# Intensium® Max 20 High Energy

## 2.3 MWh high energy lithium-ion battery storage container

The Intensium® Max 20 High Energy is Saft's unmanned and ready to install Energy Storage System (ESS) in a 20-foot container, enabling utility-scale storage solutions for grids, renewables and industries.


**Built with advanced Lithium Iron Phosphate (LFP) technology, the Intensium® Max 20 High Energy is a fully integrated storage system, combining high energy density with high levels of safety, operational reliability and compliance with international standards.**

**The design choices of the Intensium® Max 20 High Energy are leveraging 10 years technology and operational experience in multiple applications and environments to maximize the value of your next battery Energy Storage System asset.**

## Benefits

1. ### Flexible
**high energy density building blocks, suitable for storage assets ranging up to several hundreds of MWh**

2. ### Project de-risking
**with quick and cost-effective installation of containers, 'plug and play' delivered and factory tested**

3. ### Easy system integration
**compatible with most Power Conversion Systems available in the market**

4. ### Maximized energy storage economics with:
- **Optimized energy and power availability over SoC**
- **Multiple charge-discharge cycles per day with minimum auxiliary consumption**
- **Long lifetime cells and optimum thermal management**
- **High availability and serviceability**

5. ### Low maintenance with Saft CUBE
**real-time battery control, supervision and big-data publishing platform for enhanced analytics and services.**

6. ### Safety driven design
**to guarantee safe behavior during operations and in case of an abusive event, protecting assets, operators and first responders**

## Applications

- **Integration of renewables: smoothing, shifting, minimizing curtailment**
- **Peaking capacity**
- **Transmission & Distribution grid support**
- **Energy management in large C&I sites**
- **Microgrids**

## Features

### Advanced industrial design offering highest safety and robustness:

- **Unmanned container with external access, fully assembled and tested within Saft manufacturing hubs**
- **Single, easy access distribution cabinet integrating all power and control interfaces, supervision and safety devices**

### Proven architecture for high availability:

- **Individually connectible strings with one Battery Management Module per string**
- **Master Battery Management for global charge and discharge management, auxiliary equipment monitoring and diagnostic functions**
- **CUBE platform for external communication, battery containers parallelization, remote monitoring and supervision, data management to lower operation and maintenance with a high cybersecurity level**

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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**
- **Real-time indication of State of Charge (SoC)**
- **Alarms and faults management**
- **Indication of State of Health (SoH) integrating cycling and calendar aging**

## Advanced thermal management system based on air conditioning unit and controllable fans:

- **High cooling efficiency**
- **Temperature homogeneity within containers**

## Safety driven design to guarantee safe behavior in case of abuse usage or cell thermal runaway at module, string and container levels:

- **UL9540A tested Lithium Iron Phosphate (LFP) technology**
- **Short-circuits, over-currents, over-temperature and over-voltages management**
- **Stop push button, disconnect switch, ground fault detection**
- **Fire detection and two levels of suppression systems (gas, water) to fight fires in their initial stages and prevent collateral damages**
- **Blast panels on the container roof**
- **Safety features focus to protect first line intervention personnel**

# Specifications

### Electrical

| | |
|---|---|
| **Rated energy (C/5) [1]** | **2.3 MWh** |
| **Discharge duration range** | **1 – 4 hours** |
| **Voltage range** | **1040 V – 1400 V** |
| **Rated DC power** | **1.1 MW charge/discharge** |
| **Rated current** | **900 A charge/discharge** |
| **Maximum DC power** | **2.2 MW charge/discharge** |
| **Maximum current** | **1800 A charge/discharge** |

### Mechanical

| | |
|---|---|
| **Dimensions (L, H, W) without HVAC** | **6.1m, 2.9m, 2.4m / 20ft, 9ft 6in, 8ft** |
| **Dimensions (L, H, W) with HVAC** | **6.7m, 2.9m, 2.4m / 22ft, 9ft 6in, 8ft** |
| **Weight** | **< 30,500 kg / 60,000 lbs** |
| **Container protection class** | **IP 54 (operation)** |

### Operating & storage conditions

| | |
|---|---|
| **Ambient temperature** | **-25°C to +55°C** |
| **Design lifetime** | **≤ 20 years** |
| **Altitude above sea level** | **≤ 2000 m** |
| **Ambient relative humidity** | **Up to 100%** |
| **Storage temperature** | **-25°C to +55°C** |
| **Storage time** | **12 months (under conditions)** |

### Saft CUBE platform

| | |
|---|---|
| **Features** | **Local HMI and cloud interface** |
| **External controllers** | **Sunspec MESA, Modbus TCP/IP** |

### Standards

| | |
|---|---|
| **Safety** | **IEC 62619, IEC 62477**<br>**UL 1973, UL 9540, UL 9540A** |
| **Marking** | **CE, UL** |
| **Directives** | **REACH** |
| **Manufacturing hubs** | **ISO 9001, QS 9000, ISO 14000** |
| **Cybersecurity** | **IEC 62443-4-2** |
| **Transport (fully populated)** | **UN3536** |

**[1] According to IEC 60620**

## Saft CUBE: energy and asset performance

**CUBE is Saft's real-time battery control, supervision and big-data publishing platform for enhanced analytics and services; it enables storage asset owners access to highly granular system data. Saft CUBE has a high level of cybersecurity ensuring data confidentiality, product availability and safety.**


Saft

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