

Soft lithium-ion rechargeable batteries for transportable power applications



Saft Li-ion battery solutions

A global capability in industry –



A broad capability...

Saft is an international market-leading designer and manufacturer of battery systems. Our front-line experience with industry and the military spans over almost a century, including more than 10 years in lithium-ion.

Why Lithium-ion?

High-technology devices are indispensable in today's fast, mobile environment. Conventional energy sources are inadequate as new applications emerge to meet new demands in a global market. Saft lithium-ion battery technology has evolved to provide autonomous energy solutions: highly efficient, compact and transportable.

Why Saft?

High-tech industrial devices require guarantees of reliability, cost efficiency and durability. And Saft has a long experience in delivering this level of service to large industries.

From Saft's Li-ion manufacturing sites (Bordeaux and Poitiers in France; Cockeysville and Valdese in USA) rechargeable lithium systems have been deployed into global industries, such as :

- space
- medical
- military
- aviation
- professional electronics
- telecom networks
- transport
- UPS



for increasing power needs

Benefits of Saft's MP and VL for professional applications

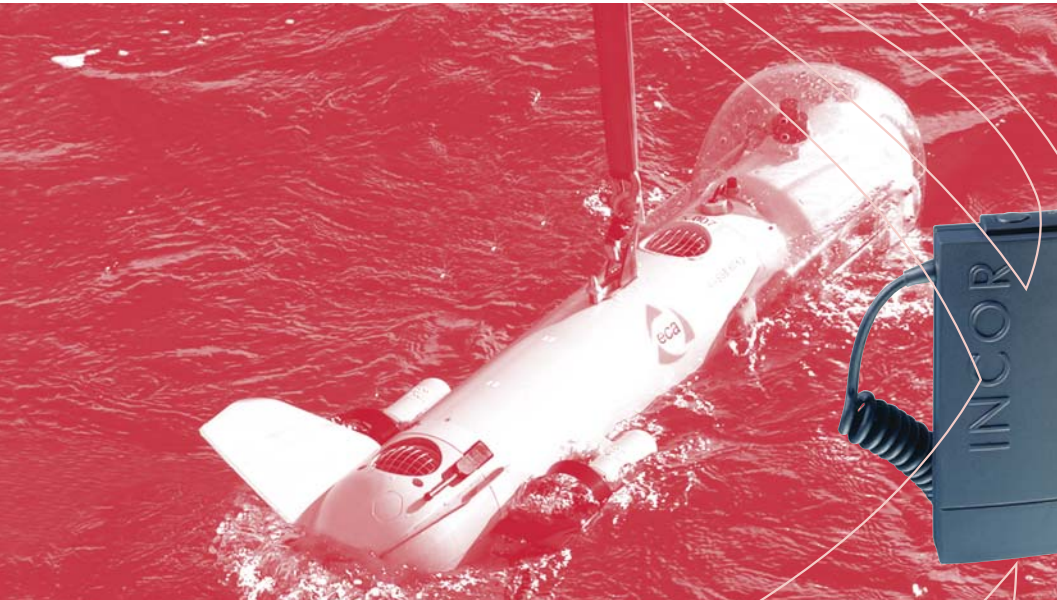
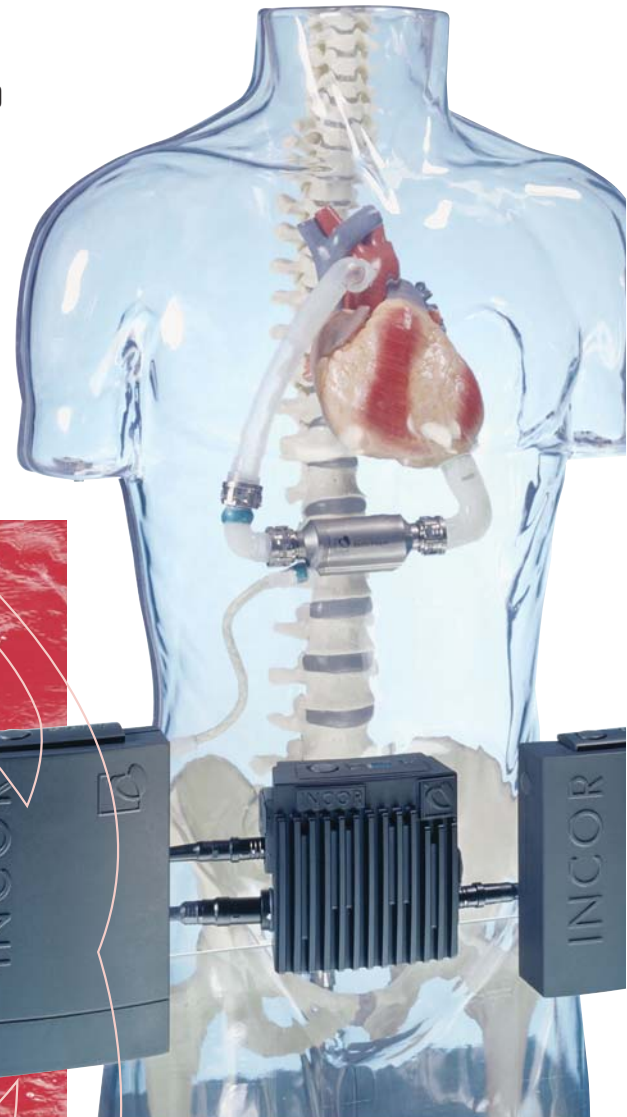
Saft offers professional Li-ion solutions for demanding applications which require :

