

# Tadiran Batteries - The first choice at harshest environmental conditions

## Application example "Electricity meter for Russian Locomotives"



Measuring the consumption of energy or resources has always been important to allocate the individual amount and losses in the supply chain. So, meters were introduced right after the first water, gas or electricity networks started operation.

Since billing is directly coupled to the measured values these devices have high requirements on accuracy and reliability over their entire lifespan. In most countries there are legal requirements in place to guarantee correct operation.

In addition to these tough demands, the installation environment can add an additional burden to the meter. Not all of them are installed in a quiet place inside a house.

In some regions outdoor installations are common. This situation adds even more requirements: Besides resistance to water, dust, and UV light especially a wide temperature range must be considered. As this is already a challenging job for the electronics board and the plastic housing, especially the battery powering the meter must deliver its energy efficiently.

While very high temperatures are activating a battery and so increasing self-discharge and enhancing the chemical ingredients to degrade, very low temperatures are slowing down the ion mobility causing voltage drops and reduction in power capability.



An exciting example of many tough requirements coming together is an e-meter project for Russian Locomotives. Since both industrial and household meters are usually attached to the grid for the entire lifespan and a backup battery only must cover black outs, disconnecting is a regular operation in a locomotive. It happens every time the machine is not in operation. Said that the backup battery has a tough job keeping the meter alive on a regular basis, especially while having the low winter temperatures in Siberia and the hot summers in the southern regions in mind.

To cope with this the manufacturer decided to use four Tadiran SL-860 cells in a battery. Their XOL chemistry is optimized to low and constant self-discharge even at high temperatures and guarantees a suitable stability at  $-40^{\circ}\text{C}$  and even below. By choosing this technology the railway companies have a reliable meter power-source working for a long lifespan without unplanned outages which will be far more costly at the end than a high quality battery.



 **TADIRAN BATTERIES**  
The heart of your device

**Tadiran Batteries GmbH**  
Industriestr. 22  
63654 BUEDINGEN, GERMANY  
Tel: +49 6042 954-0  
Fax: +49 6042 954-190  
E-mail: [info@tadiranbatteries.de](mailto:info@tadiranbatteries.de)