

POWIN

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ENERGY STORAGE
MADE SIMPLE



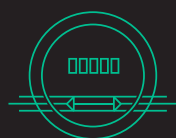
53' 2HR CONTAINER

PURPOSE BUILT UTILITY SCALE STORAGE

Powin's safe and cost-effective energy storage solutions are revolutionizing the way energy is generated, transmitted, and distributed for utilities, IPPs, and energy consumers worldwide.

Powin's stack modular battery system has been engineered from the cell-level up to maximize energy density and perform rigorous in front-of-the-meter and behind-the-meter functions. Powin's entire portfolio of Stacks utilize Powin's field-proven and patented battery monitoring and control platform, StackOS, with hundreds of thousands of hours of safe operation. StackOS is purpose designed for stationary energy storage applications and is the most advanced battery management system in the energy storage industry.

APPLICATIONS



IN FRONT OF THE METER

- Distribution Deferral
- Transmission Deferral
- Congestion Relief
- Resource Adequacy



MICROGRIDS

- Islanding
- Backup Power
- Renewables Integration



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BEHIND THE METER

- Backup Power
- Peak Shaving
- Time-of-Use Bill Management



GRID SERVICES

- Energy Arbitrage
- Frequency Regulation
- Voltage Support
- Spin/Non-Spin Reserve



SOLAR+STORAGE

- Increased PV Self-Consumption
- Peak Shaving

“It’s very important for Hecate to offer turnkey solutions that are attractive financially to our utility customers and Powin Energy provides tremendous value while still delivering a highly robust energy storage system. Their responsiveness to even the smallest request and attention to detail that only energy industry veterans possess makes Powin a preferred partner.” – GABE WAPNER, VP BUSINESS DEVELOPMENT, HECATE GRID

StackOS

Powin's StackOS is the DNA of the Powin BESS offering and is purpose-built for Powin's hardware. It provides visibility, operability, and optimization at each layer of the system and adds safety features, tightly integrated from hardware to software, from battery cells to control room screen. StackOS is an all-encompassing BMS, EMS, and TMS. In other words, it manages batteries, it manages energy, and it manages thermal conditions.

StackOS is an integrated part of all Powin energy storage systems and comes with a comprehensive suite of tools including:

- + Command Center UI
- + First Responders HMI
- + Emergency HMI
- + Enclosure Environmental Controller
- + Alert Management System

UNPARALLELED INSIGHT AND SUPPORT

Stack-OS facilitates vital system control and visibility down to the cell level to optimize the usable capacity within your battery system while maintaining the highest level of automated safety and performance. Additionally, Powin supports all sites with daily scans for essential safety. If engaged with a long-term service agreement, Powin comprehensively monitors the system 24 hours a day, seven days a week.

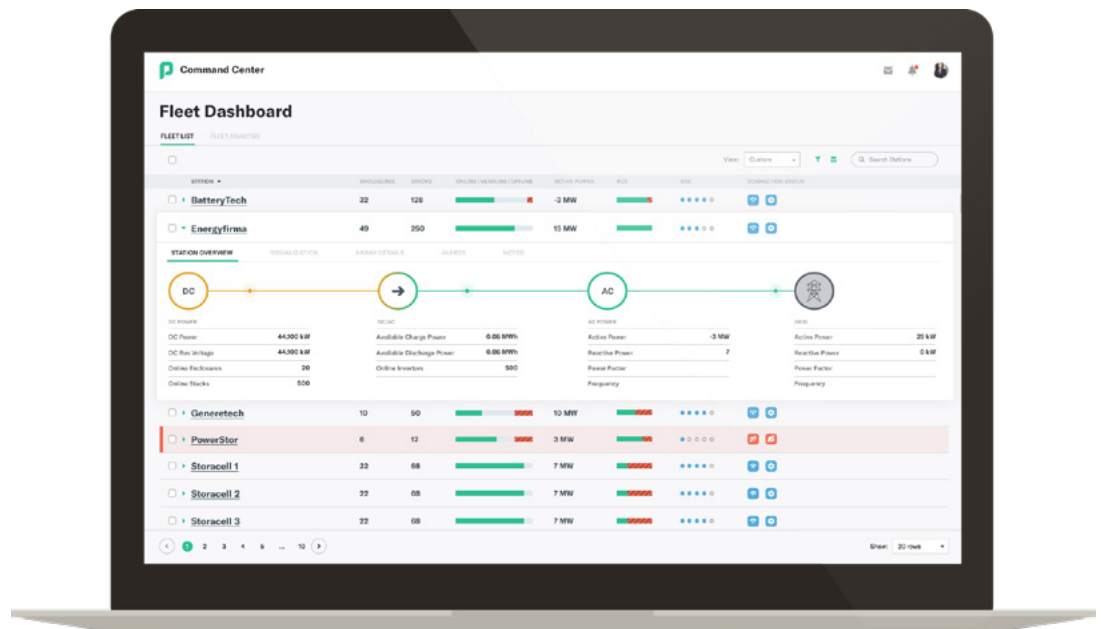
POWIN FOR FIRST RESPONDERS

We are pleased to offer an additional safety interface located onsite for first responders. This new interface includes site-specific information and tools to speed the diagnosis and resolution of problems, along with efficient ways to communicate with Powin and site operators.

StackOS+

As an add-on to StackOS, Powin offers StackOS+ which can turn the local dispatchable system into a financially performing asset. StackOS+ Apps can also be tailored for customers who have a unique value proposition or project application that needs to be custom developed. StackOS+ is integrated directly into the StackOS HW and SW platform and provides enhanced:

- + Asset Optimization
- + Market Participation
- + Monitoring and Reporting
- + Predictive Analytics
- + Data Management



Powin's Scalable Hardware Products



*Production version may vary

Centipede Platform

The Stack750E, Centipede product represents the next evolution of modular battery storage technology at Powin. Building on our core technology and the ethos of designing our systems from the ground up, we have meticulously innovated our entire storage eco-system to create the Centipede Platform.

