

Battery Reliability Test Lab at the Grid Storage Launchpad

Ed Thomsen, Vilayanur V. Viswanathan, Nimat Shamim, Alasdair Crawford, Daiwon Choi, Guosheng Li, David M. Reed
 Battery Materials & Systems Group, Pacific Northwest National Laboratory, Richland, WA 99352

Objective

The objective of the Battery Reliability Test Lab is to evaluate and validate the performance of battery cells, modules, and smaller systems for grid applications by testing to real world grid duty cycles developed by the Office of Electricity Energy Storage Program.

http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-22010Rev2.pdf

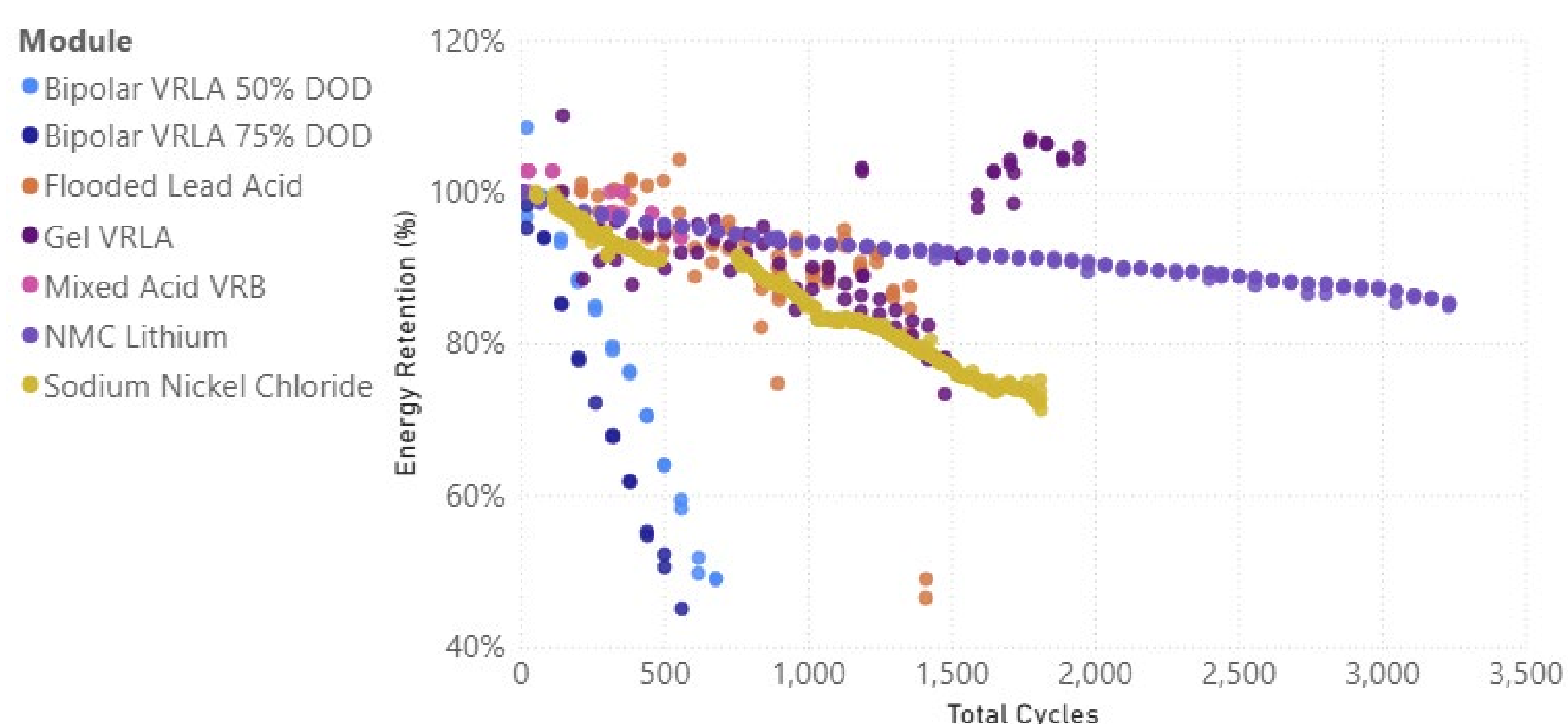
Methodology

- Testing of cells, and modules of various chemistries from Li-ion, lead acid, sodium beta, vanadium redox flow, nickel-zinc, nickel iron, with additional chemistries under consideration
- Systematic cycling tests under grid duty cycles
- Periodic reference performance test to track degradation

