EcoStruxure™
Innovation At Every Level

Efficient green power for islandable microgrids

EcoStruxure™ Microgrid Operation

EcoStruxure™ Microgrid Operation efficiently and proactively manages microgrid power production and demand to prioritize renewable energy.

EcoStruxure Microgrid Operation is a high-performance, resilient, scalable solution for microgrids. It is capable to provide advanced power control and management functionalities with a simple system structure based on:

- A microgrid controller.
- A microgrid SCADA/Local HMI.

Application cases

EcoStruxure Microgrid Operation applies to two microgrid typologies:

- Grid-connected microgrids with islandable capability.
- Island microgrids.

1 - DER: Distributed Energy Resources
2 - EMS: Energy Management System

Product at a glance:

- Maximizes renewable energy use.
- Simple, robust and scalable.
- Centralized topology engine.
- Compatible with existing microgrid DER[1] control solution (brownfield).
- Advanced cybersecurity features.
- Shorter commissioning time and cost.
- Easy operation and maintenance.
- Grid-connected energy optimization by adding EcoStruxure™ Microgrid Advisor (Schneider Electric EMS[2]).

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Microgrid Controller

Continuity and stability

Constantly monitors the grid and automatically switches the operation mode of the microgrid (grid-connected or islanded mode) in case of abnormal electrical conditions.

Synchronizes load voltage and frequency to preserve microgrid power supply continuity and stability when disconnecting and reconnecting to the grid.

Intelligent

Performs dynamic electrical topology computations and measurements in real time to overcome challenges in the microgrid's changing electrical topology.

Manages microgrid DERs' (energy sources, controllable loads and energy storage systems) operational priorities based on customer strategies and needs.

Sheds non-critical loads when the microgrid power production is lower than the demand.

Power reliability and protection

Adjusts protection relays and the grounding/earthing system settings to the current microgrid mode (grid-connected or islanded).

Connectivity and interoperability

Communicates with any type of DER and intelligent electronic device using IEC 61850 standards (also IEC 60870-5 and Modbus).

Interacts with EcoStruxure Microgrid Advisor™ (Schneider Electric EMS or third party's) by retrieving weather forecast information, historical DER energy data, day-ahead electricity tariff rates to dynamically control microgrid DERs and optimize facilities performance.

Resilience and high performance

Advanced energy management functionalities like load sharing, load shedding, black start, load restoration and battery energy storage system (BESS for photovoltaic production) are quickly and simply managed with EcoStruxure™ Microgrid Operation.

Cybersecurity

Advanced cybersecurity features help to comply with standards: NERC-CIP, IEC 62351-8 RBAC, IEC 62443-2-4 , BDEW, ANSII, IEEE 1686, etc.:

- Individual Role-Based Access Control.
- Active directory synchronization.
- System security logs recording.
- Encrypted communication to SCADA/EMS.
- Malware protection and OS/application hardening.

A scalable solution to easily respond to customer's microgrid
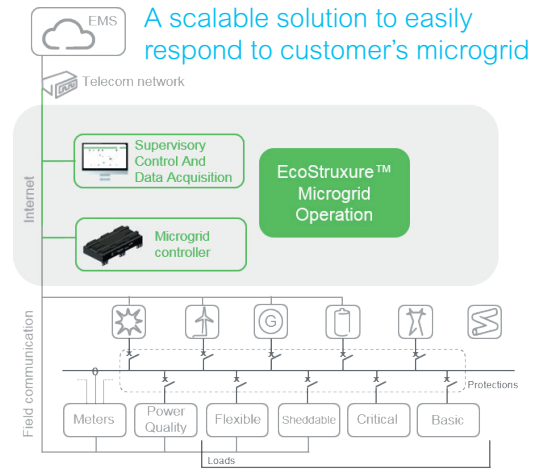
Microgrid SCADA/local HMI

Dedicated user-friendly interface

- Enables control commands/functions over the participants of the microgrid.
- Displays information: machine status, notifications, power flows, circuit breaker status, etc.
- Provides millisecond time-stamped sequence of event recording to enable event reconstruction and analysis.
- Custom event system on demand for local and cloud service needs, available via mobile device and workstation.

EcoStruxure™ PowerScada Operation is the preferred SCADA.

EcoStruxure™ Microgrid Operation can also leverage third-party SCADA

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