Microgrid energy storage vienna

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Nine years later, a project is being initiated at the Siemens City site, once again with SRE as the innovative developer, and again with a number of unique selling points. "Just as the new main building on the corporate campus represented the future of sustainability and energy efficiency for non-residential buildings at the time, this new project points the way to the future of smart energy management solutions," states Franz Mundigler, head of Central and Eastern Europe (CEE) for SRE.

Emerging electrification requirements such as e-mobility will place greater demands on the grid. As electric vehicles (EVs) become more commonplace, drivers will be charging their cars at home, at work, at shopping centres and gas stations - everywhere they go.

At the same time, maintaining resilience will be a growing challenge. Renewable energy sources are becoming a bigger part of the energy matrix, but fluctuations in availability need to be balanced out by other sources, or through more efficient battery storage systems.

"Energy transition is picking up speed and there is a bigger intake of renewables, so businesses, campuses and local communities can see fluctuating power supply," says Robert Klaffus, CEO of digital grid at Siemens. "Prosumers, who both produce and consume energy locally and can feed power back into the grid, are increasing in number, and that is one reason why grids are becoming more complex.

"In developed economies, there are many energy efficiency initiatives under way to reduce overall energy consumption, but the growth of e-mobility, as well as electrical heating and cooling, will lead to a significant increase in electrical demand. Meanwhile, in developing economies, power consumption could rise in double-digit rates each year. For remote communities, islands, or for specific industrial plants, it is important to incorporate local sources of renewable power generation and that is where the microgrid comes in."

Microgrids reflect the growing trend of communities, companies and utilities working together to build resilient, flexible power systems that balance local power consumption, generation and storage. Able to operate as part of the traditional grid, independently, or both, they revolutionise the way energy resources are managed.

"Anywhere power supply can be unreliable - in remote mining operations, island communities, industrial locations, or places vulnerable to adverse weather events. Local renewable generation and storage can bring down carbon emissions, increase reliability and reduce costs," says Klaffus.

Small wind turbines and photovoltaic (PV) generation installations are already feasible technologies for local grids, and as the costs of PV and battery storage come down, they will play a larger role in the overall energy mix, even if a traditional grid connection is maintained as back-up.

"We will see a lot more demand for microgrids because, with the technology that we have available, they are the best way to combine the benefits of multi-source generation - efficiency, reliability and lower carbon emissions," says Klaffus.

Key to their success is the ability to balance local inputs, power from the national grid, and local consumption. As the matrix of power sources expands, the demand from EVs and other electrified systems grows, and we progress along the journey of energy transition, managing that complexity efficiently will be of paramount importance.

To steer that process, Siemens has developed its microgrid controller. Based on the open SICAM platform, a small, ruggedised piece of hardware - compact and ideal for harsh conditions - that optimises supply and demand within a local microgrid. This 20cm cube is the brain to run the microgrid.

"It does everything you need to operate a microgrid," says Klaffus. "It can operate seamlessly between the different in-feeds - storage, local generation and the grid connection - according to the parameters specified by the operator to suit local needs. It can monitor the state of battery charge, it can perform peak shaving to level outpeaksin electricity use by power consumers, provide blackout warnings and much more.

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