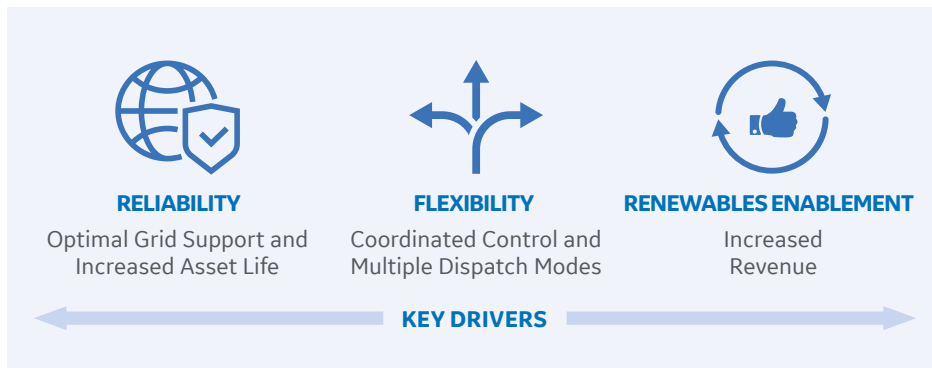GE
Grid Solutions

GridNode DER Management

Energy trends of increasing renewable penetration and decentralization of generation assets create new industry challenges. These challenges include integration, coordination, and maximizing return-on-investment (ROI) on distributed energy resources (DERs), while providing network reliability and flexibility.

GE's GridNode DER Management solution enables utilities and developers to easily integrate renewable energy resources.

The GridNode DER Management solution includes the control and automation functions to manage Active and Reactive Power, Power Factor, and Voltage at the point of interconnection for your Renewable Energy Resources.

RELIABILITY	FLEXIBILITY	RENEWABLES ENABLEMENT
Optimal Grid Support and Increased Asset Life	Coordinated Control and Multiple Dispatch Modes	Increased Revenue

KEY DRIVERS

Key Benefits

- **Improve Reliability** by exploiting renewable generation capabilities in order to provide optimal support to the grid.
- **Ease of deployment** by utilizing GE's configurable GridNode DER Management Solution
- **Increased revenue** through equitable dispatch across renewable generation assets and providing the capability to provide ancillary services to the grid such as Reactive Power support.
- **Energy cost reduction** through a solution that can efficiently manage, optimize and integrate low cost renewable onto your grid.
- **Life extension** by reducing the number of operations on distribution level voltage transformers and capacitor banks through the optimal and flexible dispatch of your renewable generation assets.

GridNode DER Management
DISPATCH MODES
- Voltage
- Reactive Power
- Active Power
- Power Factor

CONTROL CAPABILITIES
- Equitable Dispatch
- Ramp Rate Control
- Volt-Var Control
- Feeder Controls