Current Testing Capabilities

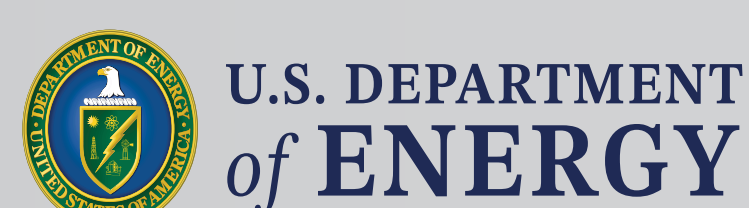
- 864 Channels 0-5V 10A Charge / Discharge
- 24 Channels 5-60V 30A Charge / Discharge
- 16 Channels 0-60V 50A Charge / Discharge
- 32 Channels 0-60V 150A Charge / Discharge
- 28 Channels 8-100V 200A Charge / Discharge
- 5 8ft³ Test Chambers
- 3 32ft³ Test chambers
- 3 66ft² Ventilated Enclosures
- ~4000ft² dedicated to battery testing
- Interface and measure BMS parameters

Modules subjected to Peak Shaving Duty Cycle

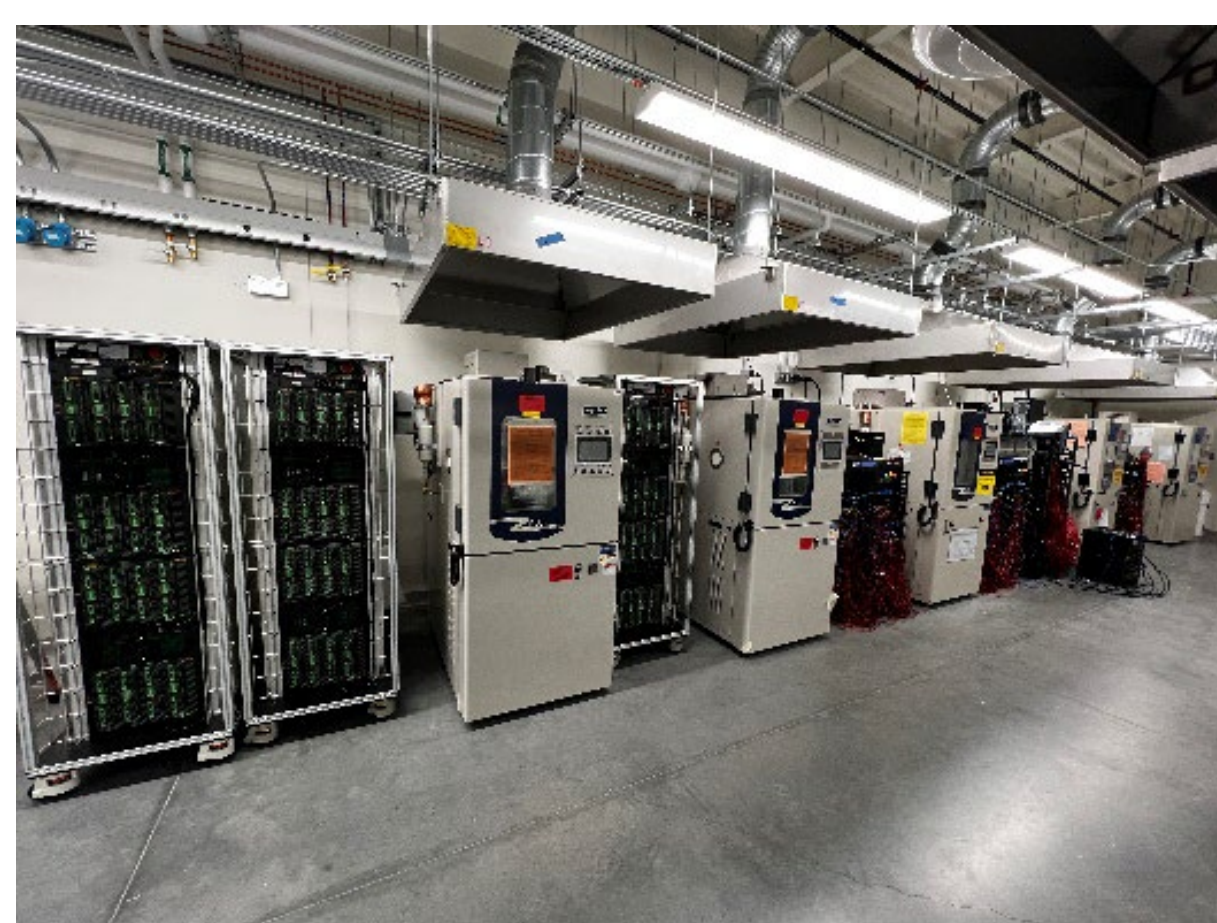


Acknowledgement

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Single Cell Chambers



Larger Chambers



Ventilated Enclosures



Lab Layout



Conclusion

- Building a world class battery test lab that will enable a more reliable grid
- Testing both mature and emerging technologies

Future Work

- Build out more test stands and test channels
- Build testing capability for AC integrated systems



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For additional information, contact:

Ed Thomsen

509-375-3739

Edwin.Thomsen@pnnl.gov

www.pnnl.gov