

ABB microgrid solution in Johannesburg, South Africa

Providing uninterrupted power supply



ABB is a pioneer in microgrid technology with a track record of more than 30 global installations that are operated commercially for a diverse range of applications such as remote communities, islanded electrical grids, utility grid support and research and industrial campuses. Power shortages, availability of renewable energy sources like wind and solar, fossil fuel price volatility and environmental concerns are leading to the search for sustainable solutions and there are thousands of facilities across South Africa and the continent that could leverage microgrid technologies to address these challenges. By integrating renewables into the grid, the potential loss of power can be avoided.

Benefits:

Reliability – uninterrupted power supply

The combined installation of the Microgrid Plus System and the PowerStore™ solution will enable continuity of electricity supply even when the main power supply is disrupted. The supply will also maintain its stability during transitions from grid to island operation. By utilizing this technology buildings, plants and factories can be kept running as normal through any power outage enabling increased productivity, security and cost efficiency.

Integration of renewables – leveraging the “Power of the Sun”

This solution will also optimize renewable energy contribution to the Longmeadow facility and the CO₂ emissions can be reduced by over 1,000 tons/year. The innovative system with fully grid-connected and off-grid functionalities will help maximize the use of clean solar energy and ensure uninterrupted power supply. The benefits of a maximization of solar energy usage also provides cost-effective access to high-quality power while minimizing environmental impact by fulfilling requirements traditionally fulfilled by diesel generation.

About the Longmeadow project:

Uninterrupted power supply is critical for Africa and it is specifically important for our commercial industries and factories to operate - even during the event of load shedding. By integrating renewable energy resources like sun, wind and hydro into the power grid, the potential loss of power can be avoided. This microgrid solution serves the power demand of ABB's factory and offices by using renewable energy, even in the event of load shedding. It has full on-and off grid functionalities and prioritizes renewable energy before using the existing diesel generators. This environmentally friendly solution contributes to a reduction of carbon emissions substantially reducing the operational cost of the industrial complex. Microgrid technology is available now and it is likely to be a critical piece of the smarter energy future.

Longmeadow, Johannesburg, South Africa

The microgrid solution in South Africa is constructed for the 96,000 square meter Longmeadow facility that is hosting ABB South Africa's headquarters as well as manufacturing facilities with around 1,000 employees. The microgrid solution consists of a 1 MVA/380 kWh PowerStore, a battery-package and Microgrid Plus, ABB's dedicated control system for microgrids, which together with a 750 kW rooftop photovoltaic (PV) field have been added to the existing back-up solution. The microgrid technology deployed at Longmeadow is fully containerized and pre-designed for this type of application.

The solution:

Rooftop PV plant

The Microgrid Plus System is a specially designed distributed control system that will ensure efficient and reliable power flow management in order to reduce consumption of grid electricity and fuel and optimize use of renewable energy while also guaranteeing optimum loading and spinning reserve in fossil fuel generators. The system is modular based and the distributed logic of such system will enhance reliability and scalability for any future expansions.

PowerStore

The PowerStore is a compact and versatile grid stabilizing generator with the main purpose of stabilizing the power systems against fluctuations in frequency and voltage. In order to maintain the voltage and frequency the system stabilizes electricity networks by rapidly absorbing/injecting power. The battery used, includes state-of-the-art inverters and virtual generator control software and the solution is applicable to isolated grids or in grid support mode.

Remote Service

In line with the Internet of Things, Services and People (IoTSP) approach, a cloud-based remote service system will be used for the operations and maintenance.

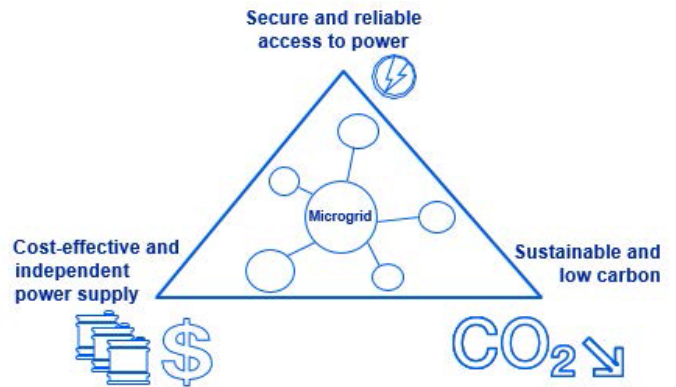


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