



Member Update



Michael Worry, CEO

INTEGRATED BATTERY MANAGEMENT SOLUTIONS



NUVATION
ENERGY

ENERGY STORAGE ENGINEERING



NUVATION ESS IN THE FIELD

City of Santa Rosa Wastewater Treatment Plant Microgrid



ESS
Site



NUVATION ESS IN THE FIELD

City of Santa Rosa Wastewater Treatment Plant Microgrid



Nuvation Custom ESS

- 2MW/588kWh
- 1000 VDC
- EnerDel high power 4C modules
- Compact 24' custom container
- Nuvation Turnkey ESS solution

NUVATION ESS IN THE FIELD

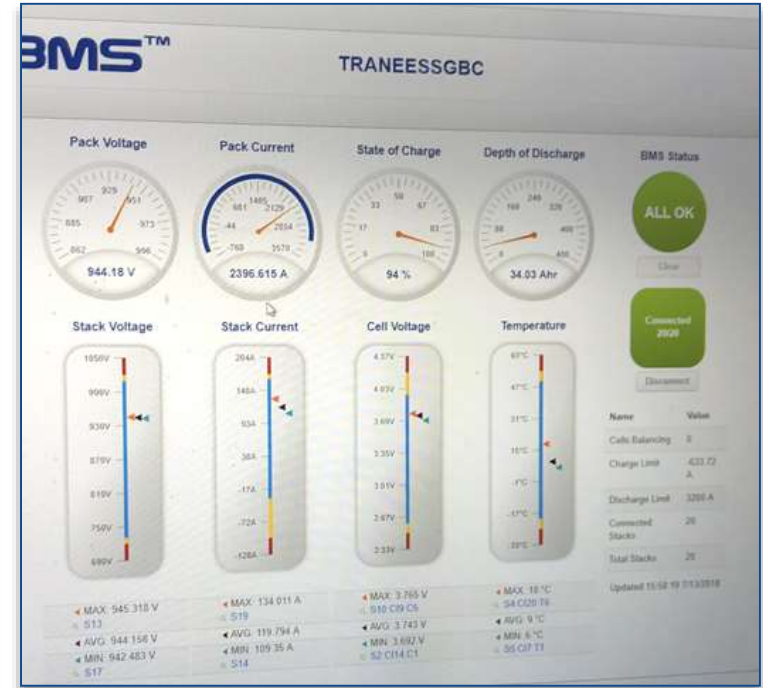
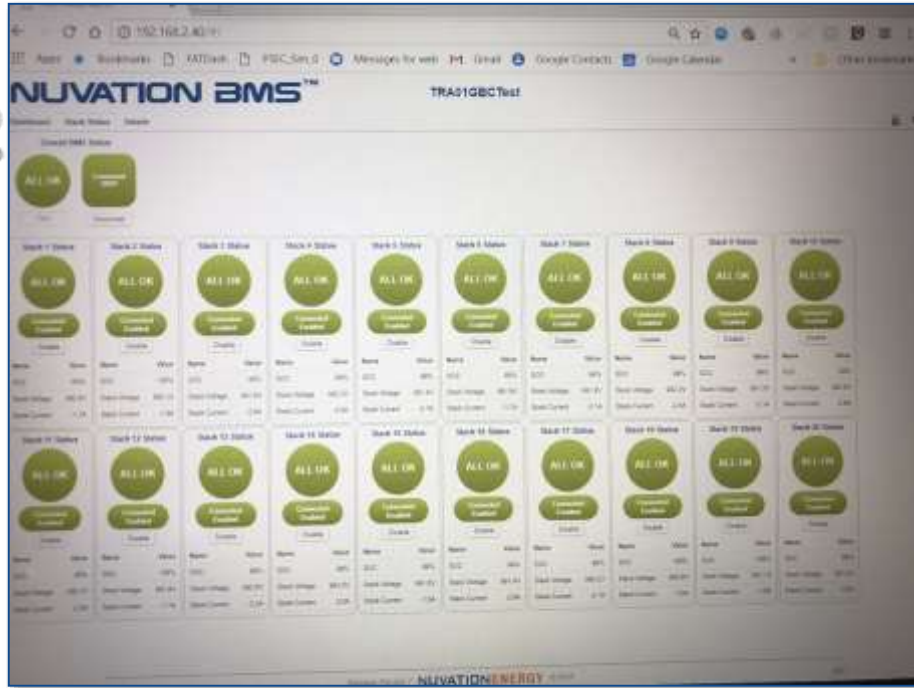


