

Electrochem™ Wide Range Battery Technology

PROVIDING A GREATER DEGREE OF CONFIDENCE



Confidence, power, control — when you need it most.

In the high-pressure, high-temperature world of downhole drilling, risk is always a factor. With more than 40 years of experience performing in the most demanding environments, Greatbatch understands the importance of minimizing risk and achieving operational excellence. As part of our commitment to meet the challenging needs of your applications, we have developed Electrochem Wide Range Battery Technology — the first technology designed to operate between 20°C and 200°C.

Innovative technology from the industry leader.

Revolutionary testing capabilities.

Electrochem Wide Range Battery Technology enables surface-level testing of high-temperature downhole tools. By performing simple deck checks, your team can be confident that the tool and battery are working properly before sending them downhole — reducing risk and preventing costly non-productive time.

Unparalleled versatility.

With Electrochem Wide Range Battery Technology, one battery can now deliver power across a variety of downhole temperatures and conditions. This not only reduces downtime by eliminating the need to change batteries, but also simplifies the battery selection process and streamlines inventory controls.

Trusted innovation.

With a four-decade legacy of field-proven power solutions and a commitment to zero defects, the Greatbatch name has earned the respect and confidence of the drilling industry. Our Wide Range Battery Technology is the latest innovation to demonstrate our commitment to your success.



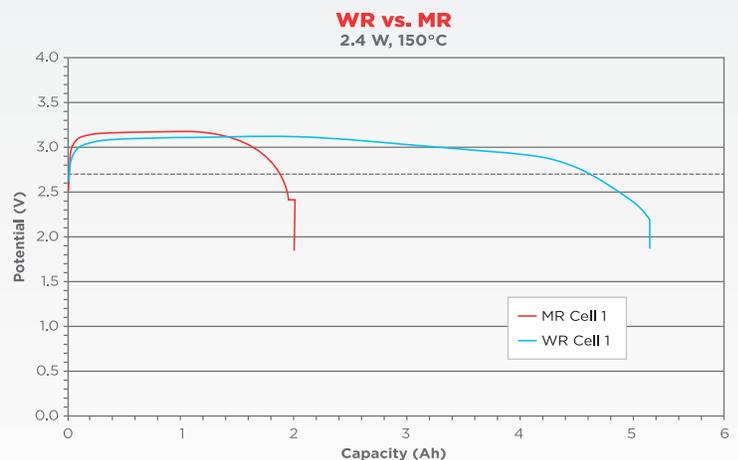
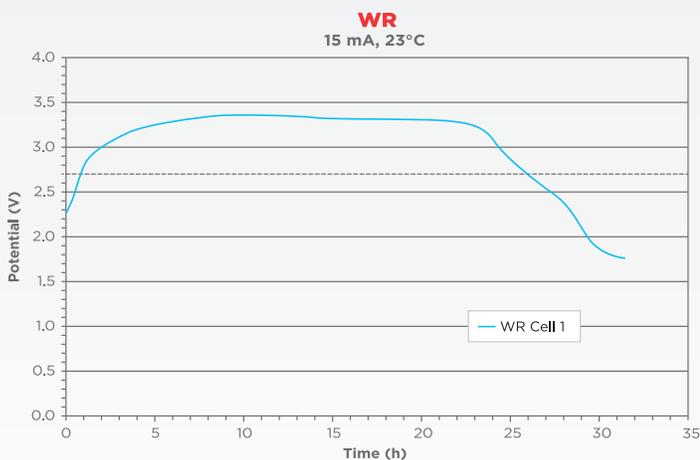
Superior performance.

