

Power n

Solar & Energy Storage

ENERGY STORAGE SYSTEM (ESS)



RESIDENTIAL, COMMERCIAL, UTILITY ESS & MICROGRID SOLUTIONS

Power On's energy storage solutions are designed to operate within a wide range of charge/discharge modes, battery chemistries, inverters and software controls. Our final design will be tailored exactly to your needs. Whether your organization is concerned with power quality, peak load reduction, arbitrage, or deploying storage to avoid expensive infrastructure upgrades elsewhere, Power On is here to model a solution for you. Our skilled engineers can also create, deliver and install a custom enclosure of your choice for aesthetic appeal.

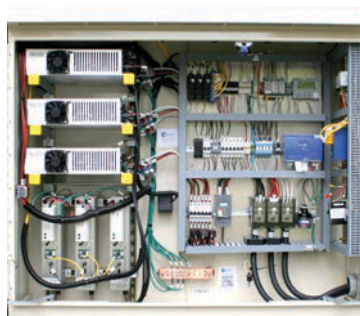
RESIDENTIAL



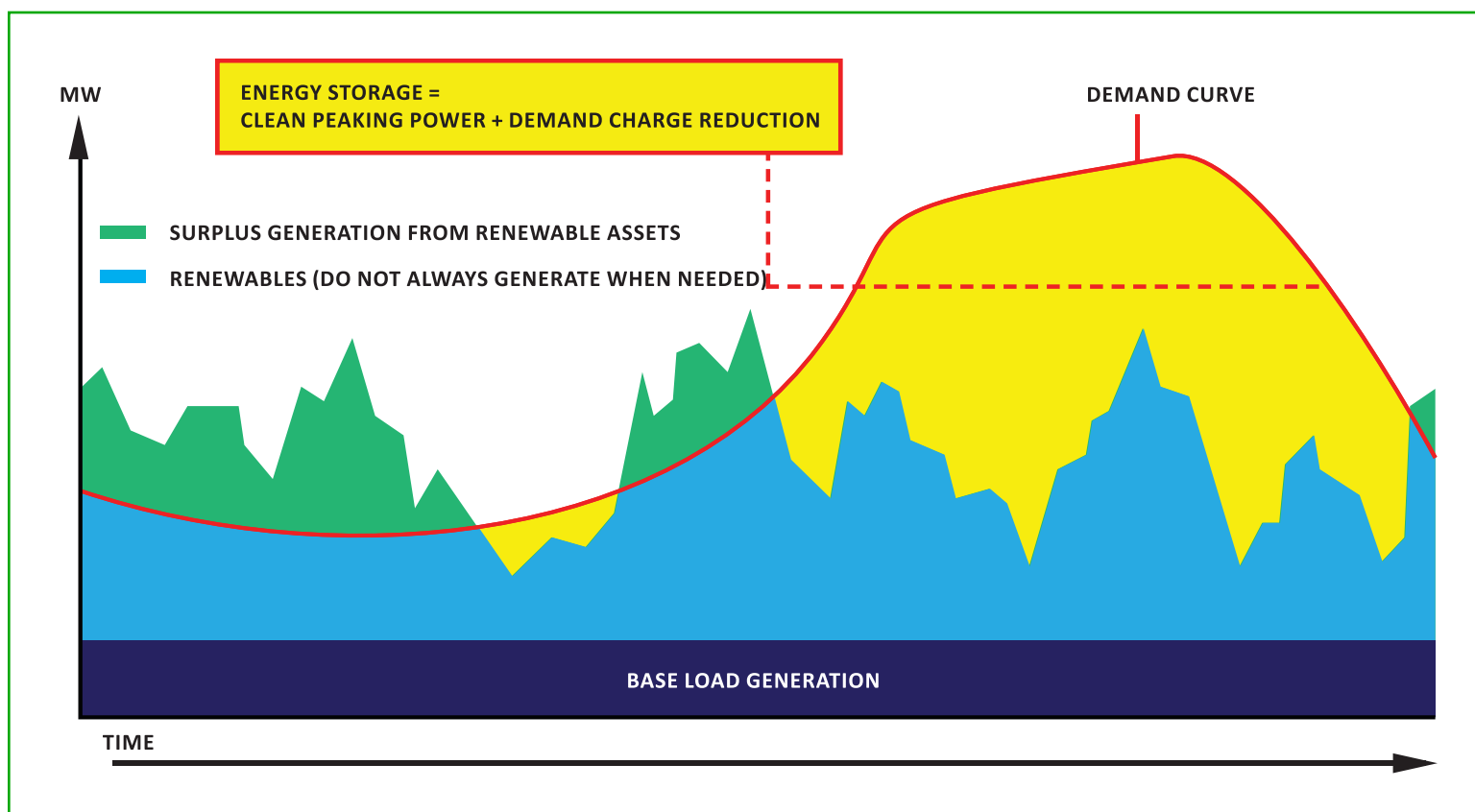
MOBILE



COMMERCIAL



UTILITY



THE POWER ON ENERGY STORAGE ADVANTAGE

Energy storage systems deployed by Power On have several modes of operation each designed with a specific set of performance attributes and corresponding benefits. Modes of operation may be programmed to work in coordination with one another for maximum revenue stacking and passive benefits. This provides the end-user with an adaptive financial modeling plan based upon the time-of-day, month/year, placement within the local grid structure, and position within the ISO (if applicable).

