

CLEAN ENERGY STORAGE SOLUTIONS



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At SmartGrid, the goal is to accelerate the integration of renewable energy, replacing polluting power generation technologies, such as diesel generators, with innovative and easily-scalable battery energy storage systems.

A SmartGrid battery energy storage system in a 10 ft container: A fully charged SmartGrid 500 kWh battery system can provide enough clean electricity for 15 full charge cycles of a small excavator.



The Netherlands-based company was founded in 2019, as an offshoot of Super B Lithium Power, and specializes in the production of high-quality lithium batteries. The concept for container-based battery energy storage systems came about through a project to increase available grid power at the port of Arnhem, Netherlands, using a combination of batteries, wind, and solar energy. The challenge was to develop an energy system capable of providing grid support and stability.

To model the system, SmartGrid teamed up with experts at Controllab, who introduced them to Bachmann's robust hardware and open software platform for PLC systems. Using the expertise gained on the Arnhem port project, the team at SmartGrid decided to further develop the concept of mobile battery storage systems.

Challenging development

"The aim was to deliver a fully-functional mobile system, capable of providing grid support and delivery, ready for use on the balancing energy market", explains Harry Roewen, CTO of SmartGrid. "And it all had to fit into the smallest possible space."

Achieving this required a combination of various technologies, such as inverter systems and batteries. The developers at SmartGrid also had to ensure that the control logic maintained batteries in good condition for many years. "Proper battery usage: preventing overcharging, under-charging, or even deep charging is not a trivial matter. We had to consider many different parameters," says Roewen. For grid support the team at

SmartGrid relied on Bachmann grid measurement and protection modules. The modules provide safe, reliable, and rapid measurements of all relevant values in three-phase electrical networks, as well as several monitoring functions for generator and grid protection. "We are particularly happy with the highly-accurate measurements provided by the grid modules. It is important to know exactly what goes in and out of the system – something we guarantee to our customers", says Michel Bodegraven, Sales Operations Lead at SmartGrid.

A crucial phase in the project was the development of an intuitive and user-friendly graphical user interface, for straightforward system set-up and control. Combining all the required functionalities posed a significant challenge.

Innovative results

The result of all that hard work is a smart and flexible container-based battery storage system which fits into 10 or 20 ft containers. The modular system allows the flexible addition of inverters and batteries: anything from between a few kilowatt-hours to several megawatt-hours. And containers can also be combined into larger systems – either on the AC side for more power, or on the DC side for more capacity.

High potential for a variety of industries

Designed according to the highest safety standards, SmartGrid battery storage systems are a robust and

reliable source of clean energy. This makes them an ideal solution for many industries aiming for to zero emissions. Many governments have already restricted the use of diesel generators for energy supply, for example, on construction sites and at outdoor events. But SmartGrid products are also well suited to supporting the stability of the existing grid.

Demand for their products is growing rapidly, and along with it, the demand for a number of new features. With this in mind, it was important for SmartGrid to choose the right partner. "Meeting the people at Bachmann and getting to know the company's culture was very important to us", explains Roewen. "We chose Bachmann because we need a sustainable partner to ensure our products stay ahead of the competition."

SMART GRID B.V.

- Founded in The Netherlands in 2019 as an offshoot of Super B Lithium Power, a manufacturer of lithium batteries
- Part of Koolen Industries, the Dutch clean energy solutions conglomerate
- Develops and builds mobile battery storage systems for clean energy provision

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