NUVATION
ENERGY

NUVATION ESS IN THE FIELD



NUVATION ESS IN THE FIELD



NUVATION BMS IN THE FIELD

Bright Power - Via Verde - New York City



- 222 unit, 300,000-square foot building in the Bronx, NY
- Incentive compliant with NYSERDA's Multifamily Performance Program (MPP) New Construction (NC) Program
- 66 kW PV system, heat recovery ventilation, high performance windows, LED lights etc.

NUVATION BMS IN THE FIELD

Bright Power - Via Verde - New York City



- GS Battery SLR1000 (lead batteries) with Nuvation BMS
- Three ESS installations
 - Daily cycling, Demand response, UPS
- Cell level battery management
 - Voltage, Temperature, Current, SOC/SOH
- Nuvation integrated battery management solution

NUVATION BMS IN THE FIELD

Bright Power - Via Verde - New York City



Nuvation integrated battery management solution

- Stack Switchgear
- Energy Control Panel
- nDisplay Operator Interface

NUVATION BMS IN THE FIELD

Why a BMS for a lead battery ESS?

- Energy Storage Installations in New York require Certification to UL1973 or field certification
- UL1973 is an extensive set of testing to ensure safety of an Energy Storage System (more on this later)
- Lead batteries with off-gassing cannot pass UL 1973 without a BMS
- GS Battery and Nuvation collaborated to create an Energy Storage System of GS Battery's SLR1000 and Nuvation's BMS that
 - Passed field certification with CSA
 - Satisfied the New York Fire Department
 - Allowed the project to proceed with the New York Department of Buildings

• Project Objectives

- Comply with local and national codes and standards, regulatory environment and Authorities Having Jurisdiction (AHJs)



NUVATION BMS IN THE FIELD

- Encell - Nickel-Zinc (1200 AH cells), 600VDC / 180kw / 460 kWh Indoor ESS for demand charge management
- CivicSolar - Lead - Island near Panama, PV + Storage, retrofitting existing batteries to Nuvation BMS + adding GS Battery stacks to expand capacity. Expanding storage from 1.5MWh to 2MWh
- Iron Edison - LFP - 400Ah ESS for residential off-grid microgrids
- Canadian utility - LFP - Grid-attached ESSes, 1000VDC, 600 kW / kWh per ESS
- US Navy ship - Lead monoblocs - hybrid propulsion system, achieved efficiencies to drive ship off 1 turbine instead of 2



MEV - MUTANT ELECTRIC VEHICLE

- TechnoGecko, FKA DiscoFish
- Heterogeneous second life Nissan Leaf modules provided by Spiers
- Motive pack: 40kwhr 4 stack system of 14s8p, 52V, Nuvation Low Voltage BMS
- Load shifting pack: 15kwhr, single stack, 350V, Nuvation High Voltage BMS
- Plug in hybrid: onboard 100G propane tank for generator and fire effects



NUVATIONENERGY

PROVIDING POWER ENGINEERING
SOLUTIONS SINCE 1997

*Accelerate Your Energy
Storage Project*



info@novationenergy.com



novationenergy.com



855-261-0507



ENERGY
MANAGEMENT
PRODUCTS



ENERGY
STORAGE
SOFTWARE



BATTERY
MANAGEMENT
PRODUCTS



ENERGY
STORAGE
SYSTEMS