

Microgrids egypt

ComAp, together with our partner, United for Electromechanical Supplies, provided a Hybrid Microgrid solution for a community development project in New Cairo, Egypt, to upgrade the community's power supply system through the implementation of renewable energy, reducing its dependency on diesel. This project was run by the Better Home Group, an Egyptian real estate investment and development group that specialises in developing sustainable, world-class communities.

As a company that takes pride in developing modern and sustainable residential areas, Better Home wanted to ensure that their final build would have a low environmental impact. As such, they knew it would be necessary to take the appropriate steps to implement a sustainable source of energy to reduce the community's diesel consumption.

Better Home decided to upgrade their power supply system by installing 500 KVA photovoltaics with four Huawei KTL inverters. This system would be connected to both a standby 550 KVA gen-set powered by a Cummins electronic engine and the main grid transformer in the future, combining the use of renewable solar energy with a traditional gen-set.

To achieve this, United for Electromechanical Supplies, with the support of ComAp, implemented a hybrid control panel operated by ComAp's IntelliGen 500 Microgrid controller alongside the IntelliFieldbus Gateway. This facilitates the connection between the different sources of energy and ensures that the variable energy demand is met.

The IntelliGen 500 Microgrid monitors and controls all available power sources to meet the load demand. ComAp's control panel communicates with the four inverters via Modbus protocol. This facilitates control over inverter performance, allowing for the ramp-up/ramp-down of both active and reactive power based on given conditions. To enable remote monitoring capabilities, each unit is registered with ComAp's WebSupervisor fleet management platform, allowing for easy remote access on devices via the WebSupervisor app. Additionally, the control panel can be accessed via the local network or internet using a customised IntelliSCADA software.

"United for Electromechanical Supplies designed and implemented the plant control system, ensuring the highest level of efficiency and reliability. Moreover, their technical support was very quick and efficient."

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The Egyptian government plans to develop the Nubian villages in Wadi Karkar, where 8 villages will be established on an area of 400 acres, and all services will be provided there including local power networks to meet the electrical energy requirements of approximately 2024 Nubian homes. One of these areas is governmental villages called the new Nubian city of Wadi Karkar. These villages are located in Wadi Karkar, which is 16 km from the lake Nasser in the desert.

The study compares the utilization of different renewable energy sources, particularly solar PV systems, and small-scale wind turbines. By assessing their performance and determining the optimal utilization between the two sources, the researchers provide practical guidance on selecting the most suitable renewable energy option for the understudy areas.

The current study analysis helps maximizing the utilization of available resources and contributes to the overall efficiency and effectiveness of the microgrid systems.

Highlighting the impact of solar PV mechanical tracking systems on the overall cost and performance of the energy system. By examining different tracking systems and their influence on critical factors such as NPC, REF, additional electrical power, and GHG emissions

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