



Abb smart grid

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ABB's line of devices and technologies supports microgrid deployments and ...

Automating the secondary distribution network is a key contributor and a ...

At CIRED 2023, which took place 12-15 June in Rome, ABB demonstrated why ...

These solutions lie in smart grid investments that maximize ROI by ...

A more intelligent grid, including smart energy management, is important to unlocking the potential of renewables. This goes beyond power lines, encompassing cutting-edge technologies that revolutionize the way we generate, manage and distribute energy.

Traditional grids were designed for the one-way, constant flow of electricity from centralized natural gas or coal-fired power plants to end users, whether consumers or businesses. By contrast, renewable energy sources are variable and intermittent.

Solar panels, wind turbines and even electric vehicles (EVs) with bi-directional charging capabilities are becoming important pieces of the energy puzzle, with end users no longer just consuming electricity, but also generating it. An intelligent grid acts like the brain of this new energy system, integrating these distributed energy resources (DERs), anticipating fluctuations in renewable energy production, storing excess power - with battery energy storage systems or hydrogen, for example - when generation is high and distributing it when demand rises.

A smart grid can not only forecast energy needs and optimize power flows in real-time, but also seamlessly integrate the fluctuating output of renewable energy sources. Sensors strategically placed throughout the grid collect data on voltage, current and power quality. Advanced algorithms are then used to identify patterns, predict energy demands and suggest instant adjustments based on energy loads and the watts available.

In industry, ABB's distributed control systems (DCS) play a critical role in ensuring reliable power supply, even with the intermittent nature of renewable sources like solar and wind. These systems constantly monitor power demands in real-time and adjust energy flows accordingly within an industrial facility - boosting electricity to a critical part of the production while reducing it for a lower-priority loads.

Highlighting the potential of smarter grids for renewable energy integration, ABB Ability(TM) OPTIMAX(R) technology is supporting Trondheim, Norway's aim to become a "climate-positive" city. This solution helps the city manage energy use in buildings, optimizing energy consumption and balancing supply and demand with a high penetration of renewables.



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Trondheim's local energy trading platform, where surplus green energy can be sold, further demonstrates the potential for a decentralized and sustainable energy future. This project serves as a real-world example of how ABB's technologies can empower communities to not only integrate renewables but also create a smarter, more efficient energy ecosystem.

The Faroe Islands, a remote archipelago in the North Atlantic, have set an ambitious goal: transitioning to 100 percent renewable energy. However, integrating variable renewable sources like wind and solar raises the prospect of unstable power supply. This is where ABB's innovative synchronous condenser technology comes in.

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