

Energy Center™



CATALYZING A CLEAN FUTURE. EVERY DAY.

Flexible, safe, and sustainable long-duration energy storage solution

Features

- Long-duration iron flow battery
- Provides up to 8 hours of discharge at rated power
- Flexible, modular design for utility-scale applications
- No thermal runaway
- IEEE-693 Seismic High rating available
- Complies with NFPA 855

Benefits

- 25-year design life
- Safe and sustainable
- No power or energy degradation regardless of duty cycle
- Low Total Cost of Ownership (TCO) as compared to other LDES technologies

What sets the Energy Center apart?

The Energy Center is a commercially available long-duration energy storage system. The Energy Center supports a wide range of applications, including:

- Time-shifting renewable energy
- Providing ancillary grid services
- Smoothing the intermittency of renewables
- Supporting capacity needs and more



Easy deployment and operation

The Energy Center's simple iron electrochemistry consists of easy-to-source materials, iron, salt, and water. The system's benign characteristics make it safe and easy to permit and site. The environmentally-friendly chemistry also enables standard, lower cost components for construction.

With safe and sustainable chemistry and no thermal runaway, the iron flow battery simplifies the need for fire-suppression and hazmat requirements. In addition, the system is substantially recyclable at end-of-life.

Customizable and upgradable

ESS has worked closely with leading engineering firms to deliver a design-build approach that enables systems to be tailored to meet any project size. Energy Center sites can be configured to deliver customized power and discharge durations, maximizing project flexibility, and delivering the lowest operational cost to owners.

Modular design maximizes project flexibility



Flexible. Safe. Sustainable.

Energy Center™



Unparalleled flexibility

The Energy Center allows the power (the rate of electricity flow) to be decoupled from the capacity (the total amount of energy held). As a result, users have the flexibility to use the battery for a variety of use cases simultaneously on a project.

Specifications

| Features | |
|-------------------------|---|
| Configurable Range | Customizable up to GW scale |
| Nominal Power | 125 kW |
| Nominal Energy Capacity | 1000 kWh |
| Total Energy Capacity | 1350 kWh |
| Maximum Charge Power | 174 kW |
| Voltage | 880 VDC ± 5% |
| Response Time | < 1 second depending on operation mode |
| Expected Life | 25-year design life |
| Module Cycle Life | >20,000 cycles |
| Secondary Containment | Integrated into tank container to 110% of volume of largest tank |
| Communication | 24/7 remote monitoring (MODBUS TCP/Ethernet interface to EMS/SCADA) |
| Certification | Conforms to UL 1973, UL 9540 (pending), UL9540A (pending) |
| Environmental | |
| Battery | Recyclable components |
| Electrolyte | FeCl ₂ , KCl, H ₂ O; re-usable, recyclable |
| Ambient Temperature | -15°C to +50°C (+5°F to +122°F) operating range |
| Warranty | 1-year comprehensive defect warranty; Extended warranty available |

Lowest cost per kWh

Using easy-to-source materials in its chemistry – iron, salt, and water – keeps the cost of manufacturing the Energy Center lower than comparable storage technologies with different chemistries. For applications that can use 6+ hours of discharge and frequent cycling, the iron-flow battery Energy Center delivers the lowest cost per kWh over its 25-year lifetime.

Safest and greenest battery on the planet

Economics

- Low Total Cost of Ownership
- Bankable Warranty

Durability

- No Capacity Fade
- No Cycling Limit

Performance

- Wide Operating Temperature Range
- Water-based, NFPA 855 Compliant

Safety

- Safe And Sustainable
- No Thermal Runaway

Warranty partner



ESS Tech, Inc. has partnered with Munich RE to launch industry-first insurance coverage of its flow batteries. The innovative policy means our long-duration storage solutions are now available for backing by a full 10-year performance guarantee, regardless of project size or location.

Qualified Projects deployed during the Policy Period of Jan. 1, 2023 – Dec. 31, 2024 can obtain additional warranty back-stop by Munich Re, with insurance capacity exclusively allocated at project level.

For more information, contact



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