



Energy Storage Laboratory



GSPCL Laboratory

GVSC's Ground Systems Power and Energy Laboratory (GSPCL) Team operates the Energy Storage Laboratory (ESL), an ISO/IEC 17025 accredited laboratory, which supports testing and evaluation of batteries and electrochemical technologies at cell, module and battery pack level.

Capabilities/Facilities

- Three (3) large Battery Test Rooms, two (2) Pack Test Chambers, an Electrochemical Research Lab, and a Battery Management System Lab.
- Multiple cell/battery Cyclers on a centralized control system.
- Thermal Chambers and temperature controlled Water Baths.



Internal Cell/Module Test Rooms

Capabilities/Benefits

- Cradle-to-grave R&D and surveillance testing support for all DoD ground vehicle energy storage systems.
 - Performance to specification
 - Cycles to Failure (Service Life)
 - Cold Cranking
- Assess TRL levels and understand new technology/chemistry.
- Assess performance of fielded storage systems.
- Test new solutions for fielded and future vehicle systems.



Cell, Module & Battery Cycling Equipment

Equipment

Battery Cyclers

Brand	Model	Quantity of units	# of Channels per unit*	# Thermocouples Channels per unit	Voltage		Current		Temperature	
					Range	Tolerance	Range	Tolerance	Range	Tolerance
Bitrode	LCV3-100-36	1	3	7	±54VDC	±.05VDC	±100ADC	±.1ADC	-40 to 190°C	±2.5°C
Bitrode	MCV48-50-5	2	48	48	±5VDC	±.005VDC	±50ADC	±.05ADC	-40 to 190°C	±2.5°C
Bitrode	LCV12-50-24	2	12	16	±32VDC	±.036VDC	±50ADC	±.05ADC	-40 to 190°C	±2.5°C
Bitrode	LCV4-100-36	1	4	8	±54VDC	±.05VDC	±100ADC	±.1ADC	-40 to 190°C	±2.5°C
Bitrode	LCV4-100-60	7	4	8	±60VDC	±.06VDC	±100ADC	±.1ADC	-40 to 190°C	±2.5°C
Bitrode	DTV1-2000-24**	1	1	1	-24VDC	±.024VDC	-2000ADC	±2.0ADC	-40 to 190°C	±2.5°C
Bitrode	LCV8-100-60	3	8	12	±60VDC	±.06VDC	±100ADC	±.1ADC	-40 to 190°C	±2.5°C
Bitrode	LCV2-1000-48	1	2	4	±72VDC	±.07VDC	±1000ADC	±1.0ADC	-40 to 190°C	±2.5°C
Aero-Vironment	AV900	3	2	-	±900VDC	±1.35VDC	±300A	±1.13ADC	-	-

*Channels within unit may be placed in parallel for higher currents

**Discharge only

Temperature Conditioners

Brand	Model	Quantity of units	Temperature		Internal Volume	Cooling Change Rate	Heating Change Rate
			Range	Tolerance			
ESPEC	BTZ-175	5	-65 to 150°C	±.5°C	1.5 ft ³	5°C/min	5°C/min
ESPEC	BTZ-475	5	-65 to 150°C	±.5°C	4 ft ³	2.5°C/min	2.75°C/min
Cincinnati Sub-Zero	ZPHS-8-1.5-1-H/AC	1	-65 to 150°C	±.5°C	8 ft ³	14°C/min	17°C/min
Tenney	T10RC-1.5	3	-65 to 150°C	±.3°C	10 ft ³	4°C/min	5.5°C/min
Russells	GD-64-5-5-AC-EP	1	-65 to 150°C	±1°C	64 ft ³	3°C/min	3.8°C/min
Thermotron	SE-2000-6-6	1	-65 to 150°C	±.7°C	69.3 ft ³	3.4°C/min	5.3°C/min
Water bath	-	2	15 to 70°C	±1°C	up to 15.7 ft ³ *	≈.2°C/min	≈.25°C/min

*Depth of water can vary from 4 to 17"



Outdoor Pack Test Chambers



FOR FURTHER INFORMATION:
Phone: (586) 215-9327

Igor Baseski, Lab Manager
e-Mail: igor.baseski.civ@mail.mil