# Saft batteries for metering applications

## The safe, stable and reliable choice




saft

a company of TOTAL

# Saft: a solid history of providing **power for metering applications**

## Meters — whether solid state, automatic or "smart" — need batteries that are long lasting, rugged for tough outdoor conditions, intrinsically safe and indisputably reliable.

Saft is the world leader for high technology, high performance primary and rechargeable lithium batteries that perfectly meet the needs of the metering sector. When it comes to robust and reliable batteries with a very long service life, no one can match Saft.

### The widest range of technologies

Primary or rechargeable lithium: whatever your metering requirements or constraints, we have a battery solution with the right electrochemistry. Thus Saft's solutions support any communication protocol.

### A tested, trusted partner for over a century

Only Saft has 100 years of practical experience with industrial customers. Many of the world's leading providers of electricity, gas, heat and water meters rely on Saft for primary or back-up power.

### An offer that goes beyond batteries

Service is integrated into our offer from end to end. We provide expert support across every stage of your battery's life, from made-to-measure design to volume supply; from installation and training to end-of-life recycling.

### A truly international footprint

With manufacturing facilities, R&D sites and sales offices in 18 countries around the world, we can satisfy the needs and expectations of customers wherever they are.

### Striving to provide the lowest cost of ownership

Field replacement costs represent up to 100 times the initial price of batteries. The underlying philosophy behind all of our activities is to provide our customers with the best products and services for their investment.

### Competitive solutions for mature and emerging economies

Saft's solutions are not limited to well-established markets. Saft's contracts signed for large deployments of smart meters in highly competitive countries such as China or India are proof of the performance and reliability of our technologies.

