Intensium® Flex

5.1 MWh high energy lithium-ion battery storage container

Intensium® Flex is Saft's flexible and ready to install containerized battery building block enabling optimised Energy Storage Systems (ESS) for any configuration, any operation and any location.

Benefits at a glance

1 Compact modularity

- 5.1 MWh building block suitable for storage projects up to GWh scale
- Able to address 2 to 8 hours applications through multiple container paralleling
- Reduced floorspace per MWh for full system installation compatible with most Power Conversion Systems

2 De-risked projects

- Full system including controls designed by Saft
- Robust design built on 15 years of field experience
- Fully assembled, tested and certified in Saft factories
- AC system performance and availability guaranteed by Saft

3 Maximized economics

- Capex-optimised system architectures
- Space-optimised installation layout
- Performance optimised energy and power avoiding oversizing
- Long lifetime cells and optimum thermal management
- High availability due to automated self-balancing
- Opex-optimised energy consumption and servicing requirements

4 Easy installation & maintenance

- Transport fully equipped by road and sea, easy plug&play installation
- Real-time battery control, supervision and big-data publishing platform for enhanced analytics with Saft I-Sight

5 Safety driven design

Guaranteed safe behavior during operations and in case of an abusive event, protecting assets, operators and first responders

6 US domestic content

US customers benefit from US local content thanks to Saft's manufacturing plant in Jacksonville, FL and its domestic supply chain

Built with Lithium Iron Phosphate (LFP) cells, the Intensium® Flex is a liquid-cooled, fully integrated storage system with high levels of safety and operational reliability. Its flexibility enables optimized design of multiple battery system configurations serving merely any mix of use cases from long duration shifting to dynamic short-duration grid services.

Features

Flexibility to optimize any configuration, any operation profile in any location

- Flexible configuration
  - Highly modular architecture for optimum configuration and sizing for any PCS brand and any duration thanks to double DC outputs per container.
  - Building block granularity from 3.4 to 5.1 MWh to match PCS requirements or deliver sites with constrained access.
- Flexible operation
  High performance cells, power architecture and liquid cooling allow to optimally satisfy any combination of use cases:
  - From long duration shifting to short duration peak management and dynamic grid services
  - Up to 300% energy throughput per day without sacrificing life time and round trip efficiency (RTE)
  - Up to 2.5 MW of power available throughout the full range of SOC and over the entire lifetime.
- Locations
  I-Flex can operate under any environmental condition thanks to high-efficiency thermal insulation and a sophisticated temperature and humidity management
  - From -30°C to +55°C as standard without sacrificing lifetime and RTE
  - Tropical or desert climates, IP55 enclosure

Proven architecture for high availability

- Six individual strings with one Battery Management Module per string
- Master Battery Management for global charge and discharge management, auxiliary equipment monitoring and diagnostic functions
- Multi-container paralleling into virtual battery banks. Augmentation enabled
- Smart-balancing patented technology to reduce commissioning time and increase availability.

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Sophisticated battery management for enhanced operability

- Monitoring and control of voltage, current and temperature
- Balancing of State of Charge (SoC) between cells and strings
- Indication of State of Health (SoH) integrating cycling and calendar aging
- I-Sight digital platform as AI based software for site supervision, KPI management and predictive maintenance.
- High cybersecurity level exceeding market standards, secured by in-house BMS design and supply of key components in Europe.

Advanced thermal management system with liquid cooling

- Optimum operating temperature for long lifetime of battery cells
- Homogeneous temperature across all modules
- High cooling efficiency
- Robust system with low maintenance

Safety design to guarantee safe behavior

- UL9540A compliant
- Short-circuit, over-current, over-temperature and over-voltage management
- Active and passive ventilation system, matching NFPA 855 requirements and non propagation rules of large scale fire tests
- Arc Flash protection

Specifications

Electrical	
Rated energy (C/5) [1]	5.1 MWh
Discharge duration	2 - 8 hours
Voltage range	1160 - 1475 V
Maximum DC power charge/discharge	2.5 MW
Rated current charge/discharge	1900 A
Maximum current charge/discharge	2100 A
Mechanical	
Dimensions (L, H, W)	6.1m, 2.9m, 2.4m (20ft ISO)
Weight	43,5T
Container protection class	IP 55, UL50-3R
Operating & storage conditions	
Ambient temperature	-30°C to +55°C (-40°C optional)
Design lifetime	≤ 20 years
Altitude above sea level	≤ 2000 meters
Painting	C5H
Noise level	<75 dBA at 1m
Ambient temperature during storage	−30°C to +55°C
Storage time	Up to 12 months (under conditions)
Standards	
Safety	IEC 61619, IEC 62477, UL1973, UL9540, UL9540A, NFPA 855 & NFPA 70E
Marking	CE, UL
BMS Hardware & Software	UL60730-1
Directives	REACH, EU battery regulation
Manufacturing hubs	ISO 9001, QS 9000, ISO 14000
Cybersecurity	IEC 62443-4-2 level SL-2
Transport (fully populated and tested)	UN3536

[1] at 20°C, C/5, according to IEC 62620
Preliminary data

Space saving installation of 4 containers back-to-back and side-by-side

Saft

Headquarter
26 quai Charles Pasqua
92300 Levallois-Perret - France

Saft America Inc.
13575 Waterworks St
Jacksonville, FL 32221, USA

www.saft.com
Saft, a subsidiary of TotalEnergies

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Doc. n° 23003-0725-2 - July 2025 - Data in this document is subject to change without notice and become contractual only after written confirmation by Saft. Photo credits: Saft.