FEATURES

Lithium-Ion batteries

Environmentally Controlled

Cabinet & Fire Suppression

High Power Electronics

Intelligent Controller

Energy Management System

Customized to Every Application

OPTIONS

Extended warranties + performance guarantee

Emergency replacement plans

Controls & monitoring software

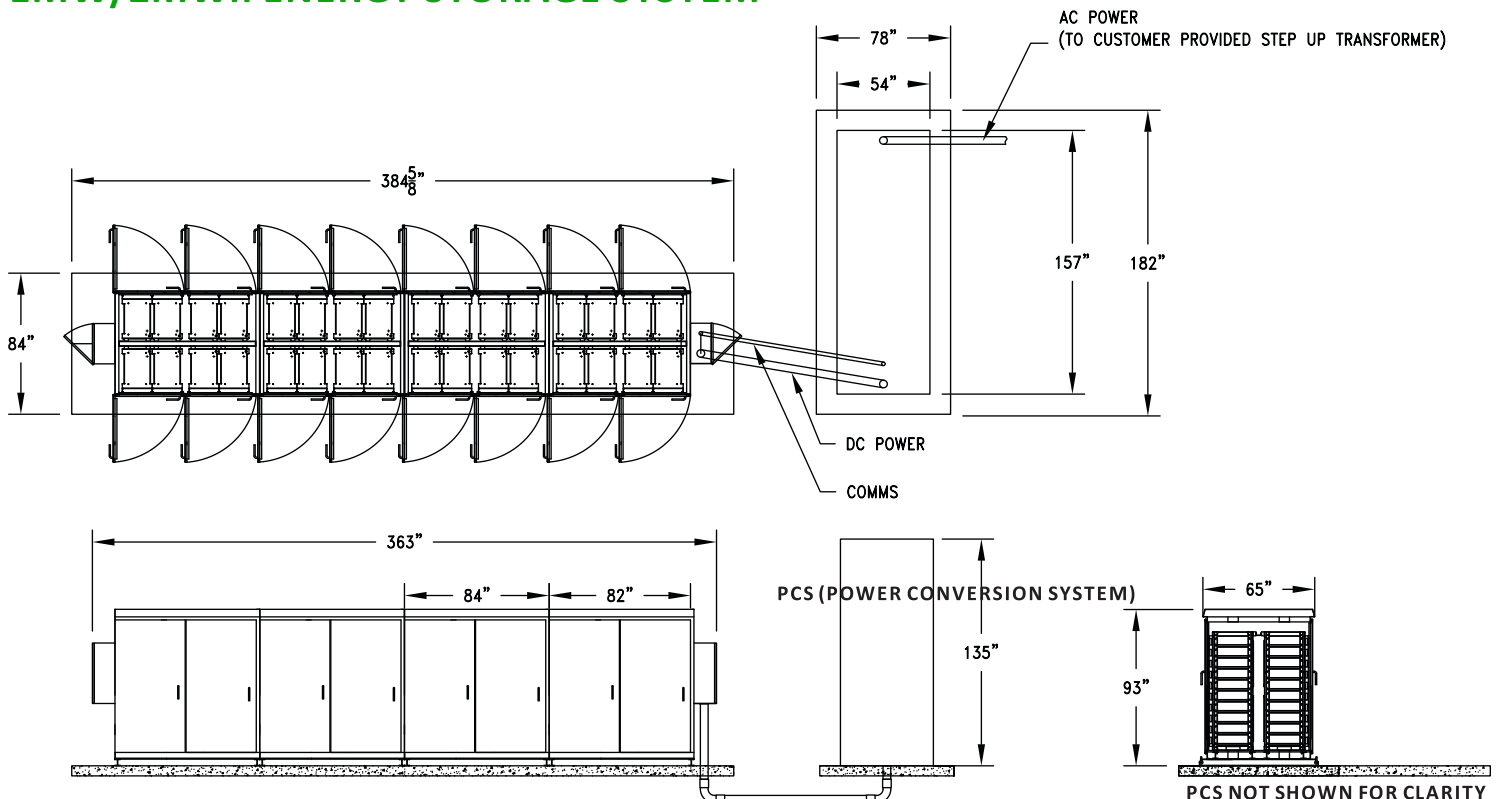
Maintenance schedules

SYSTEM SIZING

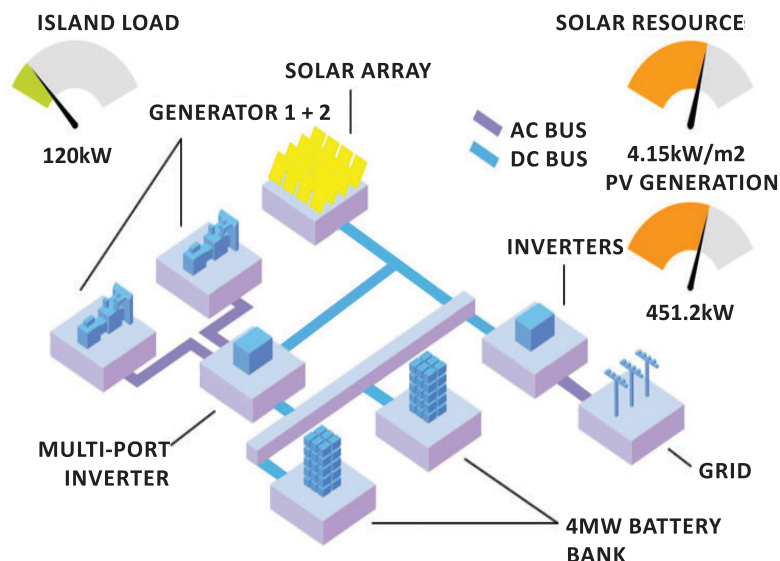
Utility scale energy storage systems start at 250kW-500kWh and continue into the multi-megawatt range. Power On's custom, utility scale energy storage solutions are perfect for peak shaving, voltage regulation, grid stabilization and renewable integration. Packages can be tailored to every application and can feature controls, monitoring and maintenance plans.



1MW/2MWh ENERGY STORAGE SYSTEM



MICROGRID SYSTEM



BENEFITS

UTILITIES

- Transmission congestion
- Relief transmission + upgrade deferral
- Demand charge reduction

T&D ORGANIZATIONS

- Frequency regulation
- Voltage support
- Black start support

BUSINESSES & RESIDENTIAL

- Backup power
- Time of use bill management
- Load management + demand charge reduction

ISLANDABLE FUNCTIONALITY

Power On's microgrids continue to keep critical loads up and running. With uninterrupted islanding, every Power On microgrid system delivers reliable power during emergency situations and/or grid instability. In addition, on site generation provides flexible methods for the energizing the battery bank.

CONTROL & MONITORING SOFTWARE

Power On's customized control and monitoring interface can further elevate the performance of your distributed energy storage and microgrid solutions. Our software features analytics that provide a comprehensive view of your power network and allow you to make fully informed and intelligent decisions around the management and operations of your system.

MICROGRID FEATURES

Automated islanding

Battery charging control

Customized design built to specs

Upto 20 year battery life

Fully grid-interactive

Automated alarm and event notification

Realtime, trending, and logged data for any parameter

Integration of local power generation + renewables



WHAT CAN **Power On** ENERGY STORAGE DO FOR YOU?

BENEFITS + OPERATIONAL MODES

PEAK SHAVING/LOAD LEVELING

The peak shaving application charges and discharges the energy storage system based upon a specific load profile given by the end-user. This operation is commonly used with other benefits such as arbitrage to achieve maximum financial gains. End-users also use this when seeking to reduce demand charges due to load spikes. Arbitrage is the most common mode of operation activated on Power On's energy storage platforms.

RESERVE POWER

In a reserve mode, the energy storage system will automatically direct power to the pre-determined load if there is a lack of power from the grid. This is generally a selected priority setting as this allows the unit to function in another mode of operation so long as there is an active grid connection. In the event of a grid failure, the system would switch modes to power only its assigned load, ie - Emergency operations center.

SCHEDULED (OR ON DEMAND) LOAD REDUCTION

Load Reduction is designed to deploy the maximum amount of energy into the grid during key time-frames which are generally associated with the monthly transmission peaks and/or annual capacity peak for the utility, and/or the ISO. Load reduction involves critical forecasting on the utility's part in conjunction with signaled response from the unit. This method reduces the utility's overall load within the ISO during a specified period. With load reduction, a complete discharge is generally configured in the 2-3 hour time-frame.

POWER QUALITY

Power On's energy storage systems are designed to respond with power quality control allowing each unit to charge and discharge based upon the frequency regulation and voltage support requirements of the grid. This is generally activated on either a time-of-day basis or through signaling (SCADA). Specific kVar or power factor may be input in order to achieve desired reactive power levels. Other advantages of power quality include the ability to manage frequency and voltage regulation.

ISLANDING OR MICROGRID CAPABILITIES

When energy storage units are deployed in conjunction with renewable resources and/or when a utility wishes to have complete disconnection from the grid available for backup power due to of grid failure, the islanding function is often configured. In an island function, the energy storage unit charges via local generation assets (PV/ wind/diesel generator) and will discharge to a specific predetermined load. The system communicates with a relay which senses grid presence.

ENERGY ARBITRAGE

Energy Arbitrage takes advantage of either a predetermined time-of-day price fluctuation or signal indicated (from SCADA data) to charge and discharge the storage system at a specific rate for a specific time-frame.

FLEET OPERATION

Fleet operation allows all interconnected energy storage units to communicate and operate as a whole. This method of storage and distribution provides a scalable solution that can handle multiple modes across a diverse energy landscape. Residential homes, commercial units and utilities can cross communicate for maximum efficiency and operations.

GENERATOR OPERATION

In emergency situations, systems equipped with a generator may switch autonomously to a generator mode of operation. This may be enabled either through a timed delay, a specific depth of discharge (DoD) of the battery, or based upon a specific load profile once the energy storage system has become isolated from the grid.

NET METERING

When an energy storage system is configured with a renewable generation source and if the battery bank is fully charged, the system will route all excess power back to the grid.

MANUAL OPERATION

Manual operation allows the end-user and/or Power On to manually control the operation of the system through a secure HMI interface at location or through a secure web portal.

TIME OF DAY ROUTING

Time of day routing allows the energy storage system to perform a series of pre-determined functions at a specific time each day. This could include any of the operation benefits listed.

