

# ONE BOBBIN-TYPE LITHIUM THIONYL CHLORIDE BATTERY IS NOT LIKE THE OTHER

The major advantages of lithium thionyl chloride (Li-SOCl<sub>2</sub>) cells in comparison with other chemical systems are their high-energy density as well as their low self-discharge rate. To optimise the system, many manufacturers put additional substances into the electrolyte and simply offer cells with this single composition. Usually, these ingredients lead to a better pulse current response. The flip side is that they also have a higher self-discharge rate.

In applications requiring 10 years+ life span, such as utility meters, this deal does not pay off.

To satisfy the needs of various application requirements Tadiran is the only manufacturer worldwide offering different electrolyte compositions.

The iXtra electrolyte series was designed to deal with higher current pulses. Usually this type is limited to applications with a lifetime of 10 years but can manage without a supporting capacitor.

The XOL electrolyte series was designed to have an extra low self-discharge rate which usually requires the support of a hybrid layer capacitor for radio pulses up to 2A at -40°C. This combination is known in the industrial sector as Tadiran PulsesPlus and offers a lifetime of 20 years+, making it the first choice for utilities.

For example, Tadiran XOL cells feature an annual self-discharge rate of 0.7% per year,

so after 20 years our battery may retain almost 85% of its original capacity.

By contrast, competing Li-SOCl<sub>2</sub> batteries may have an annual self-discharge rate of up to 3%, so after 20 years these batteries will have exhausted up to 60% of their original capacity. Once you factor in the

average annual current used to operate the wireless device, these competing batteries might fall below their threshold for usable capacity in less than 10 years, drastically increasing the total cost of ownership.

Tadiran also offers a third, traditional electrolyte for backup and mixed applications. For high temperature demands, specialised cells are also available.

Moreover, Tadiran batteries are manufactured to the highest standards using 30 years of unexcelled technical expertise and proprietary knowledge, resulting in a bobbin-type Li-SOCl<sub>2</sub> battery that delivers unrivalled performance and reliability.

The use of inferior chemical compounds for the electrolyte or un-optimised battery manufacturing techniques can lead to poor performance and batch-to-batch inconsistency, which reduces the long-term battery performance, even if initial performance characteristics seem identical.

Performing due diligence during the battery specification process will help ensure that the battery performs as promised. Therefore, it is advisable to request complete documentation regarding the source of all raw materials.

In view of the advantages above, Tadiran's solution is tailored to the demand for a perfect fit power source. ■■

## LTC Family (examples) – features and attributes

SL-700 series / SL-2700 series (iXtra)	SL-800/2800 series (XOL)
<p><b>for enhanced start</b></p> <ul style="list-style-type: none"> <li>• Higher voltage under pulse load</li> <li>• Improved voltage delay (lower TMV)</li> <li>• Fast voltage recovery after long term storage</li> <li>• Higher capacity</li> <li>• Higher discharge rate</li> <li>• No orientation effect</li> </ul>	<p><b>for extended operation life</b></p> <ul style="list-style-type: none"> <li>• Extra low self discharge</li> <li>• Extra low passivation during long term use</li> <li>• Higher capacity</li> </ul>

Table 1: Characteristics of the LTC family of batteries



### ABOUT THE AUTHOR:

Marc Henn studied Mechatronics Engineering near Frankfurt/Main and holds a Master's degree in Business Administration.

After a longtime responsible position in the testing and certification industry he joined Tadiran as Manager of Application Engineering in 2016.

### ABOUT THE COMPANY:

Tadiran Batteries is a leader in the development of lithium batteries for industrial use. Tadiran Batteries are suitable where utility meters require a single long term stand-alone power source even if it has to supply high pulse currents for a GSM module.