel and synchronise. As a result, the iE Convert offers a wide range of power conversion capacity, from 150 kVA to 8 MVA.



You can connect the iE Convert controller to a DEIF iE controller for seamless power/energy management. For PLC integration, you can use the CODESYS platform from DEIF.

Power block	Power	400 V AC	690 V AC
iE Convert 150	150 kVA	217 A*	126 A
iE Convert 500	500 kVA	419 A	419 A
iE Convert 1000	1000 kVA	837 A	837 A

Note: * Through a dedicated module equipped with 1200 V MOSFETs.

Specifications

Power losses: 1 to 2 %
Switching speed: 24 to 75 kHz
AC nominal voltage: Up to 850 V AC, at 50 or 60 Hz, and up to 400 Hz for special cases (subject to derating)
DC nominal voltage: 750, 1100, or 1500 V DC
Protections: Voltage, current, and fault monitoring
Supply: 24 V DC, 5 to 10 A

Housing: IP2X, or none (IP00)
Ambient temperature: -40 to 60 °C
Coolant temperature: 5 to 60 °C
Coolant type: Antifrogen N-water mix: 25:75
Humidity: 95 % RH, non-condensing
Altitude: Up to 4000 m

Communication: Modbus interface, EtherCAT
Standards and approvals: DNV-GL (Marine), UL, Cybersecurity, CE, RoHS

Hardware platforms

iE Convert 150

Working AC voltages
208 V to 480 V, or 300 to 690 V

Maximum DC voltage
850 V, or 1500 V

Frequency
50 Hz, 60 Hz, or 400 Hz

iE Convert 500

Working AC voltages
300 V to 690 V

Maximum DC voltage
1350 V

Frequency
50 Hz, 60 Hz, or 400 Hz

iE Convert 1000

Working AC voltages
300 V to 850 V

Maximum DC voltage
1500 V

Frequency
50 Hz, 60 Hz, or 400 Hz

Applications

AC/DC
Grid

DC/AC
Drive

DC/DC
Buck-boost

DC//DC
Galvanic isolation

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Marine appliction guide

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