Energy Storage Systems Engineering Services

Design Consulting  •  Prototyping  •  Systems Integration
Battery Management  •  Custom Hardware and Software

nuvationenergy.com
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Energy Storage Systems Engineering

Nuvation Energy provides a range of consulting, design, and system integration services to organizations designing and building energy storage systems. Our clients range from manufacturers of custom battery packs in the kilowatt range to developers of megawatt-scale energy storage systems.

From Requirements Definition to Field Installation

Nuvation Energy provides support during all stages of your energy storage product development. This includes consultation on initial design and selection of components, transitioning from prototyping to volume production, supply chain management, and hands-on engineering support during system bring-up in the field.
Energy Storage Systems Development Services

- Research and selection of power conversion system
- Selection or development of site controller
- Selection of communications hardware and software
- Data logging software development
- Data analytics integration
- Supply chain management
- Design for thermal management
- Container specification and selection
- ESS acceptance test plan development

Battery Stack Development Services

- Custom battery rack design
- Battery cell characterization and selection
- Battery stack topology design
- Battery module/tray development
- Combiner box design
  - Power circuit design
  - Contactor selection
  - Current shunt selection
- Power system design for black start and jump start
- Design for thermal management
- Stack acceptance test plan development
Accelerate Your Energy Storage Project

Nuvation BMS™ is a highly configurable and chemistry agnostic off-the-shelf battery management system that can be used in both small- and large-scale energy storage systems. With over 1000 configurable settings, Nuvation BMS™ drastically reduces your energy storage project development effort by providing an off-the-shelf BMS that has been designed from the ground up to utility-grade standards. Product options range from an 11-60 VDC BMS for low-voltage applications to a modular 1250 VDC battery management system that can manage megawatt-scale containerized storage.

- Detects overheating, overcharging, and overdischarging and takes corrective action
- Dual independent processors monitor each other to identify potential unsafe/faulty operation and can be configured to open the contactors in the event that one processor fails, to prevent battery cell damage and unsafe operation
- High measurement accuracy improves system reliability and up-time
- Can be powered from an external power source and measure cells from zero volts
- Remote access to battery performance data and configuration controls via Web browser
- BMS firmware updates can be rolled out over Ethernet
- High data throughput enables the BMS to function as a data analytics gateway
- Conformance with the MESA-Device/Sunspec Energy Storage Model enables it to be easily integrated with other MESA-conformant energy storage hardware
- For clients who need additional customization, Nuvation’s BMS engineering team provides client-specific hardware and software customizations

MESA Conformance

Nuvation BMS™ is conformant with the MESA-Device/Sunspec Energy Storage Model. MESA (mesastandards.org) conformant products share a common communications interface that exposes all the data and control points required for operating an energy storage system. This enables Nuvation BMS™ to be integrated with other MESA-conformant energy storage hardware or software without the need for custom middleware.
Power Engineering and Electronic Design Services Since 1997

Nuvation Energy leverages the power engineering and product design expertise of Nuvation Engineering to deliver high quality battery energy storage solutions.

Nuvation Energy leverages the power engineering and product design expertise of Nuvation Engineering and our relationships with leading component vendors to deliver high quality energy storage solutions to our clients. In operation since 1997, Nuvation Engineering has completed over 800 electronic design projects. We create highly complex products for environments such as deep sea exploration, space systems, military vehicles, scientific research, and manufacturing facilities.

Nuvation Energy customers are supported by a team of senior power electronics and BMS design engineers who provide hands-on support with system integration and configuration, firmware update roll-outs, and custom energy management engineering services. Our project management and design methodologies have been refined over two decades and include internally developed toolsets and supply chain management processes.

All product development is performed in Canada and the United States.

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