

Choosing portable power for next-gen devices

More and more critical applications are increasingly relying on batteries for primary or backup power. This makes choosing the right battery essential.

Lithium Thionyl Chloride (Li/SOCl₂) is one of the most rugged and energy dense non-rechargeable lithium chemistries on the market today, making it suitable for a wide range of remote or long-term applications. But what exactly are these applications and which type of Li/SOCl₂ cell is best suited?

Ultralife manufactures two types of Li/SOCl₂ cell in sizes from AA to C and D; these are:

High-rate (spiral) – higher power but lower capacity/energy
Low-rate (bobbin) – higher capacity/energy but lower power

Original equipment manufacturers (OEMs) should select the type of cell that gives them the performance characteristics they need.

Due to ever-increasing demand higher performance from Li/SOCl₂ cells overall, Ultralife launched the ER Generation X family of cells to provide a wider operating temperature range, longer service life, improved capacity, better passivation performance and more.

See below how these traits are effective in a wide range of industrial use-cases.



1

Asset tracking

As asset tracking may be required for items in transit or remote locations, the tags could be susceptible to cold or hot temperatures. They may also be required to be discrete in size and left at a location for extended periods. A low-rate Li/SOCl₂ battery will provide minimal self-discharge, high energy density for long battery life and reasonable activation rates from sleep mode.

Ultralife can provide a robust ER Generation X battery that meets environmental and power needs, with a 30% greater capacity (average across temperatures versus competitors).

Ideal cell construction: Bobbin



2

Smart metering

Batteries in smart meters typically provide backup power. This means they need a long life and low self-discharge; characteristics of low-rate cells. They also need to be able to provide infrequent pulses to check whether battery power is required. However, they can also benefit from a high-rate cell to quickly activate when communications require a more powerful signal.

Ideal cell construction: Either — bobbin for long-lasting power; spiral for more powerful communications signals



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Oil and gas

Field instrumentation is essential in onshore and offshore oil and gas operations. Many devices are in remote locations and could face extreme high or low temperatures. Batteries must withstand these conditions and provide consistent power for real-time communication with SCADA systems.

Batteries ideally need a temperature range of -40 to +60 degrees Celsius. Remote oil and gas instruments benefit most from lower rate bobbin cells due to the longer service life, while accessible instruments can use higher rate spiral cells to get higher power for sensors or communications.

Ideal cell construction: Either — bobbin for long-lasting remote applications, spiral for real-time, accessible instruments or communications

Downhole applications need an even higher temperature range. SouthWest Electronic Energy offers high performance lithium batteries for downhole use, with temperatures up to +200 degrees Celsius. Find out more at swe.com.



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Sonobuoys

Batteries in sonobuoys need a high capacity to provide a long service life, with occasional pulses of activity to transmit signals. Mechanically, these batteries must be lightweight, safe for marine applications and fully sealed to prevent ingress or leakage. They must also withstand low temperature conditions.

The ER Generation X range is lightweight, hermetically sealed glass-to-metal with a laser welded can seal and boasts a temperature range of **-55 to +85 degrees Celsius**.

Ideal cell construction: Bobbin, or spiral if higher communications power is needed



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Radio comms

Battery power requirements depend on the radio transmit power used by a device. Higher transmit power communications demand higher power. In most scenarios, a lightweight, high-rate battery is the ideal choice to ensure seamless operation — vital in critical communications in markets such as military and defense.

Ideal cell construction: Spiral



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LED lighting

LEDs are able to last longer and consume less power than traditional lighting — the batteries should operate similarly. Compact, lightweight low-rate batteries with a long operating life are the best choice. Meeting all these needs and boasting a 10-year lifespan, the ER Generation X is the ideal fit.

Ideal cell construction: Bobbin



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Next gen batteries

As you can see, ER Generation X cells are extremely versatile and well-suited for the applications above. However, they can also assist with many more next-gen applications, thanks to:

- Up to 30% more capacity performance (average across temperatures versus competition)
- 400+ Whr/Kg
- Spiral and bobbin cell versions to suit many applications
- Low self-discharge (<2% yearly)
- 10-year service life

Developing a device for tomorrow's market? We can help ensure the best portable power for your application.

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