



Special Purpose Batteries

MaxPower, Inc.

Organic-based Room Temperature Liquid Reserve Technologies

Presenter: Steve Shantz

MaxPower, Inc.

141 Christopher Lane

Harleysville, PA 19438

215-256-4575

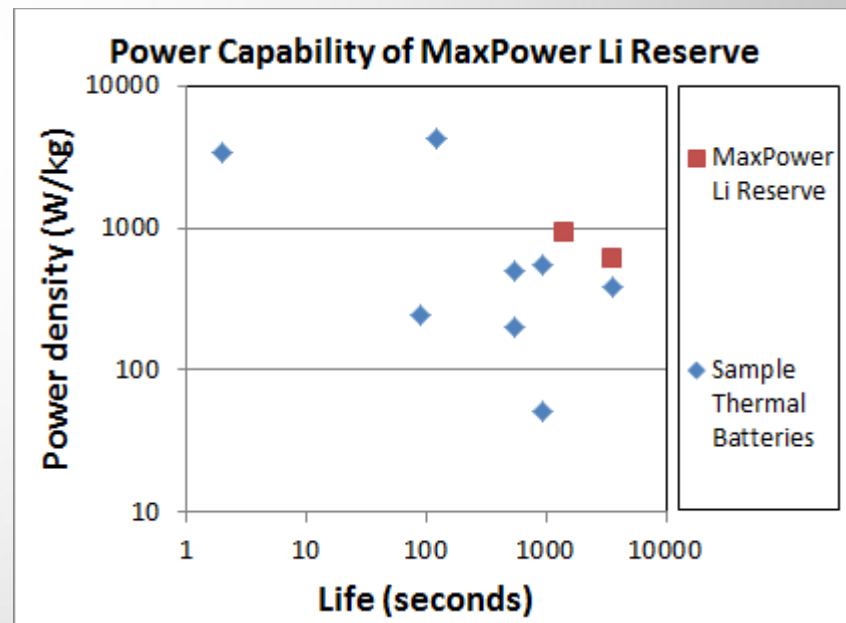
maxpower@maxpowerinc.com

- Company background
- MaxPower approach to reserve power for munitions
- Reserve battery case studies
 - Setback activated reserve battery for gun-launched submunition
 - Electrically activated reserve battery for ICBM reentry vehicle
- Future for reserve power at MaxPower

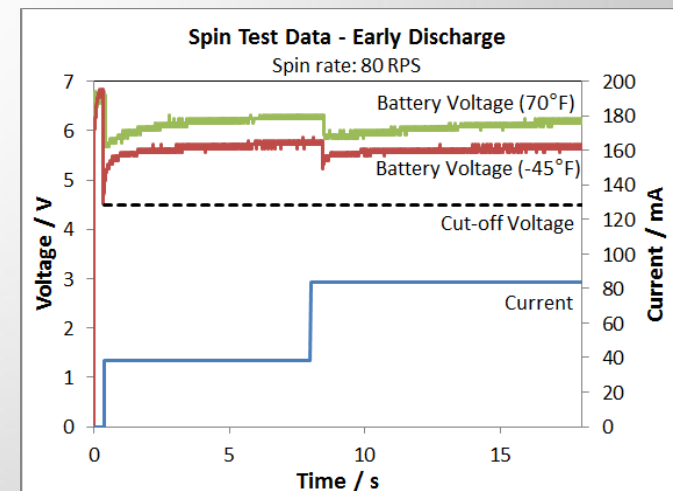
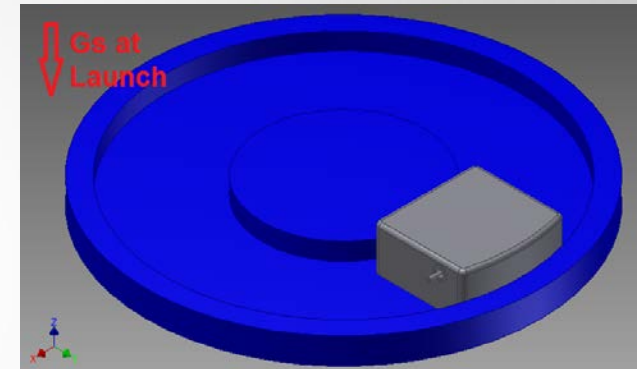
- Established in 1995
- Mission statement: Special-purpose battery company, pursuing the development and manufacturing of lithium-based batteries
- Focus on “niche” applications
 - Reserve power is an important business component