DEPLOYABILITY

This system is fully modular and comes to the field factory built and pre-integrated in outdoor rated enclosures. This means the Stack 750E requires less time to procure and deploy, has superior reliability, requires less space on site, and costs less to install.

SCALABILITY

Centipede is focused on enhanced scalability by using a simple augmentation strategy allowing for the seamless addition of up to 21 stacks per array. Centipede can accommodate a wide range of system configurations, and energy specifications with immediate room to grow.

RELIABILITY AND SAFETY

Centipede's simplified design is more reliable, more efficient, and safer to maintain. Utilizing a third-generation module design with improvements from a tuned heat sink to a maintenance-friendly racking system allows for precise thermal control and an anticipated 80% reduction in replacement time. The independent segments of the Centipede platform allow for granular control and monitoring of the entire system. Nearly all maintenance can be performed without accessing the battery compartment.

“esVolta selected Powin as our OEM of choice because Powin’s commercially-proven integrated battery systems are ideally suited to meet the demands of our utility-scale storage application. His partnership provides esVolta with competitive advantages in design, engineering, and pricing which are critical factors contributing to esVolta’s growth and success in the market.”

— RANDOLPH MANN, FOUNDER AND PRESIDENT, ESVOLTA



CAISO CAPACITY - CA

Southern Power awarded Mitsubishi Power Americas, Inc. and Powin, LLC two utility-scale battery energy storage system (BESS) projects totaling 640 megawatt hours (MWh). These projects will enhance California's grid reliability with additional flexible resource capacity for integrating intermittent renewable energy into the grid.

The BESS projects are among the first collocated solar and storage projects in California and represent some of the largest retrofits of solar and storage in North America to date. They are designed for a 20-year life cycle and four hours of energy storage duration. Southern Power's 205 megawatt (MW) Solar Facility will add 88 MW and 352 MWh of energy storage.

BATTERY: POWIN STACK 230 / CATL 280AH CELL

INVERTER: POWER ELECTRONICS PCSM

COD: DECEMBER 2021

CONTAINERIZATION: 53' ENCLOSURES



DC COUPLED PV + STORAGE - MA

DC Coupled system configurations combining solar + storage technologies are being deployed and proven at a pilot scale across the country allowing for greater use of low-cost, clean, dispatchable energy. Powin has been working diligently with PV Inverter and DC-DC converter vendors to ensure compatibility and optimization between the different system components. The announcement of this project portfolio shows that Powin's DC coupled PV + storage solution has become commercially viable at a MW scale.

Coupled with solar, energy storage can smooth electricity prices through arbitrage, manage evening energy ramps, mitigate the risk of curtailment, ancillary service capability, and more.

BATTERY: POWIN STACK 230 / CATL 280AH CELLS

INVERTER: SMA SC SOLAR INVERTER + DYNAPOWER DC/DC CONVERTERS

COD: MARCH 2021

CONTAINERIZATION: 53' ENCLOSURES



ERCOT FRRS - TX

This is an example of one of our projects deployed in ERCOT to provide Fast Responding Regulation Services (FRRS) and other ancillary services for our customers. Responsive Reserves are resources ERCOT maintains to restore the frequency of the ERCOT System within the first few minutes of an event that causes a significant deviation from the standard frequency. This project is one of several projects Powin Energy has built in Texas for the Frequency Response application. Powin has deployed over 300MWh of projects in the state of Texas.

BATTERY: POWIN STACK 230P / CATL 280AH-1P CELLS

PROJECT SIZE: 9.9MW / 20MWH

PROJECT LOCATION: WEST TEXAS

COD: JUNE 2020

SYSTEM USE CASES: FREQUENCY REGULATION, ANCILLARY SERVICE, SPOT MARKET CAPACITY



Global Headquarters, Tualatin, Oregon

BY PEOPLE WHO GET THE ENERGY INDUSTRY

Powin's team brings decades of successful leadership experience in the energy, storage, and utility industries, all with real world product design, project development, and grid-level installation experience. We understand the challenges that can be presented by utility-scale energy projects, which is why we focus on easing the procurement, execution, and interconnection processes to deliver on-time, under budget, and with superior project ROI.

ABOUT POWIN

For nearly the past decade, Powin has worked to advance its patented battery management technology and develop market leading product offerings. Now a global leader in the design and manufacture of safe and scalable battery energy storage solutions, Powin supplies the software and hardware to the growing volume of next generation energy storage projects that are transforming the grid worldwide. Headquartered in Tualatin, Oregon, Powin has built over 2,000 MWh of systems, supporting 70 projects in 12 states and 8 countries. Powin has a contracted pipeline to supply over 4,500 MWh of energy storage systems globally over the next five years.

WITH THE FORESIGHT TO ANTICIPATE WHAT'S NEXT FOR ENERGY STORAGE

Powin was founded in 1989 as a high-quality, high-volume contract manufacturing company with a large supplier network and relationship base in Asia and North America. Before most people saw the enormous market potential of large-scale battery storage, Powin was already utilizing its global battery supply chain relationships to deliver high quality with market-leading value. The

company evolved into Powin LLC by marrying its robust supply chain management with specially developed technology, a high-growth market, and a vital social mission: to lead the sustainable transformation of the outdated electric grid through increased renewables penetration, non-wires alternatives, and power decentralization.

POWIN... we're building the future of energy.