CONSORTIUM FOR BATTERY INNOVATION

GS YUASA NUVATION ENERGY

LEAD BATTERIES: ENERGY STORAGE CASE STUDY

GS Yuasa and Nuvation Energy

Delivering Clean, Reliable Energy to New York City Residents

New York City, US

The historic power outages caused by Hurricane Sandy in 2012 starkly exposed vulnerabilities in the US power grid. In response, the New York State Energy Research & Development Authority (NYSERDA) formed local and federal partnerships to launch an initiative that incented building owners to add grid resilience behind the meter.

The Via Verde residences in New York City contracted Bright Power to create a solar + storage microgrid to support their condominium units. The solution consisted of 66 kW of solar power and 72 kWh of energy storage. This added reliability to the building's power infrastructure during extreme weather events, reduced the building's carbon footprint, and provided the added benefit of reducing residents' electricity costs by $13,000 per year.

The energy storage component was to be installed inside the building, so lead batteries were selected due to their historic track record for safety. Bright Power selected Civic Solar to provide the solar + storage solution, which utilized GS Yuasa SLR 1000 lead batteries.

The NFPA required the battery system to be certified to the UL 1973 stationary battery standard. UL 1973 is increasingly becoming mandated by regulators across the United States as a requirement for energy storage systems. Nuvation Energy's battery management system was integrated with the GS Yuasa batteries to protect the batteries and help with safety certification of the energy storage system.

The strict monitoring and control provided by the BMS minimizes incidents of off-gassing, a safety response built into all VRLA batteries, by ensuring that the batteries are always being operated within

nominal parameters. In a situation of over-temperature, overcharge, or excessive current, the BMS coordinates with the PCS to resolve these conditions and will disconnect the batteries if defined performance thresholds are exceeded.

By adding Nuvation Energy BMS to the system, GS Yuasa extended their battery warranty from five to ten years due to the optimization of lifespan.

Technical Specification

The energy storage system includes:

- GS Yuasa SLR1000 batteries
- 66 kW of solar panels
- 72 kWh of energy storage capacity
- Operating range from 46.5 VDC to 67.2 VDC
- SMA string inverters
- Nuvation Energy battery management system (BMS)
- Nuvation Energy custom solutions for stack connection and disconnection, communications, and black start capability

About GS Yuasa

Based on core technology for efficiently charging and discharging energy, GS Yuasa products are used for a wide variety of applications in society, such as for automotive batteries, industrial batteries, uninterruptible power supply systems, or high performance batteries used for deep sea research and space development.

About Nuvation Energy

Nuvation Energy provides battery management systems (BMS) and energy storage engineering solutions to battery manufacturers and system integrators. They are headquartered in Sunnyvale, California and have a design center in Waterloo, Ontario, Canada. Nuvation's utility-grade battery management solutions are used worldwide in various types of energy storage systems.

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