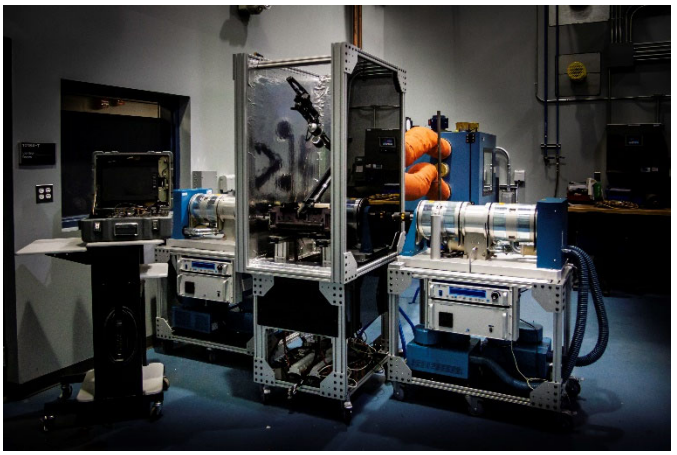
Robotic - Power Energy Vehicle Environmental Laboratory

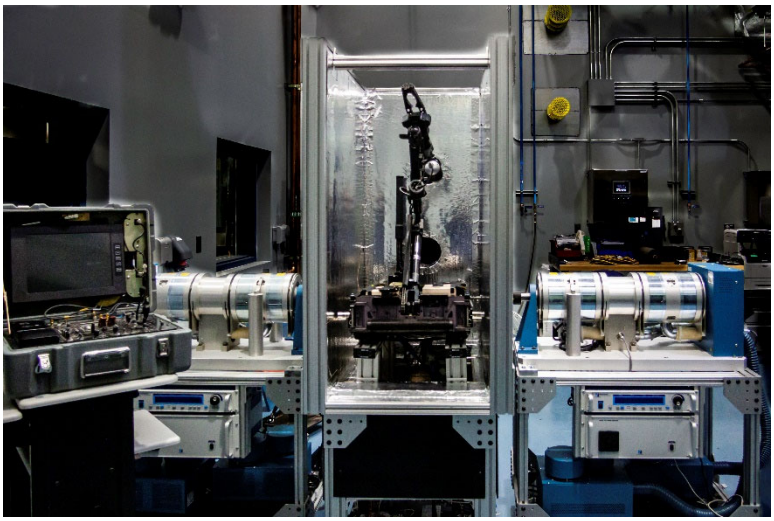
GVSC's Ground Systems Power and Energy Laboratory (GSPEL) Team operates the Robotic - Power & Energy Vehicle Environmental Laboratory (R-PEVEL) which enables GVSC to perform robot platform-level performance and durability testing on both wheeled and tracked robotic platforms. The R-PEVEL's 2 quadrant dynamometers can support up to a Common Robotic System – Intermediate (CRS-I) sized robotic platform, and up to 56.5 Newton-Meters at up to 8,000 RPM. The R-PEVEL offers controlled environmental conditions with temperatures ranging from -60 to 160 °C.

R-PEVEL Testing Capabilities

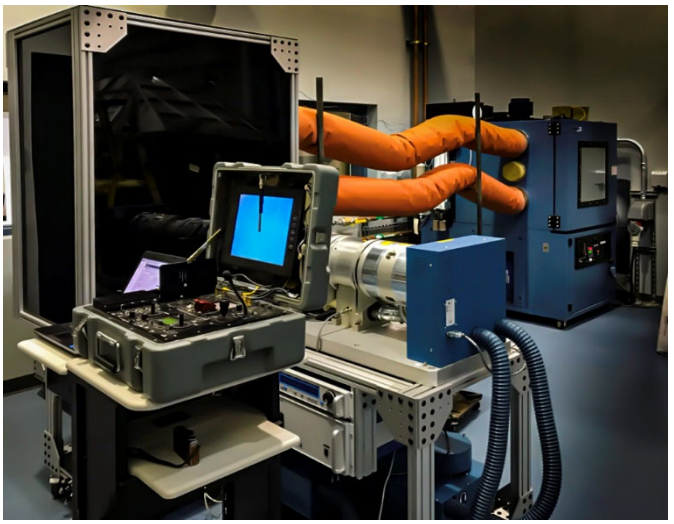
- Mobility and Performance testing of small robotic platforms
- Motors and Drives power measurement
- Performance Characteristics of low to medium power range motors
- Load simulation for duty cycle and life testing
- Testing in extreme climates under various loads
- Powertrain development and prototype system/component evaluation



R-PEVEL System View



R-PEVEL Test Chamber View



R-PEVEL System View with Thermal

Test Chamber Overview

Dynamometer Specifications

- 14 kW 2Q Hysteresis Dynamometer x2
- 56.5 Nm torque rating
- 0-8,000 RPM speed range
- Magtrol LabView based controller

Data Collection System

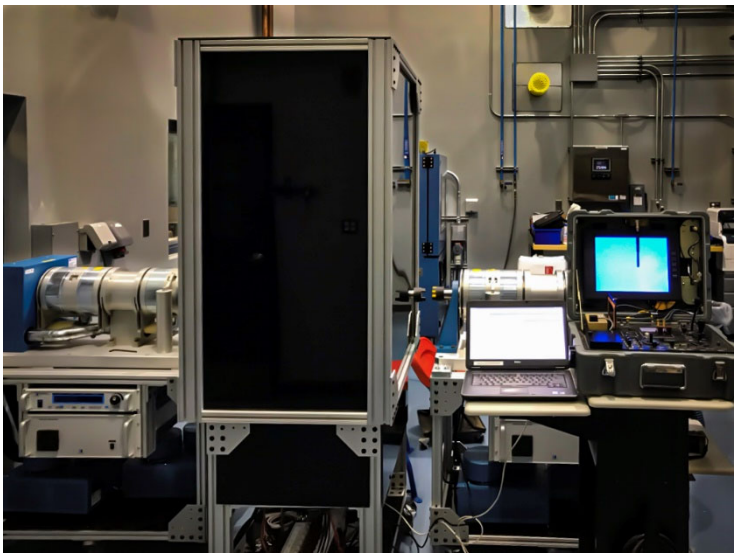
- National Instruments cDAQ chassis
- SMBus collection and sampling
- National Instruments LabView-based control
- Veri-volt voltage isolation
- Current shunt current sense

Environmental Control

- Temperature: -60 to 160°C
- External Russels Thermal Products system
- Multipoint thermocouple/RTD monitoring
- Humidity: up to 95% RH

General Information

- Thermal test chamber sized to MTRS Inc II and smaller robotic platforms
- Thermal test chamber and dynamometers are mobile
- CRS-I ready with minimal modification
- Remote Operation ready
- Large Robotic Assembly area



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