



Smart Microgrid



Overview

AKA's Smart Microgrid is a distributed resources and power supply system solution that can be easily added to an existing installation.

AKA's Smart Microgrid provides back up power generation, grid support and energy storage options to suit an installation's needs. The Smart Microgrid can have both long-term and short-term energy storage that provides increased performance with a reduced footprint and longer life expectancy. The short term energy storage provides a fast response to changes in loads and is used in applications where frequent peak shaving is required. Both sort term and long term options provide, a regenerative power function when excess energy is available or produced by the process.

The Smart Microgrid system can also provide return on investment opportunities to the owner through reduced maintenance costs as well as other revenue benefits. Its seamless ride through of grid faults delivers consistent, reliable, and clean AC power with built-in power conditioning assuring the installation's process can run without interruption independent of grid conditions. AKA's Smart Microgrid reduces the stress on the installation's infrastructure; increasing the life cycle of the facility's equipment while reducing maintenance costs. Through utilization of power generation to the grid AKA's Smart Microgrid creates an additional revenue stream for the asset owner.

AKA's Smart Microgrid design is aimed at continual safe operation for the equipment, the maintainer, the connected power sources, and the grid.

The system provides economic benefits while improving the reliability and performance of an installation's processes.

Features and Benefits

GRID RELIABILITY:

- Guarantees grid reliability through redundant energy resources along with responsive load management as well as frequency and voltage regulation.

GRID RESILIENCE:

- Design is based on experience with proven result in monitoring and responding to changing bus conditions while continuing to operate in harsh conditions.

REDUCED ENERGY COSTS:

- Provides cost savings opportunities through reduced utility bills by lowering demand charges and providing the ability to participate in demand response programs.
- 50 MW MV Islanded Power Plants:
 - Increased Reliability with over 300 years of mean time between failure
 - **Reduced Fuel Consumption by over 40%**
- 3 MW LV Islanded Power Plant:
 - **Reduced Fuel Saving of 65%**
- 2 MW LV Islanded Power Plant:
 - **Reduced Fuel Savings of 27%**
 - Reduced NOx by 51%
 - Reduced Particulate Matter by 73%

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.

REDUCED EMISSIONS:

- Maximizes performance and reduces emissions by selecting the best power sources for efficient operation based on grid and resource conditions.

SECURITY:

- Autonomous operation of functions protects against faults within one function propagating to other functions within the system.

GRID INTERCONNECTION:

- Acts as support to the utility with peak shaving and, in the event that the utility is down, black out recovery.

Technical Specifications

Electrical Description

- DC: Up to 1000 VDC
- Supply Voltage: 120/220/440/600/690 VAC *
- Input Signals:
 - Grid: Automatic breaker
 - Aux Generator: Automatic breaker
 - Photovoltaic Array: Fused disconnect
 - Wind Turbine: Fused disconnect
 - ESS: Fused disconnect
- Output Voltage: 120/220/440/600/690 VAC *
- Frequencies: 50/60 Hz
- Output Signals: Automatic breaker

