

# IRON FLOW BATTERIES: CLEAN, SAFE, AND SUSTAINABLE ENERGY STORAGE



CATALYZING A CLEANER FUTURE



IF YOU WANT CLEAN, SAFE, AND SUSTAINABLE ENERGY STORAGE...

IF YOU NEED FOUR OR MORE HOURS OF STORED ENERGY...

IF YOU WANT TO MAKE YOUR GRID MORE FLEXIBLE AND RESILIENT...

**THE ENERGY WAREHOUSE IRON FLOW BATTERY, IS THE SOLUTION.**

The limitations of lithium-ion batteries – cycle life, safety, disposability – will become a greater issue as the need for more flexible, longer-duration storage increases.

## WHY ENERGY STORAGE SOLUTIONS FROM ESS INC.?

Our iron flow battery solutions, with non-toxic, non-hazardous, and easily recycled materials, unlimited charge/discharge cycles, and up to 12 hours of flexible storage, offer the cleanest and most cost-effective energy storage system on the market.

### CLEANER

- Food grade, earth-abundant iron, salt, and water electrolyte
- No noxious fumes
- Enables greater penetration of renewables and enhances integration

### SAFER

- Environmentally safe, non-toxic electrolyte
- Non-flammable, non-explosive
- No hazardous materials—no risk to personnel, no hazmat compliance plan required
- Ships in dry state and hydrated on site

### MORE SUSTAINABLE

- No cooling/air conditioning requirement
- Designed for 25-year operating life with minimal annual operations & maintenance (O&M) requirements
- Recycle or reuse electrolyte at end of life

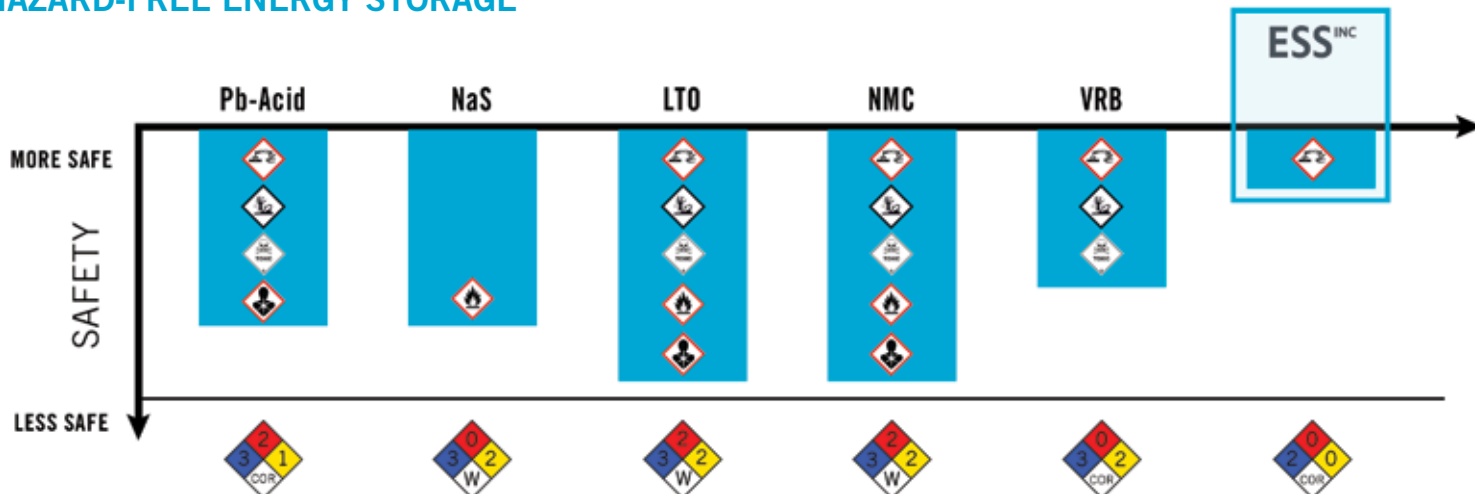
### LOWEST COST, LONG-DURATION

- Long duration (4–12 hours) for renewable shifting and demand charge reduction
- Long life, >20,000 cycles
- Optional power configurations between 33 kW and 100 kW



*With its safe, earth-abundant, proven iron flow battery technology, ESS Inc. is helping project developers, utilities, and EPCs deliver the lowest cost, longest life energy storage system that is better suited for the grid and the environment.*

## HAZARD-FREE ENERGY STORAGE



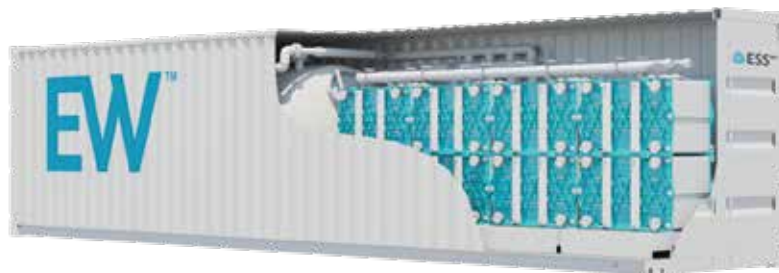
### ESS INC. IS THE CATALYST FOR A SUSTAINABLE ENERGY FUTURE

The Energy Warehouse™ (EW), is comprised of earth-abundant iron, salt and water. The system’s environmentally benign characteristics, containing no hazardous chemicals or rare-earth metal, make it the easiest-to-permit storage technology in the world. The EW has no fire, chemical or explosive risk, eliminating the need for fire suppression, secondary containment, and hazmat requirements. In addition, the system is fully recyclable at end-of-life.

### APPLICATIONS AND USE CASES

ESS Inc. energy storage systems are suitable for many applications in the utility, commercial and industrial markets, both on- and off-grid.

- Renewable energy time shifting
- Demand charge management
- TOU tariff arbitrage
- Energy security
- Utility ancillary services
- Deeper penetration of renewables
- Demand response
- Capacity reserve
- Infrastructure support
- Run generators at peak efficiency
- Microgrid stabilization, energy shifting



The Energy Warehouse (EW) is housed in a standard shipping container. Power ranges can be configured between 33 kW and 100 kW with storage durations between 4 and 12 hours.

### OUR BATTERY STORAGE IS NOW BANKABLE— WE’RE PAVING THE WAY FOR RENEWABLE ENERGY

At ESS Inc., our mission is to bring to market the cleanest, lowest-cost long-duration energy storage systems.

ESS 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 backed by a full 10-year performance guarantee, regardless of project size or location.

### ABOUT ESS INC.

Established in 2011, ESS Inc. manufactures low-cost, long-duration iron flow batteries for commercial and utility-scale energy storage applications requiring 4+ hours of flexible energy capacity. The Energy Warehouse™ (EW) and Energy Center™ (EC), use iron, salt, and water for the electrolyte, and deliver an environmentally safe, long-life energy storage solution for the world’s renewable energy infrastructure. With its safe, earth-abundant, proven iron flow battery technology, ESS Inc. is helping project developers, utilities, and EPC’s make the transition to more flexible non-lithium-ion storage that is better suited for the grid and the environment. [www.essinc.com](http://www.essinc.com)

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