



World Oil[®] **HPHT**

DRILLING, COMPLETIONS & PRODUCTION CONFERENCE

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Norris Conference Centers – CityCentre, Houston, Texas

HPHTConference.com

New Safe 250°C Solid-State Battery for MWD

Randy A. Normann

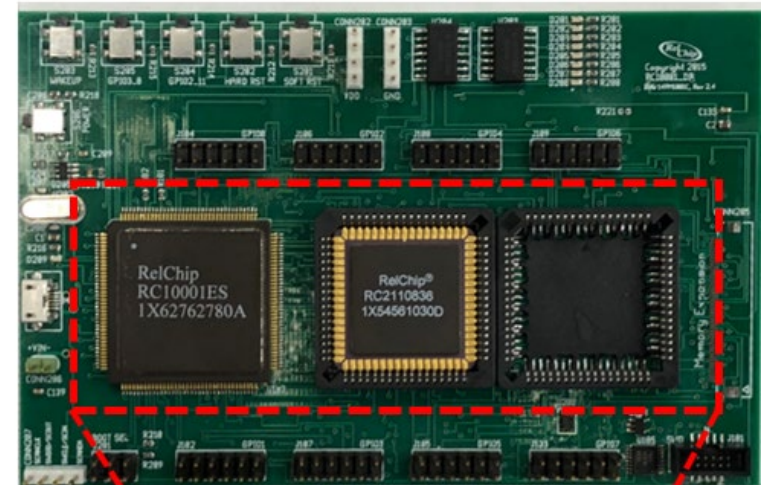
Author: “Arduino for Projects in Scientific
Measurement”

Dr. Alexander A. Potanin,
Founder, CEO

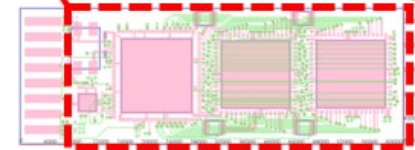
High Power Battery Systems Company (HPBS)

Do We Need 250C Batteries?

- Yes, to support future MWDs built with **manufacturer rated 225C electronic components!!**
- The new MCM is using RelChip & Ozark IC technology
- MCM 0.886 inches wide by 2.48 inches long



2 X Density Increase!



<https://www.relchip.com/>

HT SOI Electronics

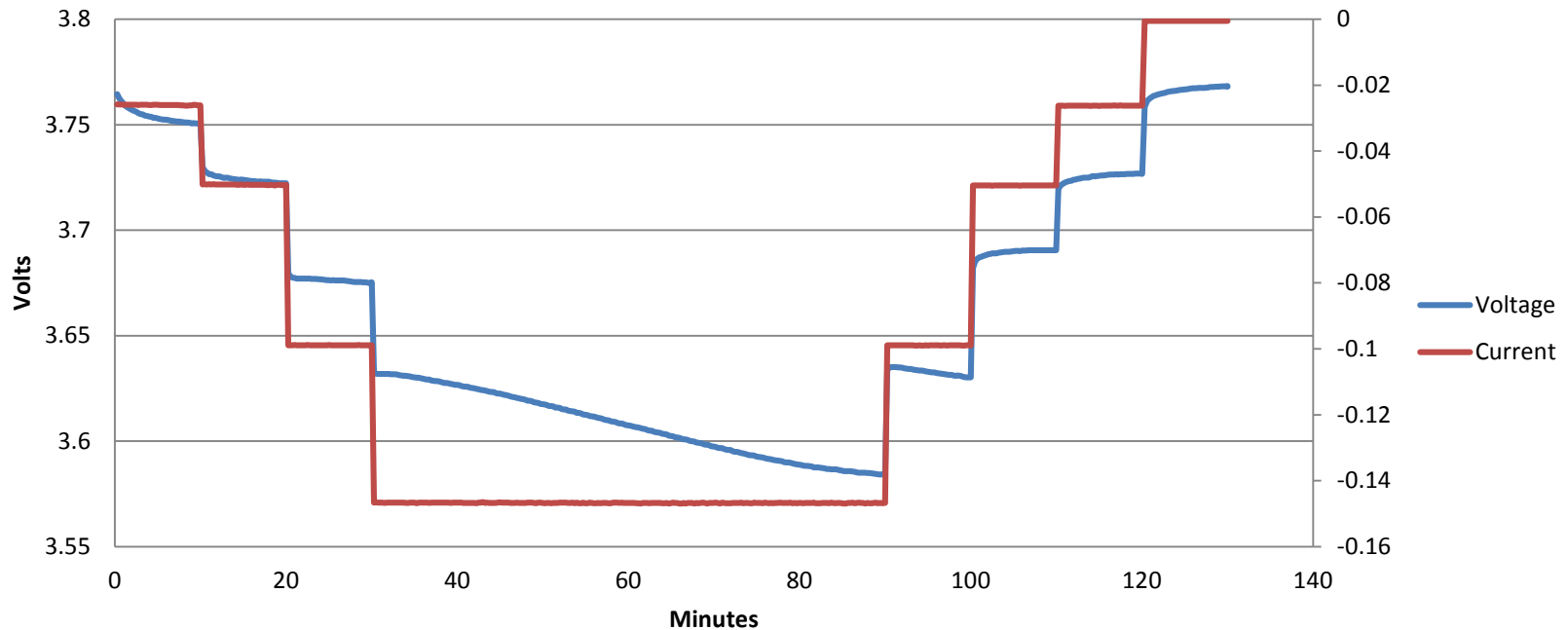
- High Temperature (HT) Silicon-On-Insulator (SOI) electronics support future aircraft
- The commercial aircraft industry will save \$\$\$\$ Billions by moving electronic control systems from the cockpit to the engine
- RelChip presented information on the new 32bit microprocessor at May 2018 HiTEC