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

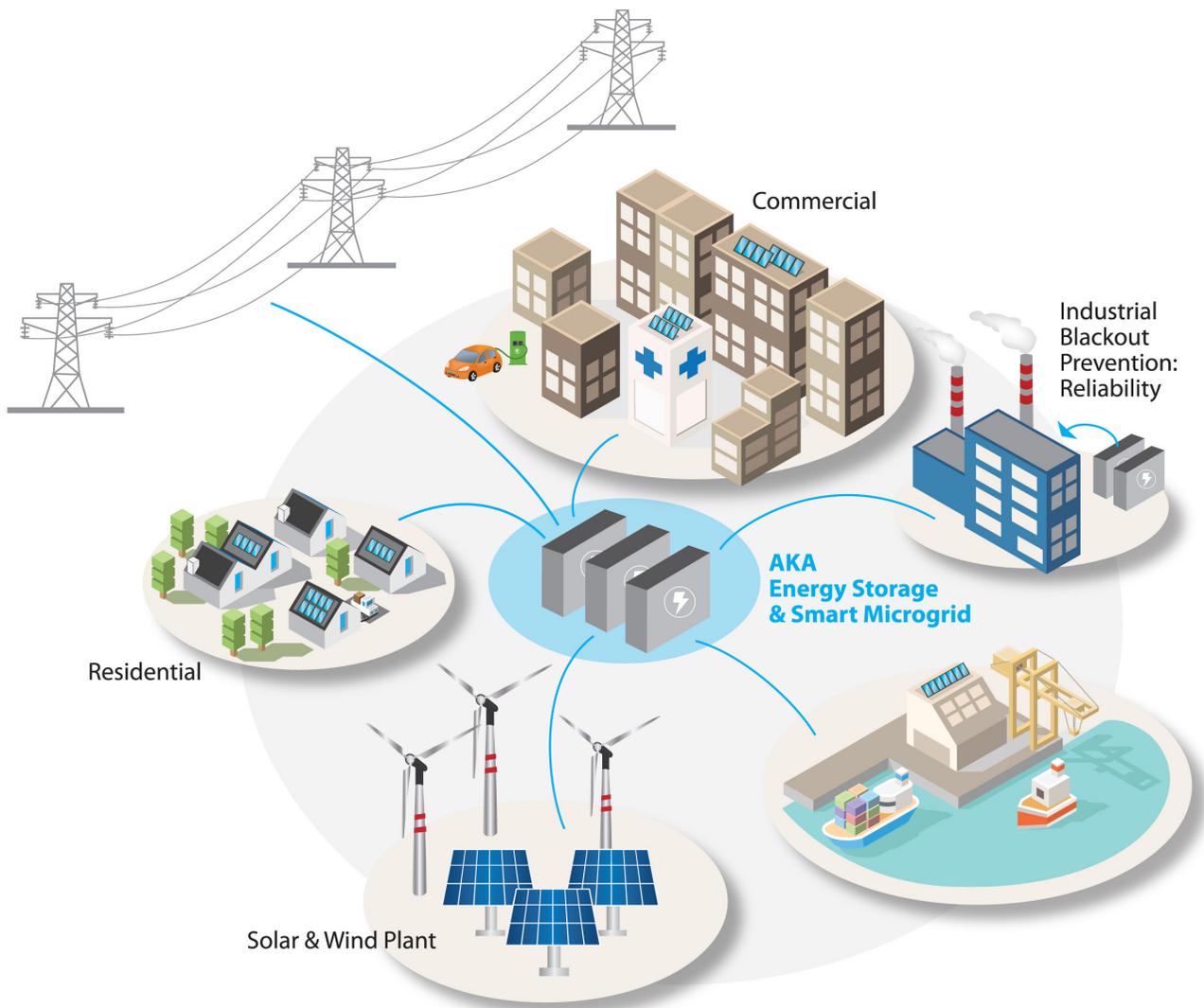
Options

- Voltage Output: 120/220/440/600/690 VAC *
- Frequency: 50/60 Hz
- Diesel Generator: Sized to meet the applications requirements
- Photovoltaic (PV) Array: Sized to meet the applications requirements and ensure the available life of the array is maximized
- ESS: Sized to meet the applications requirements and ensure the available life of the array is maximized
- Plug and socket utility (grid) connection and loads

* Medium Voltage (MV) Available Upon Request

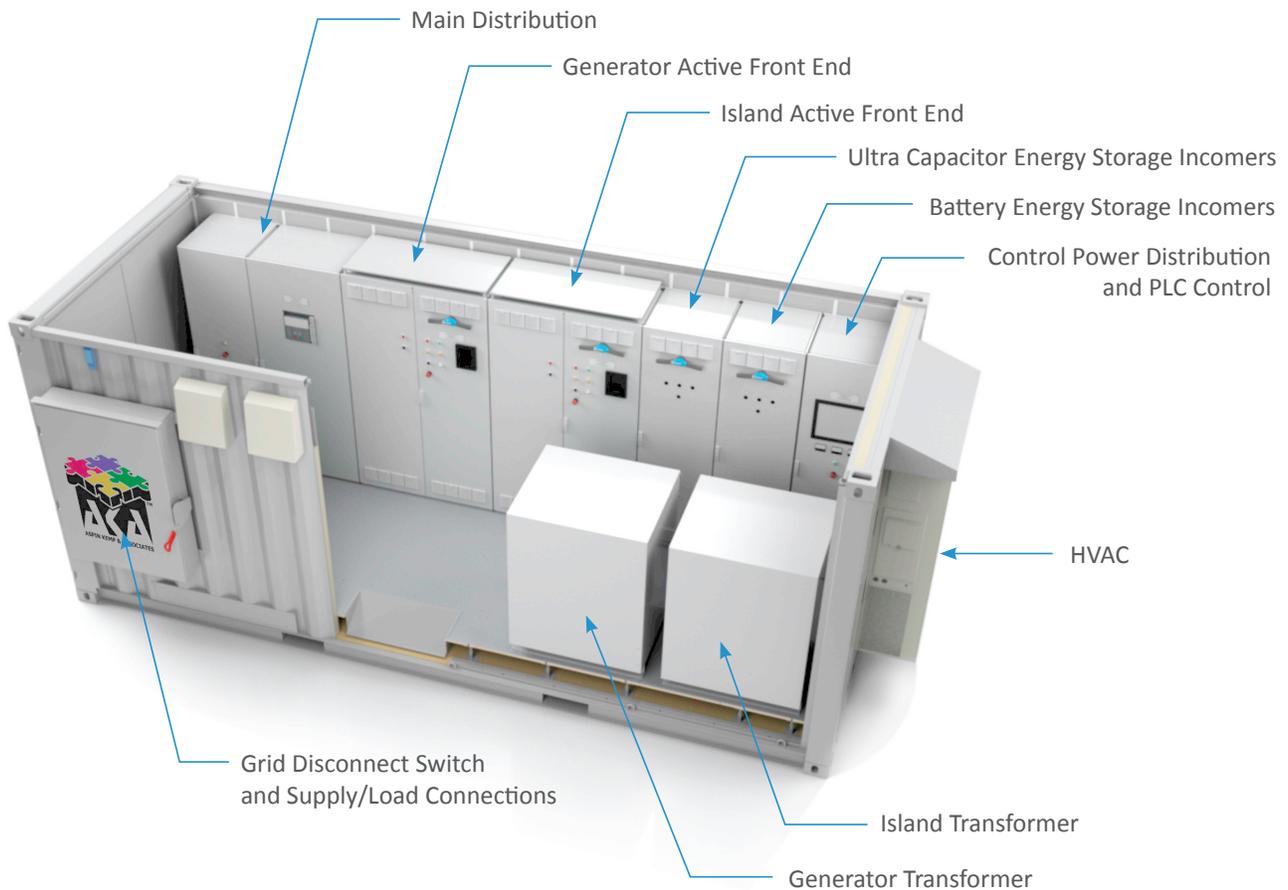


Electrical Connections



Diagram

Smart Microgrid Container



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LOCATIONS
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