- flexibility of cylindrical and prismatic formats
- higher voltages
- more than 700 operations
- efficiency within a wide temperature range
- the longest possible running times

Lithium-ion rechargeable batteries and systems are fully integrated, innovative and intelligent, optimised for a diverse range of applications, including :

- satellite positioning and navigation
- portable gas detector
- safety lamps (e.g. mining lamps, professional lighting)
- remote asset tracking
- life-preserving medical applications (e.g. external cardiac defibrillators, drug pumps, respiratory assistance)
- hospital equipment (e.g. diagnostic equipment, emergency blood warming device, bone growth stimulator)
- equipment and communications for the modernized soldier (e.g. air-purifying respirator, radio communication, night vision, telemetry)

- professional cordless power tools (e.g. circular saws, hammer drills, impact wrenches)
- personal mobility (e.g. electric bikes and scooters, wheelchairs and stairlifts)
- on-board systems (e.g. space vehicles, fighter aircraft, UAVs)
- professional video



with a track-record of quality

Because every application is very specific, each battery must be tailored precisely. Saft's broad range of technologies enable optimised solutions – whether for large installations or for small portable devices.

Breaking old boundaries for new applications

Saft's series of Medium Prismatic (MP) and Cylindrical (VL) rechargeable lithium-ion cells and systems feature :

- high energy density
- weight saving solutions
- unrivalled operating temperature range
- extended lifetime, even at high temperatures
- maintenance-free reliability
- low life cycle cost

Versatile Li-ion benefits customers by providing :

- diversified formats for a variety of equipment
- lifetime matching that of the equipment
- reliability and peace of mind
- rapid charging for fast availability
- robust spiral construction, an asset for portable military and medical applications
- easy transportation and storage



Made to measure battery systems

Cells are integrated into Saft modules or customised battery systems. These complete systems which include electronic devices monitoring performance, and safety electronics, human-to-machine interface, thermal and safety management specific to each application. Saft can develop battery formats tailored to individual needs:



Battlefield computer battery pack

Eight MP 176065 in series with charge monitoring electronics



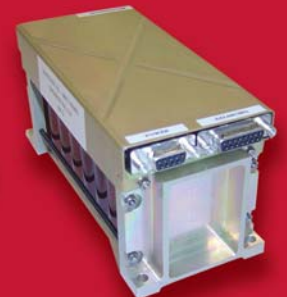
Battery for Integrated Target Acquisition Systems

28 V high power Li-ion system with human-to-machine interface (and embedded management software)



Rackmount Intensium™ battery

48 V high power system with human-to-machine interface in 19" 1U rack delivering 3 kW during 5 minutes



Battery for micro satellite

Eight MP cells in series in shock- and vibration-resistant casing

* Photos not to scale

In house R & D, worldwide industrial footprint



Research and development

The quality of its research and development teams is one of Saft's major competitive strengths, allowing Saft to maintain the technological leadership which is the key to its commercial success. Applied research programmes employ 50 people, located mainly in Bordeaux, France and Cockeysville in the United States. At the same time, another 250 people work in product development directly at the manufacturing sites.

Broad industrial capability

Saft operates high output Li-ion cell manufacturing lines on both sides of the Atlantic. Advanced levels of automation ensure efficient production and fast delivery. Semi-automated battery assembly shops provide the flexibility to deliver customized packs while remaining very cost competitive.

Transport and security

Saft's packaging, labelling and shipping conform to highest levels of international standards governing battery testing and classification. This insures worldwide safe, secure transportation and storage.



Lithium-ion in action

Many of our customers are pioneers in fields of high technology. Saft's research, engineering and know-how in customized Li-ion solutions have contributed to their success with :

- the first geostationary satellite to fly with Li-ion
- the first permanent constellation of MEO satellites to fly with Li-ion
- pioneering light and compact lamps for explosive atmosphere
- advanced handheld detectors
- state of the art portable military applications
- advanced portable target acquisition system

They all have Saft Li-ion on board!



Saft's environmental policy

Saft has had partnerships for many years with collection companies in most European countries as well as in North America. This collection network receives spent batteries from end users and dispatches them to fully approved recycling facilities, in compliance with the Laws governing transboundary waste shipments. In other countries, Saft assists its customers in finding environmentally sound recycling solutions. To inquire on how your company can benefit from this network, please contact your sales representative for further information.

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