WIDEST PRODUCT RANGE

LIFE EXPECTANCY OF 20 YEARS OR MORE

ATEX-CERTIFIED PRODUCTS

PRODUCTS OPTIMIZED FOR OUTDOOR ENVIRONMENTS

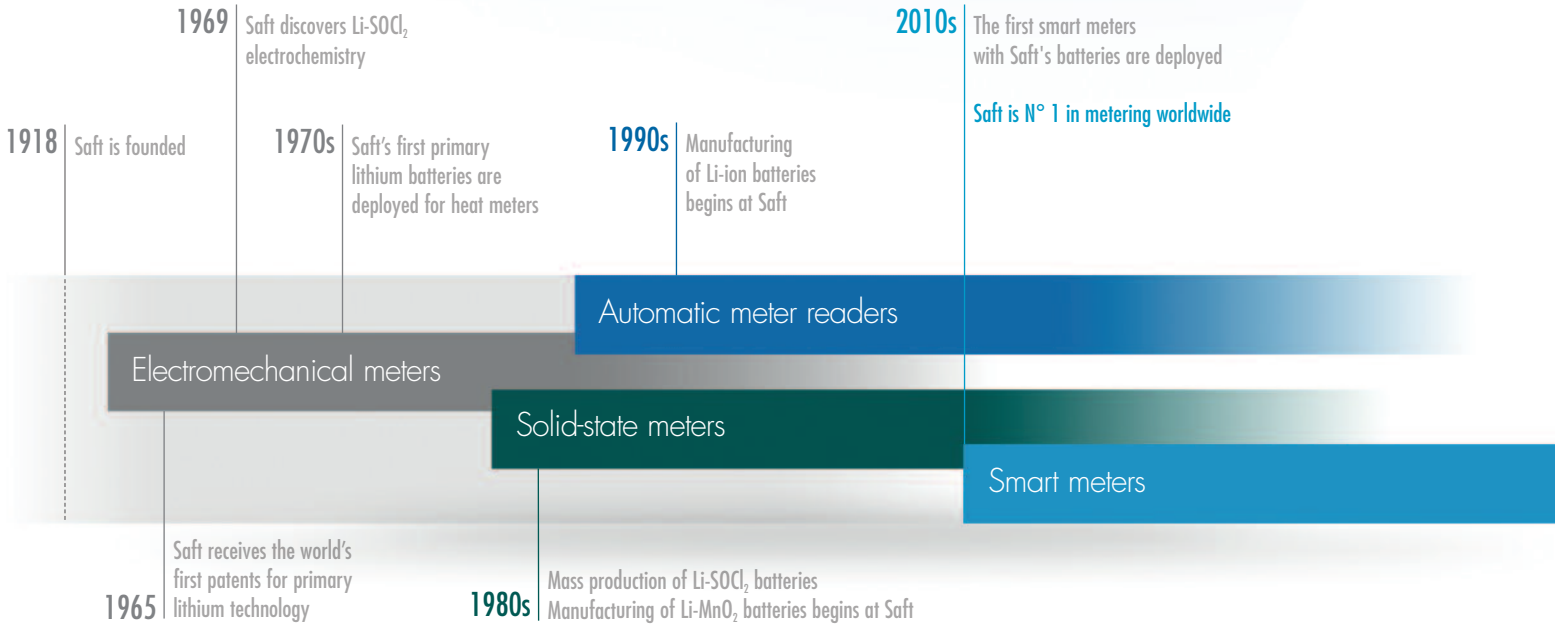
BEST VALUE FOR MONEY

## Saft's world-leading expertise has been tested and proved for:

- Electricity metering
- Gas metering
- Water metering
- Heat metering

## Saft's cutting edge solutions meet the demanding needs of:

- Solid-state meters
- Automated Meter Reading (AMR), Sub-metering & Advanced Metering Infrastructures (AMI)
- Residential, commercial and industrial smart meters
- Wired and wireless fixed telecommunication networks
- Smart grid infrastructures
- Smart homes & smart buildings



# Very reliable batteries **for an extremely long life**




## Is it possible for a battery to function reliably for 20 years or more? Yes – if you choose a supplier with the right experience, expertise and industrial quality.

Saft has already delivered batteries with 20+ year life expectancies to key manufacturers and utilities. Our long-term customers have been able to verify the reliability of our batteries through severe qualification processes, endurance testing and of course our products' proven track records in the field.

## Saft offers its customers…

**High quality materials, components and methods,** such as high end glass-to-metal seals for full hermeticity; laser welding of enclosures; and the best quality materials and processes to prevent corrosion, avoid cell internal short circuits and ensure the highest capacity retention across a long life.

**A unique ability to predict life expectancy,** using field and laboratory data collected over more than 30 years to develop a unique and highly accurate lifetime model based on data including base current, pulse currents, cut-off voltage and temperature range.

**Batteries that can handle equipment cut-offs,** and avoid any risk of low voltage during operations, either when exposed to low negative temperatures, or when submitted to high pulse consumptions after dormant periods.

**A field-proven quality organisation**
At Saft, quality is a way of life. We constantly work to provide customers with the best battery solutions available, designed and manufactured to the very highest standards, with highly reproducible and automated processes. We implement best practices in all fields, and deploy the highest levels of performance and discipline at all times.


## Why major utilities prefer Saft

Eau de Paris is the public company tasked with providing water to 3 million daily users in the city of Paris, France. "For more than ten years, Saft has provided batteries to the organisation's many different brands, makes and models of Automatic Meter Reading (AMR) systems that serve 99% of Parisian buildings. To meet our specific request, Saft designed and deployed a service to check the actual consumption of installed batteries. By performing laboratory analyses and then correlating the results with life expectancy data, Saft can accurately estimate the remaining service life of devices and equipment that are deployed across the fleet."
*Olivier Roy (Metering, Metrology and Smart Metering / Water Distribution / Eau de Paris)*

## ATEX / IECEx certified

Saft's broad offer includes the world's only lithium cells independently certified and regularly audited, ensuring full and continued compliance with IEC / EN 60079-0 (Explosive atmospheres – Part 0: General requirements) and 60079-11 (Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i") standards.

**This makes them ideally suited for potentially explosive applications such as smart gas meters.**

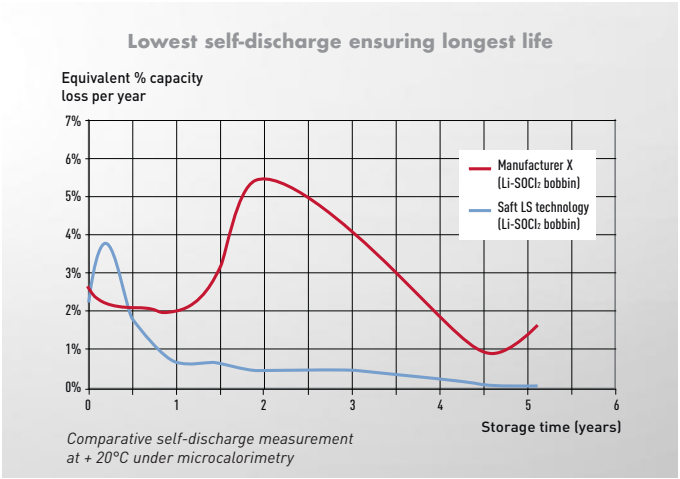
## Saft's Li-$SOCl_2$ and Li-$MnO_2$ primary lithium technologies

**Applications:**

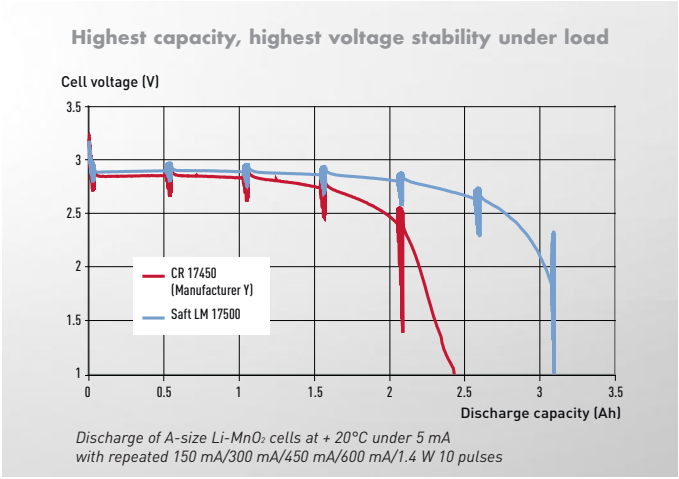
- Critical power for residential gas or water meters and other devices that are not connected to AC or DC power
- Backup power to support continuous operation of residential electricity meters and other devices connected to AC or DC power

**Key benefits:**

- Extended operating life thanks to high energy and extremely low self-discharge
- Maintenance-free
- Secure reliability during field operations with high and stable voltage under load
- Compact and lightweight
- Wide range of solutions to fit any metering applications
- Hybrid solutions with best-in-class pulse sustaining components (LSP series)
- Low environmental impact: no heavy metals, recyclable
- Meet UL, IEC and UN safety standards applicable to lithium technologies
- Most models comply with IEC 60079-11 "Intrinsic Safety" specifications for ATEX applications
- Specific M cells are ATEX certified equipment according to IEC60079-11




*Comparative self-discharge measurement at + 20°C under microcalorimetry*




*Discharge of A-size Li-$MnO_2$ cells at + 20°C under 5 mA with repeated 150 mA/300 mA/450 mA/600 mA/1.4 W 10 pulses*

## Saft's rechargeable Li-ion technologies

**Applications:**

- Backup energy to support the continuous operation of on-grid radio and signal repeaters, data accumulators, fault detection and reporting equipment plus other critical functions
- Small format solar powered remote metering and reporting equipment for oil and gas pipelines, electricity sub-stations, water pumping stations for urban supply networks and agriculture

**Key benefits:**

- Extreme operational temperature range (-40°C to +85°C)
- Long cycle life
- Long calendar life
- Space saving prismatic format
- Can be used in cycling, micro-cycling and float charging applications
- Smaller environmental footprint than conventional technologies
- Meets or exceeds UL, IEC and UN safety standards applicable to Li-ion technologies
- Specific models designed to be components compatible with IEC 60079-11 "Intrinsic Safety" requirements for ATEX applications