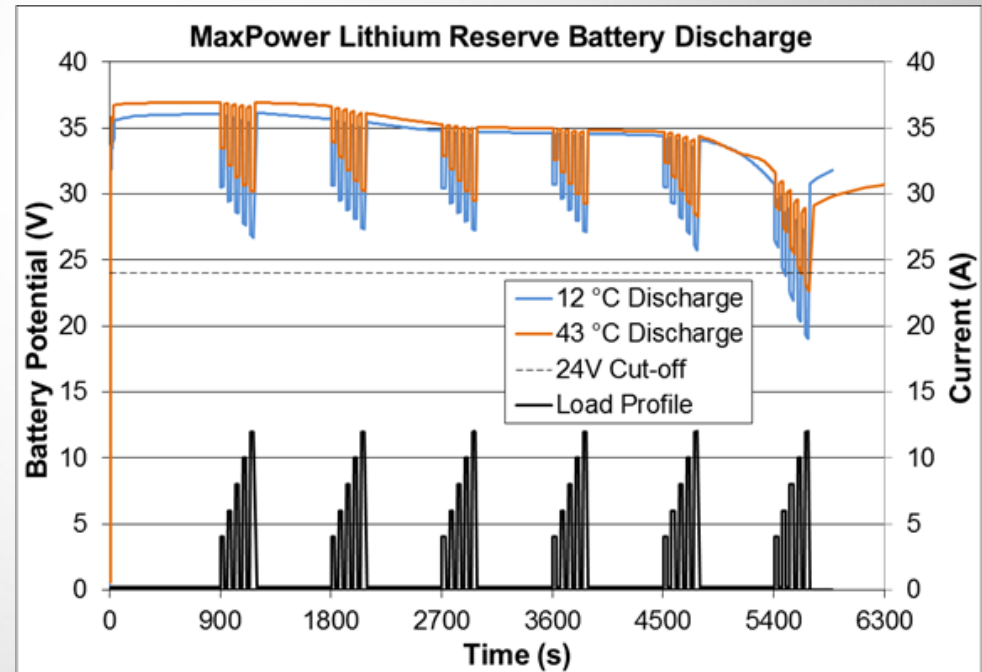
- Organic-based room temperature lithium liquid reserve technology
- “What’s old is new again”
 - Ambient temperature operation
 - Safety of organic chemistry
 - Growth of lithium technology



- Setback activated reserve battery for 155 mm gun-launched submunition
- Design required unique off-axis placement and reliable activation at low acceleration levels
- Prototype batteries met electrical requirements across temperature range
- Demonstrated activation in air gun tests



- Electrically activated reserve battery developed for an ICBM reentry vehicle
- Prototype battery met performance requirements after being subjected to simulated environments (vibration, acceleration, spin)



- Follow-on paper study where this technology was scaled to other ICBM system batteries showed size/weight reductions

- Highly configurable technology
 - Can meet a range of munitions battery form and function requirements
- Capable of meeting fast rise times and long run times
- High energy density – decreased size/weight

- Continued development for applications
 - Ongoing program for Navy long-range missile battery
 - Large caliber fuze battery
- Technology development
 - Material improvements for increased power
 - Production process improvements
- Seek applications that leverage strengths
 - High power and energy with long active life
 - Ambient temperature
 - Reliable, organic chemistry

- www.maxpowerinc.com
- General email: maxpowerdc@aol.com
- Steve Shantz
 - Project Leader: Reserve battery
 - Steve.shantz@maxpowerinc.com
 - 215-256-4575