National Defense Center for Energy and Environment

TOWABLE, LOAD FOLLOWING 60 KW (T-60) SELF CONTAINED MICROGRID

PROJECT OVERVIEW

Increased OPTEMPO and enhanced core war fighting capabilities place significant mobility demands on power systems and tactical vehicles. This demand compromises combat effectiveness of Future Force platforms. Highly power dense, versatile generator sets are the linchpin to effectively reduce fuel consumption and maintenance, increase operational reliability and system life, and maintain mission effectiveness. This effort will deliver a HMMWV / JLTV towable 60 kW power system with a self-contained microgrid that provides variable output, follows load and operates in grid tie and standalone power modes in any tactical environment. The system will use open source control signals (TMS compliant) and a universal microgrid interface to enable use with any microgrid.

BENEFITS

Stakeholder/Beneficiary: Program Manager - Expeditionary Energy & Sustainment Systems – DoD fielding/procuring agent

DoD Owned: Firmware/source codes belong to the Army

Operational Flexibility: Self contained microgrid is software independent which allows multiple T-60's to be connected via simple DC link cables with no additional hardware or microgrid software. It can be programmed to stage the engines during periods of low demand or maintenance while distributing total available power to avoid interruption of ongoing applications.

Availability and Mission Readiness: HMMWV/JLTV towable systems deliver power to critical systems within 30 minutes upon relocation over a series of 2 hour long emplacements at theater level per Chief of Staff directive.

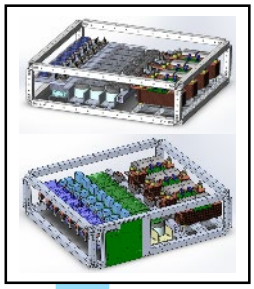
Reduced Log Footprint: reduced fuel consumption and maintenance by 25%; increased operational reliability and system life by 20%; reduced total ownership costs by *25%*

PATH FORWARD

The completion of this project promotes:

- A new family of load following 60 kW generator sets that can be transported, emplaced and provide power within 30 minutes for critical loads in theater.
- A family of inverter systems (2 -60 kW) capable of handling power surges and non-linear loads and correcting power factor.
- Delivery of Interface Control Documents, Tech Data Package, Performance Specification to PM E2S2

Water Cooled Alternator



T-60 Inverter System

John Deere Military 4045HF485-JET Engine

Representation of T-60 Load Following Generator Set

- Output: 30 - 60 kW continuous output power at 0.8 power factor
- 2800 pounds (40% less than the current 60 kW genset).

DoD Executive Agent
Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

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FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
http://www.denix.osd.mil/ndcee/home

U.S. Army Combat Capabilities Development Command
C5ISR (Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance)