Energy Storage System (ESS)

Overview

AKA's modular energy storage system (ESS) provides supplemental power and redundancy. It provides increased system efficiencies through enhanced, smarter energy management, minimizing diesel generator and grid supply dependencies. The drop-in-place design enables a simplified and efficient integration into existing power plants. It is built upon AKA's advanced active front end (AFE) power conversion design and integrated with customizable energy storage technologies to suit specific applications.

AKA's ESS has plug and play unit operation. Multiple energy storage containers can function as a single system using a proprietary technique for sensing the health of adjacent containers. Each container unit is autonomous, increasing system reliability. The energy storage housing includes integrated environmental controls and system cooling in self contained modules. The housing can be tailored for various site applications and the parallel unit configuration allows for scalable energy storage solutions.

AKA's ESS strengthens an installation's power grid through power regulation and can allow for deferral of investment in power distribution and transmission. The energy storage system provides cost savings opportunities through reduced utility bills by lowering demand metering charges and providing the ability to participate in utility demand response programs.

The energy storage system monitoring and controls are integrated within the control station interface. The system monitoring provides remote connectivity enabling external system monitoring.

Features and Benefits

- **Energy Time Shift/Peak Shifting:** Capable of charging during off-peak hours and then injecting or displacing load during peak load hours.

- **System Frequency Regulation and Load Balancing:** With the increase in variable generation (VG) and greater forecast uncertainty the requirement to control power system frequency and maintain the balance between load and generation increases.

- **Capable of Activation and Delivery within a Short Period of Time:** AKA's ESS can provide the additional resources, be activated, and begin energy delivery promptly.

- **Load Following and Ramping:** AKA's ESS can help offset peak ramp periods with a primarily carbon-free alternative.

- **Additional Operating Reserve:** AKA's ESS can offer additional operating reserve to help manage variable generation and demand forecast anomalies.

- **Transmission Connected Voltage Control:** When properly located, AKA's ESS can help maintain acceptable voltage levels in transmission zones and through kvar compensation.

- **Congestion Relief:** AKA's ESS alleviates transmission constraints by time-shifting energy, helping to defer marginal transmission upgrade needs in load centers.

Manufacturer Qualifications

Quality Registrations: ISO9001:2015 Certified

Agency Listings and Approvals

- **cUL 508A** Standard for Industrial Control Equipment

Can be built to meet agency listing requirements including but not limited to:

- **CSA-C23.3 No. 9-08** Interconnection of Distributed Resources and Electricity Supply Systems
- **IEEE 1547** Standard for Interconnecting Distributed Resources with Electric Power Systems
- **IEEE 519** Recommended Practice and Requirements for Harmonic Control in Electric Power Systems
- **UL 1741** Standard for Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources
- **NEMA/IEC IP Rating** As required by application
- Various marine classification requirements for power and propulsion (DNV, ABS, Lloyds, CCS, RS, BV, Etc.)

Features and Benefits Cont.

- **Scalable:** AKA's ESS can be sized to meet a facility's specific requirements. Multiple energy storage systems can function as a single system using a proprietary technique for sensing the health of adjacent systems.
- **Data Capture:** Data capture and analytics provide real-time results and guide smart preventative maintenance programs, as well as optimize the life of the battery.
- **Hybrid Energy Storage;** Available on Request: integration of li-ion with ultra capacitors.

Technical Specifications

Electrical Description

- DC: Up to 1000 VDC
- Supply Voltage: ** 120/220/440/600/690 VAC *
- Output Voltage: ** 120/220/440/600/690 VAC *
- Frequencies: 50/60 Hz *
- Output Signals: Automatic breaker

Energy Storage

Sized to meet the application's requirements and ensure the available life of the array is maximized

- Up to 2MWh per 20'/6M ISO container
- Up to 4MWh per 40'/12M ISO container

Operating Environmental Conditions

- RoHS compliant
- Hazardous Locations: Class 1, Div. 2 Groups A-D
- Operating:
  - Temperatures:-50 °C to +50 °C
  - Humidity: up to 100%
  - Vibration: 0.7g

Medium Voltage (MV) Available Upon Request

*** Power Conversion and Power Distribution Equipment may be Housed in a Seperate Contianer Dependant on Application*

Dimensions

20'/6M ISO CONTAINER		METRIC
External dimensions	Length	6.058 m
	Width	2.438 m
	Height	2.591 m
Internal Dimensions	Length	5.867 m
	Width	2.352 m
	Height	2.385 m
Door Aperture	Length	2.343 m
	Width	2.280 m³
	Height	33.1 m³
Internal Volume		33.1 m³
Maximum Gross Weight*		30,400 kg
Empty Weight		2,200 kg
Net Load		

* 1 mwH of storage

Note: 40'/12M ISO Container Available.

HVAC

Mechanical supply and exhaust provides precise air and thermal management. A filtration system is used to remove dust and undesirable particles. System design is reliable for delivering the desired air flow rate, regardless of the impact of variable wind and ambient temperature. This system can be used in various applications, including outdoor harsh environment marine and indoor applications.
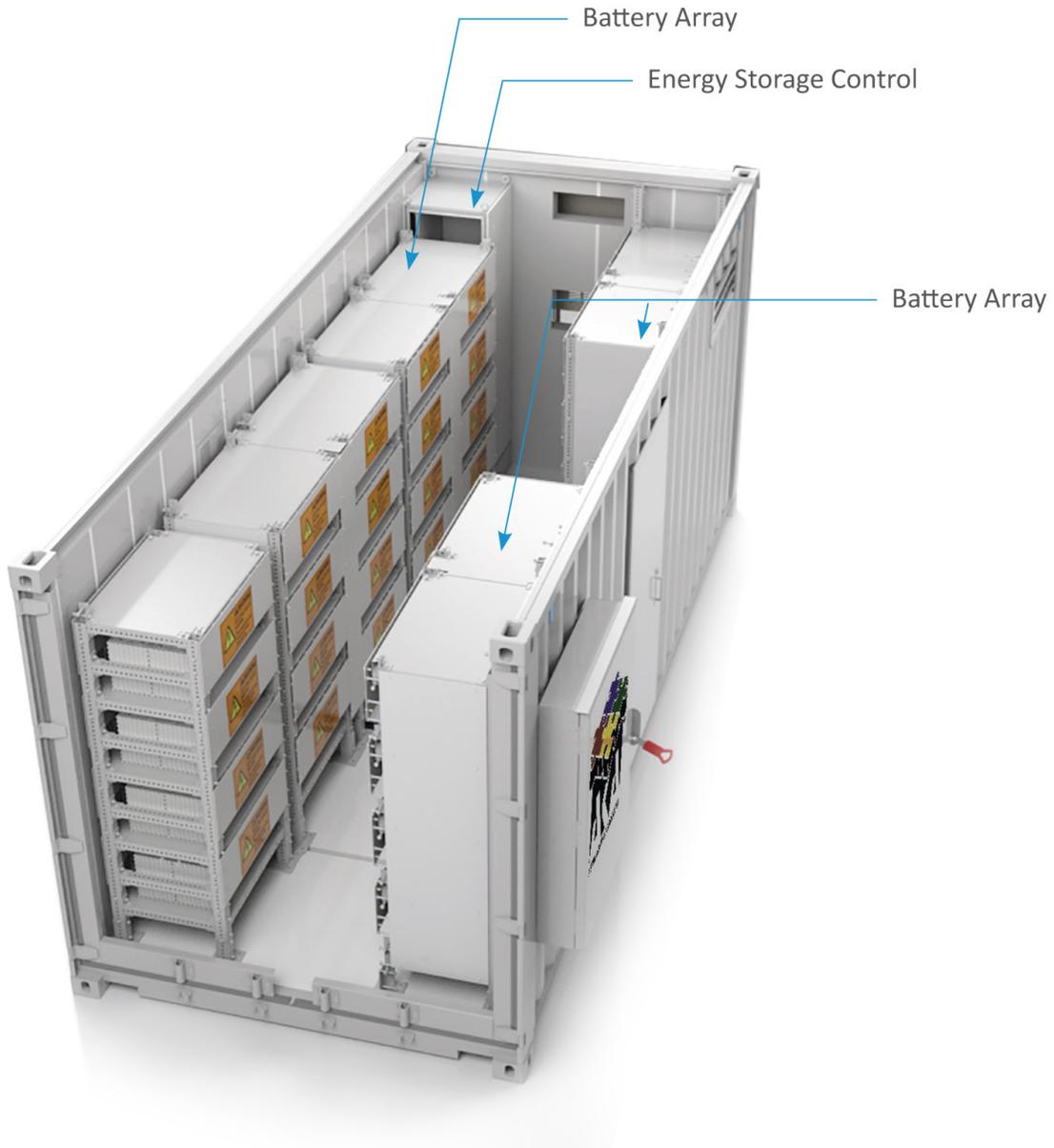
Scalable

Additional Energy Storage Containers can be added to meet installation requirements and future scalability solutions are plug and play.

GREENER, MORE RELIABLE POWER.

Diagram

Energy Storage Container

Battery Array

Energy Storage Control

Battery Array

ASPIN KEMP & ASSOCIATES