In addition to providing power for testing at the low end of the operating range, Electrochem Wide Range Battery Technology provides improved power capabilities at maximum temperatures for longer runtime and enhanced data collection. The data in the following table demonstrates how Electrochem Wide Range Battery Technology outperforms current moderate rate solutions at a variety of levels.*

	WIDE RANGE (WR) 24-97-200WR	MODERATE RATE (MR) 24-97-200MR
MAXIMUM DISCHARGE CURRENT 200°C	750 mA	150 mA
CAPACITY AT MAXIMUM CURRENT 200°C	8 Ah	9 Ah
NOMINAL CAPACITY AT 500 mA 120°C	4 Ah	1 Ah
NOMINAL CAPACITY AT 100 mA 100°C	6 Ah	3 Ah
NOMINAL CAPACITY AT 100 mA 70°C	1 Ah	0.5 Ah
NOMINAL RUN-TIME AT 15 mA 23°C	30 hours	—
CELL DIAMETER (NOMINAL)	24 mm	24 mm
CELL LENGTH (NOMINAL)	100 mm	100 mm
CELL WEIGHT	115 g	115 g
LITHIUM WEIGHT	4 g	4 g
SELF-DISCHARGE	2% per year at 25°C	2% per year at 25°C
OPERATING TEMPERATURE	20°C to 200°C	70°C to 200°C

*The performance data displayed is based on 24 mm cells.

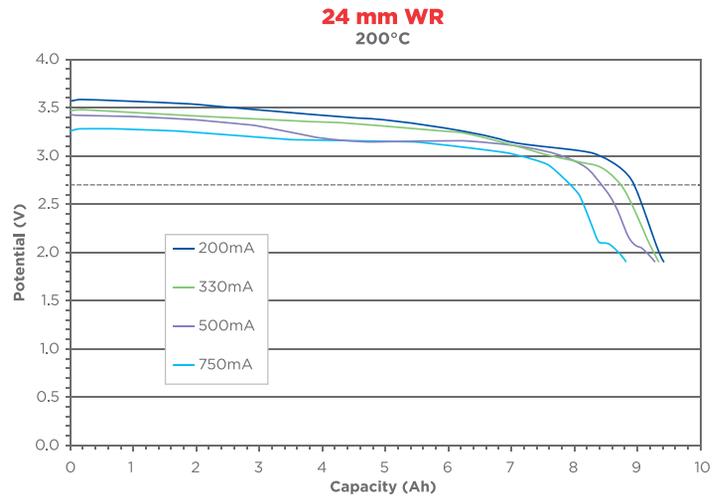
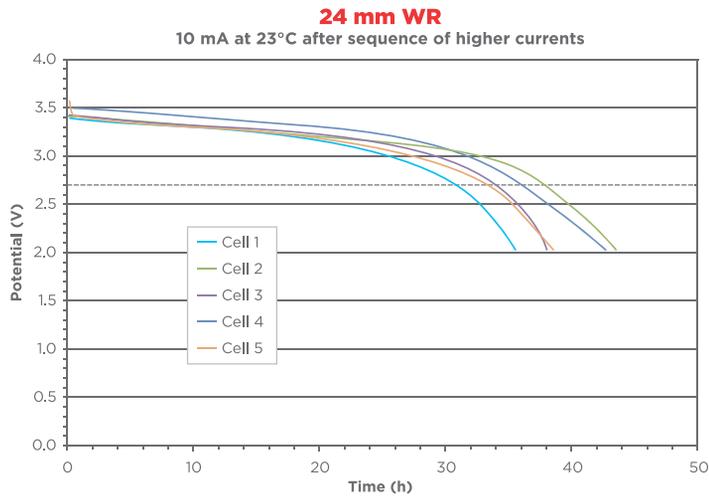
The charts below demonstrate how Electrochem Wide Range Battery Technology provides operating capabilities at low temperatures while also delivering improved discharge performance over current moderate rate solutions at high temperatures.*



*The performance data displayed is based on 24 mm cells.

Dependable power.

Electrochem Wide Range Battery Technology delivers reliable, consistent power at both ends of the operational range.



To learn more about how our Wide Range Battery Technology can reduce risk and improve the efficiency of your drilling applications, contact your Electrochem representative or visit electrochemsolutions.com/energy.



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