

## ENERGYCYCLE™ DC - 1000 INVERTER



Calnetix Technologies has developed a bidirectional silicon carbide (SiC) based EnergyCycle™ DC-1000 inverter to meet the power conversion and distribution needs of hybrid electric powertrains for military, airborne and naval applications. It can drive propulsion motors and pair with hybrid electric generators to provide mobility and on-board electrical power, enabling a step-change in vehicle performance and operability.

Calnetix's EnergyCycle™ inverter supports flexible electrical architectures and can be utilized for high power conversion of DC to AC, or AC to DC. The high frequency inverter combines emerging technologies, such as silicon carbide power switching components, and novel thermal management into a highly dense and rugged package for operation in harsh environments.

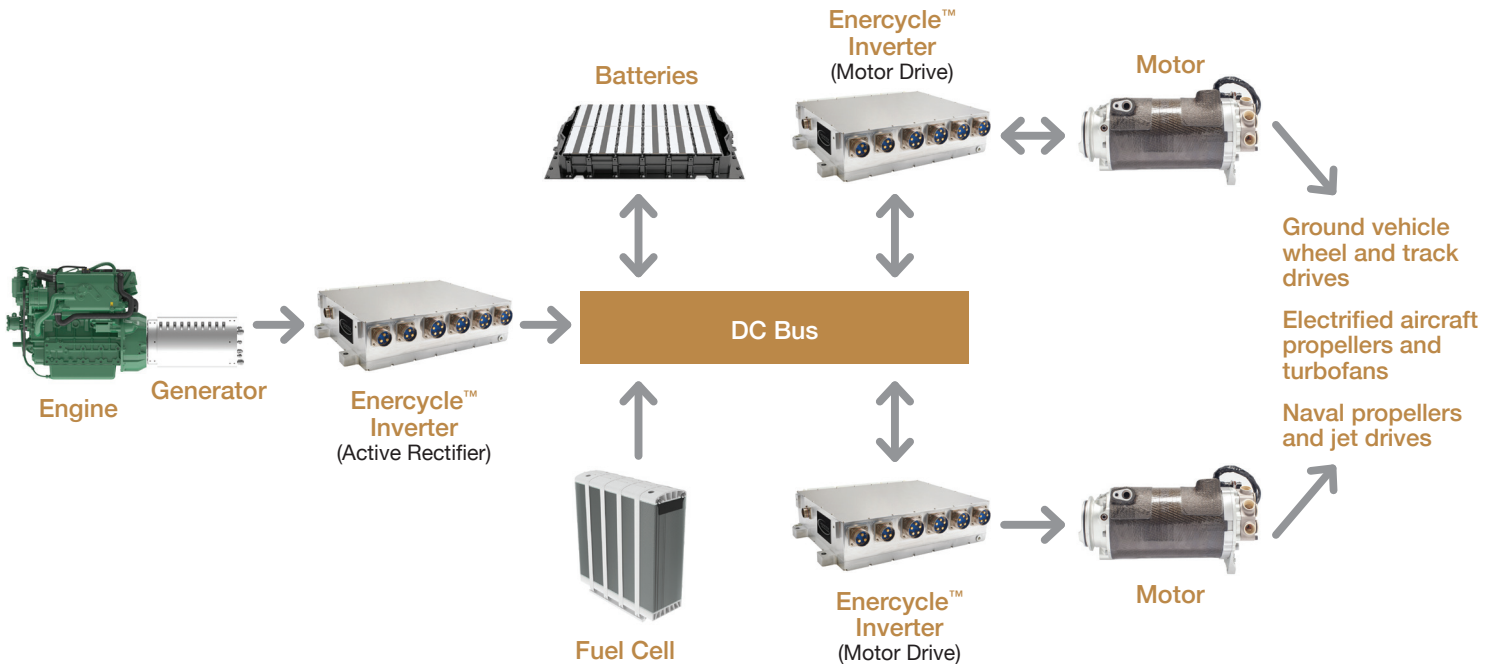
Calnetix offers energy efficient VFDs and inverters for power generation, power conversion and motor controls. Drive solutions from Calnetix encompass the full power chain, from electrical power source to delivery of mechanical torque or vice-versa.

### KEY FEATURES

- ✓ Bidirectional power flow capability
- ✓ Supports bus switching and protection for architectural flexibility
- ✓ Conversion efficiency up to 98.5 %
- ✓ High frequency switching operation with SiC devices  
*Reduce or eliminate bulky filtering components*
- ✓ Increased volumetric power density (> 10kW/L)
- ✓ High temperature operation  
*Integrated cold plate for heat rejection*
- ✓ High durability

## HOW IT WORKS

The Enercycle™ inverter can provide high-current active rectifier functionality, providing electrical power from the main generator to the DC bus. Additional power storage and generation interfaces, such as batteries or fuel cells can also interface with the DC bus. Any number of Enercycle™ inverters can be utilized to draw energy from the DC bus and independently drive propulsion motors. The bidirectional inverter can also capture kinetic energy from the propulsion systems, offering capability for additional operational modes, such as regenerative braking or improved steering and vehicle dynamics.



## INVERTER SPECIFICATIONS

PARAMETER	SPECIFICATION
Size	23 X 18 X 6 inches (579 X 467 X 150 mm)
Motor/Generator Voltage (AC)	0 to 445 VAC L-L RMS (non field weakening)
Current Rating (AC)	800 A RMS Continuous, 1000 A RMS Transient
DC bus Voltage Range (DC)	565 to 635 VDC
Current Rating (DC)	840 A Continuous, 1070 A Transient
AC Fundamental Frequency Range	0 to 1500 Hz
Power Rating @105°C	500 kW Continuous, 640 kW Transient
Number of Phases	3
Operating temperature	-40 to 120°C Ambient
Liquid Coolant	EGW @ 30 LPM, 105°C Max Inlet