SIEMENS

Totally Integrated Power

SIESTORAGE
supporting microgrid operation

The challenge: Improving efficiency and quality of service

Whether located on true geographical islands or simply isolated within an industrial or infrastructure complex, microgrids can either be connected to the distribution grid or not, but in both cases must be self-sustaining and be able to run independently. Microgrids often contain a complex mix of variable and intermittent renewable energy and slow-to-respond diesel generation that, due to ramping, runs far from optimum efficiency; making it more costly to run and with higher emissions. Microgrid operators therefore face the challenge of keeping the grid stable and providing good quality of service whilst at the same time minimizing costs and reducing pollution.

The solution: SIESTORAGE energy storage system

SIESTORAGE offers a reliable alternative power supply solution, being more economic and resource-efficient at the same time. The system comprises very fast Li-ion battery technology as well as cutting-edge power electronics and automation to provide fast and accurate response services. SIESTORAGE can be seamlessly integrated into SCADA energy management and distribution management systems as well as into building or plant automation systems, allowing monitoring and programmable control that complies with operational or grid rules.

SIESTORAGE benefits from having a flexible modular design for sizing and scaling (from kW/kWh to MW/MWh sizes), and its redundant system architecture ensures a continuous and reliable power supply.

SIESTORAGE is supported by a comprehensive end-to-end expertise, including grid analysis, business case development, project planning, manufacturing, system integration, commissioning, and services. It can be installed in E-Houses, existing buildings, or even standard shipping-style containers.

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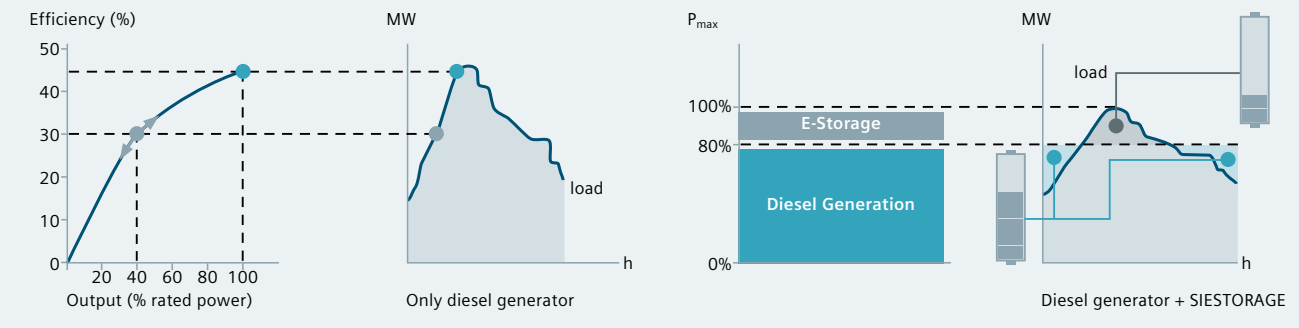
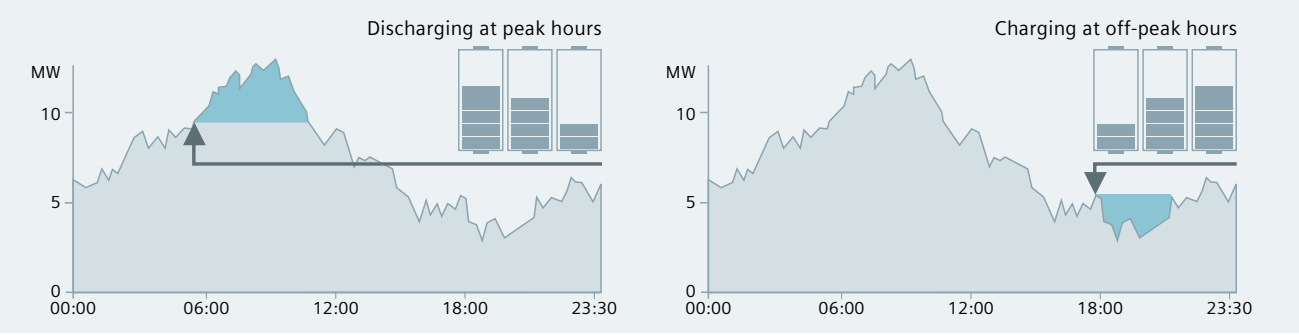


Example of how SIESTORAGE optimizes the diesel generator performance



Example of how SIESTORAGE helps to improve peak load management and cost efficiency by balancing supply and demand

Applications and customer benefits

SIESTORAGE enables multiple applications for microgrid operators while offering considerable economic benefits over its operational lifetime.

Peak load management

Managing peaks and congestion is a huge challenge for distribution network operators, yet, for microgrid operators, this challenge is even worse, as they are not always able to source additional power or access market-based balancing services. SIESTORAGE offers a way for microgrid operators to optimize energy utilization by storing energy during off-peak/low demand times and injecting energy to support the load during high demand times, thus helping to keep the balance between supply and demand at all times.

Greener alternative to back-up diesel generation

Rising fuel costs and concerns over pollution lead operators to seek greener and more reliable alternatives to back-up generation. SIESTORAGE can replace back-up diesel generation or can be co-located to it – with low operational costs, in order to reduce ramping and ensure better running efficiency. By storing power during times of low load and injecting to support peaks, smaller machines can be used and, because they run closer to their operational design characteristics, they run more efficiently and with less pollution.

Optimized black start capacity

Should the microgrid experience a blackout, even if renewable energy is available, it cannot reconnect to the grid without a reference voltage. SIESTORAGE can provide black start functionality; by being online, and charged and designed with both active and reactive power components, it can provide a very fast to respond, reliable solution.

Integration of renewable generation

SIESTORAGE also helps microgrid operators to integrate power generation from renewable sources. SIESTORAGE compensates the volatility of renewable sources by either storing energy to be injected at a different time when demand is higher, or by quickly charging and discharging power to respond to surges and dips in renewable power availability thus ensuring a smooth output to the load. Its programmable and controllable fast response time improves matching supply and demand.

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