



GROUND VEHICLE POWER & MOBILITY



Engine Generator Test Lab (EGTL)

The U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC's) EGTL is the premiere laboratory facility designed to aid in the development and maturation of Future Combat Systems (FCS) engine generator units.

The EGTL is a research and development (R&D) laboratory used to test a series of engine generator units destined for Future Combat System (FCS) vehicles. General Dynamics Land Systems (GDLS) Division funds TARDEC to perform R&D testing on FCS engine generators to support the engine generator units' development and maturation and reduce programmatic risk.

The engine generator unit is an MTU 5.5L 440 kW diesel (developed with technology transitioned from TARDEC's FCS engine program) coupled to a Williams International Permanent Magnet Generator that produces all the electrical power needed for the vehicle's propulsion and auxiliary power demands.

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Primary Focus

The EGTL's primary focus areas include:

- Verifying power pack (engine generator) performance.
- Verifying cooling requirements for the power pack.
- Validating power pack transient response characteristics for vehicle performance.
- Mapping fuel consumption for the power pack.
- Collecting data for fuel economy analysis (logistics burden).
- Collecting data for vehicle performance estimates under variable ambient temperature conditions.
- Collecting data to optimize engine-to-generator response characteristics for efficient operation.
 - o Data will be provided to GDLS for modeling and simulation efforts.
 - o There will be the potential for incorporating GDLS Models (at TARDEC lab) to perform "hardware in the loop" simulation.
 - o Data will be provided to BAE Systems for inverter and vehicle system control architecture development.
- Identifying and resolving any engine generator problems discovered during testing.



Initiatives

The TARDEC EGTL team is engaged in the following major programs and activities:

- Testing and engineering evaluation of seven FCS engine generator units for performance and technical maturation of components.
- Endurance testing of an eighth FCS engine generator unit to mature the system's durability.
- Future testing and engineering evaluation of at least four more FCS engine generator vehicle systems.
- After testing is completed, shipping the units to TARDEC's Power and Energy System Integration Laboratory in Santa Clara, CA, where they are integrated into the vehicle platform for full system checkout.

