



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND – GROUND VEHICLE SYSTEMS CENTER

Platform Electrification and Mobility Program

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1) Army leadership interest in the electrification for operational and logistical benefits.

2) Army combat vehicle challenges extend beyond commercial hybrid electric systems

4) The Army has done substantial work in hybrid electric combat vehicles with recurring limitations

5) The Army has specific gaps for hybrid electric technology adoption. The NGCV CFT is filling these gaps in the Platform Electrification & Mobility Science & Technology project.



- Mobility Power: Track resistance ~90 lbs/ton,, ~4X requiring even more power under cross country conditions 180 lbs/ton to 225
- High power requirements from outside track under steer conditions.
- ~.4G braking. Repeated braking conditions,
- High continuous tractive effort conditions under high ambient temperatures.
- Available coolant temperatures are limited to 105C minimum.
- Submergence. 2m depth
- High shock loading
- Nuclear Protection:
- EMI MIL STD 460 and 461



PLATFORM ELECTRIFICATION AND MOBILITY



Systems Integration Lab

Integration and Maturation

Platform Electrification and Mobility (PEM):

This project develops, integrates and tests essential electrification/hybrid electric technologies for various weight classes of Next Generation Combat Vehicle platforms.

Description:

Development of series hybrid electric powertrain and demonstrators for 30, 50-60, and 60 ton plus 20% growth platforms.

- Optimized scale-able high voltage architecture to permit future all electric power pack options.
- ISG power generation and energy storage to enable DEW, electrified armors, etc.
- Segmented Composite Rubber track coupled to an advanced external suspension for weight reduction and improved off road & silent mobility performance.
- Li-ion based Modular HV Battery System.
- JP8 Fuel Cell for light vehicle propulsion and continuous silent watch/extended silent mobility on larger platforms.
- Electrified sprocket drive.
- Future battery chemistry development.



Power Dense Motors/

Controllers

High Density Diesel

Electric powerpack

rechnology	industry Farmer
Generators	Wittenstein
Inverter	DCS/Calnetix and Internal
Electric Sprocket Drive	Qinetiq
Engine	Cummins
Universal High Voltage Converter	Creare
JP-8 Fuel Cell	Precision Combustion Inc. (PCI)
Modular High Voltage Battery	UEC Electronics
Composite Track	Soucy Defense
External Suspension Unit	Horstman Systems

• Future tactical battle fields a hand a proved for public release; distribution unlimited. OPSEC# 6659



MAJOR PEM COMPONENT DEVELOPMENTS





- 500kW Inverters (Cont/Gov)
- 750kW Generator
- 1000hp Opposed Piston Engine
- Composite Rubber Track
- Externally Mounted Suspension Units

