

Plug-in Hybrid Electric Vehicle for Special Operations

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This RCT Systems Hybrid Vehicle Power System has been developed to meet or exceed all Joint Light Tactical Vehicle (JLTV) objective electric power requirements for on-board as well as export power, providing power for all anticipated weapon/sensor systems, and a future “silent move” capability.

The system includes a scalable 60 KW inline motor generator and controller, that not only acts as a generator, providing power to the 600VDC vehicle electrical bus, but can also be used for vehicle start, propulsion and torque assist/smoothing. In addition to the M/G and Controller, the system includes a DC/DC Vehicle Power Converter (VPC) module used to power the vehicle 28VDC systems. The Off-Board Power Converter (OPC) provides bi-directional, galvanically isolated DC/AC converter for 120/208VAC 50/60Hz power from the 600V Vehicle DC Bus. This two mode module allows the vehicle to provide export power (Generator mode) as a voltage source with characteristics defined in MIL-STD-1332 as a tactical mobile generator capable of providing single and three phase loads with 120/208VAC at 50/60Hz. In the Plug-in Hybrid (PHEV) mode, the OPC operates as a load to power the Vehicle DC Bus from an external 120/208VAC at 50/60Hz power source for battery charging and operation of other on board equipment. The OPC and high voltage Energy Storage system operate in concert with the Motor-Generator and Controller to form the Vehicle DC Bus. When operating in PHEV mode from external power, the OPC provides power to the Vehicle DC Bus if either the Energy Storage System, or Motor-Generator and Controller are not available.



M/G



MGC



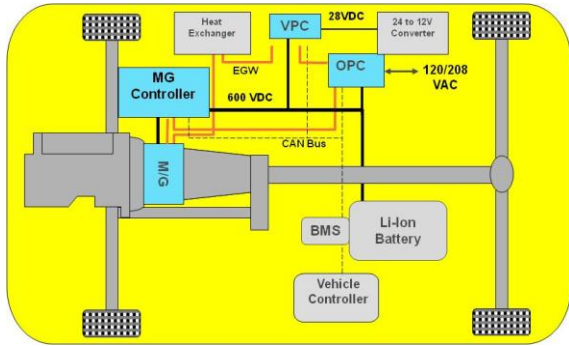
VPC



OPC

***HYPERLINK** each of the above to spec sheets.*

The technology builds on RCT Systems’ Integrated Starter Generator (ISG) and DC/DC converter developments as well as other government sponsored advanced technology for power electronics subsystems. The goal is to develop the key system components that will enable more efficient operation of tactical vehicles while providing for the increased electrical power demands of next generation systems. RCT Systems is considering a range of potential vehicles for these hybrid powertrain technologies.



Specifications	Motor-Generators (M/G)	Motor Drive Controller (MGC)	Aux Output DC/DC Converters (VPC)	DC/AC Input-Output Inverters (OPC)
Power/Current Rating	>60kW	>60kW	300A modules parallelable	>30kW 3 ϕ , 4-wire
Voltage	480VDC to 710VDC	480VDC to 710VDC	HV Battery to 14 or 28VDC	120/208 VAC 60Hz
Bi-directional	YES	YES	NO	YES
Isolated	N/A	NO	YES	YES
Size	16" OD x 9" L	18 x 14 x 8	21 x 19 x 7	31 x 33 x 8
Weight	~172 lbs	<55 lbs	<100 lbs	~ 245 lbs
Efficiency	>95%	>96%	>93%	>93%