New Solid State Battery

1. Solid State Batteries don't have liquid components.
 1. 2000 hrs life test at 200C, (HPBS)
 2. Passed shock and vibration testing at 200C, (HPBS)
2. They are safe up to very high temperatures, >275C.
 1. Safe to short circuit, (HPBS)
 2. Safe to fly commercial aircraft, (HPBS)
3. They have reduced performance at room temperatures.
4. They are rechargeable.
5. I tested one for use in well monitoring and MWD applications.

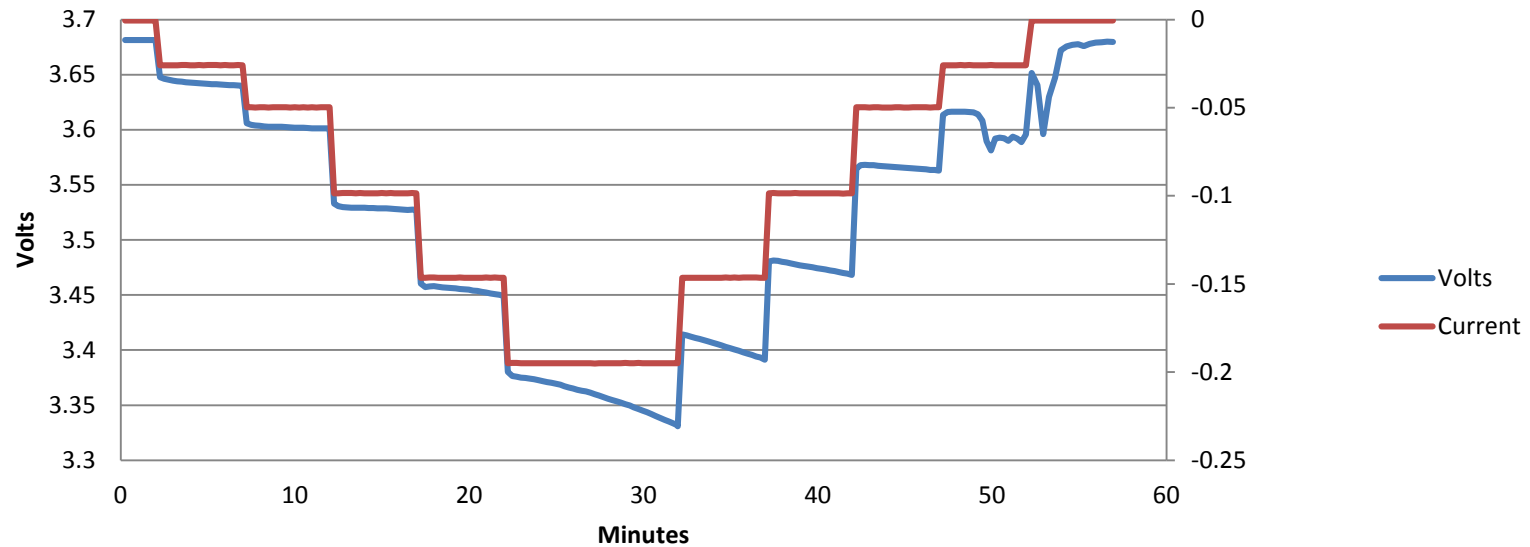
200C Test

Battery IR <1.50 Ohms @ 200C



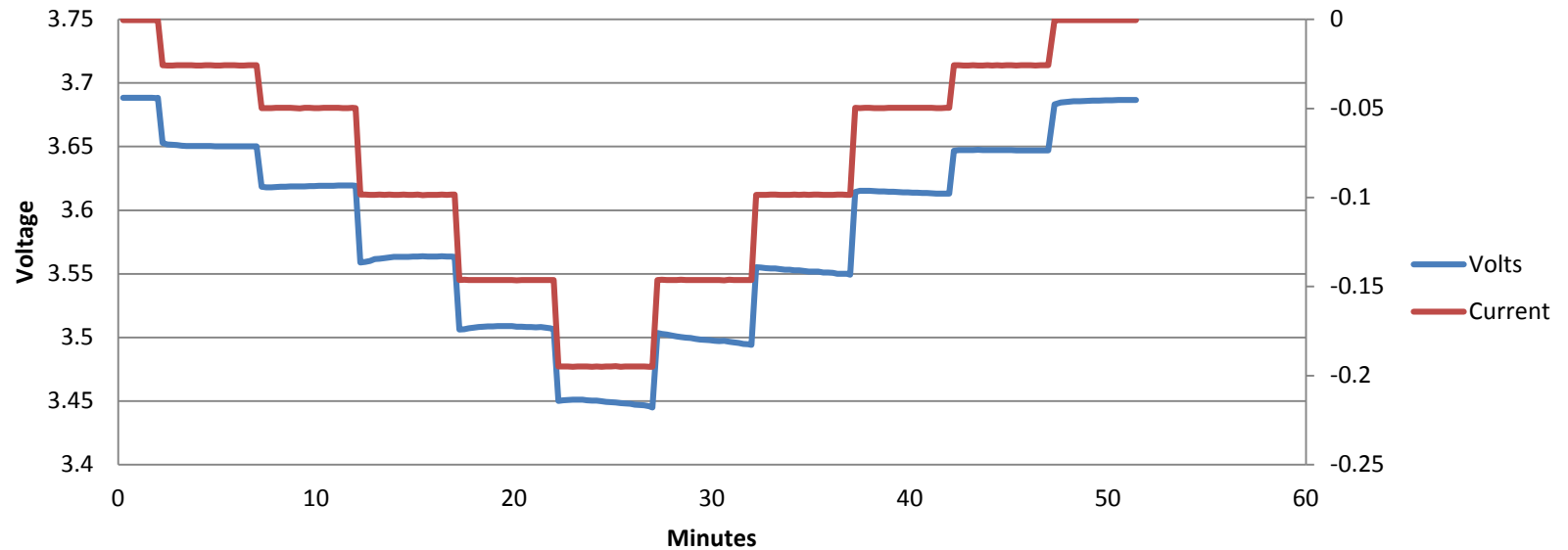
250C Test (Max Temp)

Battery IR <2.0 Ohms



225C Test

Battery IR <1.50hms



Manufacturer's Specifications

High Power Battery Systems Company, Dr. Alexander A. Potanin, Founder, CEO

Dimensions 23.6 in Long	Discharge Voltage	Capacity	Operating temperature range	Continuous current
			25-250C	30mA
1 in OD	12-16.5V	2 Ahr	100-250C	0.1A
			180-250C	0.3A
			25-250C	0.2A
1.3 in OD	12-16.5V	4 Ahr	100-250C	0.8A
			180-250C	2.5A
			25-250C	0.2A
2.36 in OD	12.-16.5V	14.5 Ahr	100-250C	1A
			180-250C	3A

Conclusion

- There is a growing capability in HT SOI electronics for building 225C MWD tools and well monitoring electronics with 50 year operating life times. **Get ready!!**
- New solid-state batteries can enable HT MWD tools.
- For more information contact the presenter:
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WE HAVE JUST ENOUGH TIME FOR A FEW EASY QUESTIONS