# Saft solutions
# for smart metering

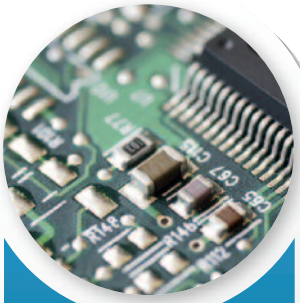
| | Cell reference | Technology | Nominal voltage | Nominal capacity | Size | Electricity | Water | Gas | Heat | Telecom & Grid infrastructure |
|---|---|---|---|---|---|---|---|---|---|---|
| **Primary (non-rechargeable)** | | | | | | | | | | |
| ENERGY | **LS 14250** | Li-$SOCl_2$ | 3.6 V | 1.2 Ah | 1/2 AA | ■ | | | | |
| | **LS 14500** | Li-$SOCl_2$ | 3.6 V | 2.6 Ah | AA | ■ | ■ | ■ | ■ | |
| | **LS 17500** | Li-$SOCl_2$ | 3.6 V | 3.6 Ah | A | | ■ | ■ | ■ | |
| | **LS 26500** | Li-$SOCl_2$ | 3.6 V | 7.7 Ah | C | | ■ | ■ | ■ | |
| | **LS 33600** | Li-$SOCl_2$ | 3.6 V | 17.0 Ah | D | | ■ | ■ | ■ | |
| HIGH PULSE | **LSP 26500** | Li-$SOCl_2$ | 3.6 V | 7.7 Ah | C | | ■ | ■ | | |
| | **LSP 33600** | Li-$SOCl_2$ | 3.6 V | 17.0 Ah | D | | ■ | ■ | | |
| POWER | **LSH 14** | Li-$SOCl_2$ | 3.6 V | 5.8 Ah | C | | | | | ■ |
| | **LSH 20** | Li-$SOCl_2$ | 3.6 V | 13.0 Ah | D | | | | | ■ |
| | **LM 17500** | Li-$MnO_2$ | 3.0 V | 3.0 Ah | A | | ■ | ■ | | ■ |
| | **LM 26500** | Li-$MnO_2$ | 3.0 V | 7.4 Ah | C | | ■ | ■ | | ■ |
| | **LM 33600** | Li-$MnO_2$ | 3.0 V | 13.4 Ah | D | | ■ | ■ | | ■ |
| ATEX | **M 52 Ex SV** | Li-$MnO_2$ | 3.0 V | 5.6 Ah | C | | | ■ | | |
| | **M 20 Ex SV** | Li-$MnO_2$ | 3.0 V | 12.4 Ah | D | | | ■ | | |
| **Rechargeable (Li-ion)** | | | | | | | | | | |
| POWER BACKUP | **MP 174565 xtd** | Li-ion | 3.65 V | 4.0 Ah | Prismatic | | | | | ■ |
| | **MP 176065 xtd** | Li-ion | 3.65 V | 5.6 Ah | Prismatic | | | | | ■ |
| ATEX COMPLIANT | **MP 174565 ise** | Li-ion | 3.65 V | 4.0 Ah | Prismatic | | | | | ■ |
| | **MP 176065 ise** | Li-ion | 3.65 V | 5.6 Ah | Prismatic | | | | | ■ |

## Wide cell selection:

With a choice of primary electrochemistries, Saft can meet every power or energy need, and our rechargeable cells offer the perfect cycle life for backup applications.

## Customized packs:

Saft can offer complete power solutions tailored to your applications needs. We also provide 3D design files of our products, as well as battery integration notes, to support your design team.



## Smart battery design:

Saft enables unique State of Charge and State of Health feedback for both primary and rechargeable solutions to facilitate battery monitoring.

## Unique field service:

We can help your end-customers optimize their asset management by accurately measuring the remaining life of batteries deployed in the field – enabling them to base maintenance operations on real facts and further improve their battery expertise.

# Beyond batteries:
# our commitment to end-to-end support

## Meter life analysis - understanding the battery ageing process

Saft's innovative Meter Life Analysis service can now provide network managers with in-depth knowledge of how their meter batteries age out in the field.

The service takes a representative sample of meters from a deployed fleet. They are then sent for laboratory analysis to determine the batteries state of charge and state of health. This information is correlated with life expectancy data to develop an accurate estimate for the remaining service life of the entire battery fleet. This provides a sound basis for the implementation of condition based maintenance and ultimately helps secure the availability of utility infrastructure.

Saft provides a wide array of support and services, both before you buy and after, so you can be sure of having, a robust, reliable and well-maintained solution over an extended period of time.


Saft conforms to all major quality, safety and environmental standards

- Quality: ISO 9001, Saft World Class continuous program
- Transport: UN
- Environment: ISO 14001
- Safety: IEC, UL, OHSAS 18001

# Saft is committed to the highest standards of environmental stewardship

As part of this environmental commitment, Saft prioritises the use of recycled raw materials over virgin raw materials in all manufacturing processes. We also strive, year on year, to reduce air and water emissions from our plants, as well as minimizing water usage, reducing consumption of fossil energy consumption and associated $CO_2$ emissions, and ensuring that all our customers have access to recycling solutions for their spent batteries. To facilitate the end-of-life collection and recycling of industrial batteries, including our nickel & lithium-based technologies, Saft has developed well-established partnerships with collection companies in most EU countries, in North America and in many other countries worldwide. This collection network receives spent batteries from our customers and dispatches them to fully approved recycling facilities, in compliance with the laws governing trans-boundary waste shipments. This collection network is currently undergoing minor adaptations to meet the requirements of the EU batteries directive. A list of our battery collection points is available on our web site. In other countries, Saft will assist anyone using our batteries in finding environmentally sound recycling solutions. Please contact your sales representative for further information.

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Document N° 31124-2-0319
Edition: March 2019



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