Solutions and Services
- Engineering and consulting services
- Controls and HMI development
- Protection, control, automation, and communications products
- Testing including Hardware-in-the-loop (HIL)
- Integration and on-site services
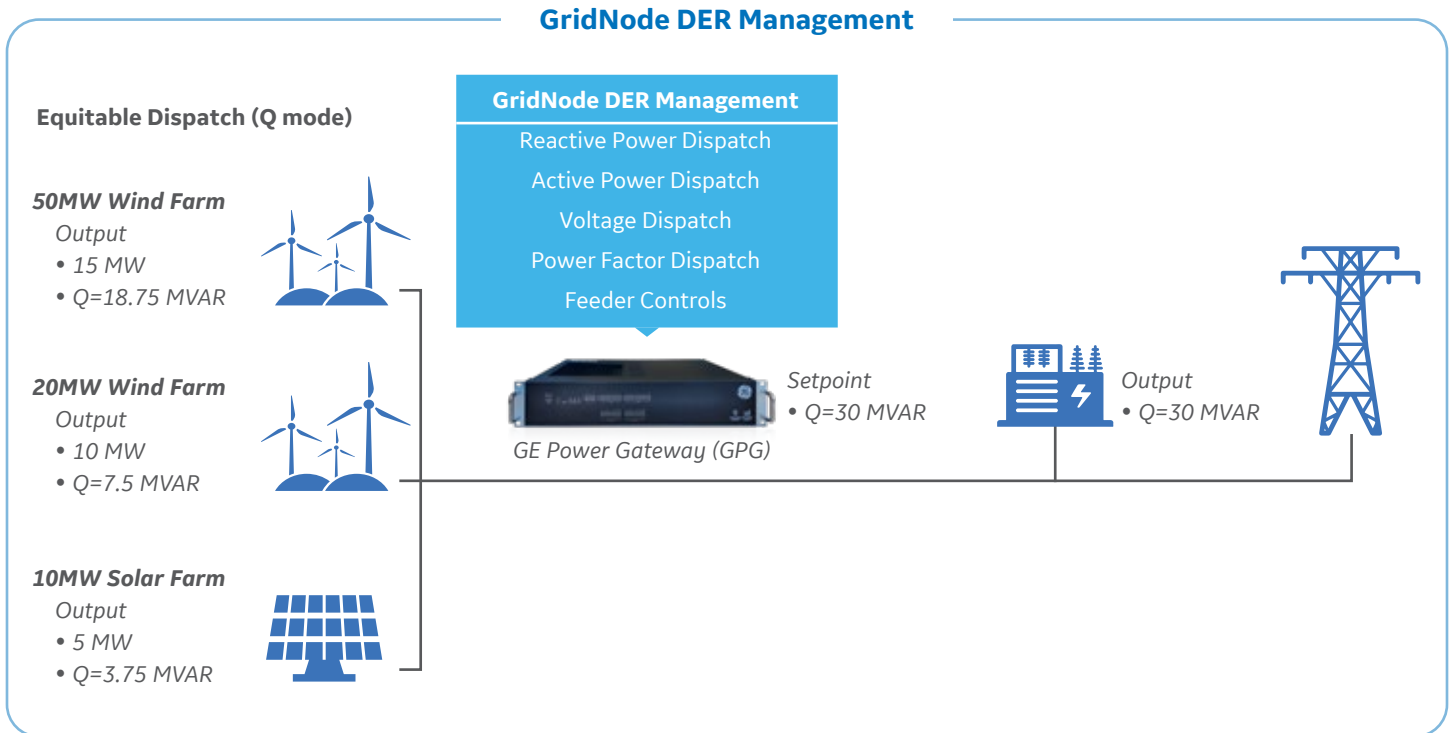- Cyber security solutions
- Maintenance and support

Communications
- IEC 61850 Ed.1 and Ed.2
- C37.118 and IEC61850-90-5
- IEC 60870-5-101/104
- DNP3 and Modbus RTU/TCP
- SNMP Client
- IEEE 1588, Irig-B and NTP
- IEC 6070-5-103
- OPC UA, DA & AE
- EGD
- MQTT
- IEEE 2030.5 *coming soon

GridNode DER Management Solution Architecture

GE's GridNode DER Management solution monitors and controls renewable energy assets from the point of interconnection (POI). Capabilities include being able to receive a set-point (P,Q,V,or PF) for the POI and control the connected DER assets to comply by dispatching them equitably, taking into account the network parameters.

GridNode DER Management

Equitable Dispatch (Q mode)

GridNode DER Management
Reactive Power Dispatch
Active Power Dispatch
Voltage Dispatch
Power Factor Dispatch
Feeder Controls

50MW Wind Farm
Output
- 15 MW
- Q=18.75 MVAR

20MW Wind Farm
Output
- 10 MW
- Q=7.5 MVAR

10MW Solar Farm
Output
- 5 MW
- Q=3.75 MVAR

GE Power Gateway (GPG)

Setpoint
- Q=30 MVAR

Output
- Q=30 MVAR

DER Management Solution

GridNode DER Management runs on the GE Power Gateway (GPG) hardware platform.

GPG Hardware Specification

- Certification: IEC 61850-3, IEEE 1613, CE, FCC Class A, UL, CCC

- Mounting: 2U/19" Rack mount

- System Design: Fanless, with no internal cabling

- OS Support: RTOS VxWorks and Windows Embedded.

- Power Supply: Redundant 100 ~ 240 VAC (47 ~ 63 Hz) DC: 100 ~ 240 VDC DC: 48VDC with isolation protection.

- PRP & HSR Ethernet redundancy.

- Two expansion slots to increase serial and Ethernet port types and quantity.

GEGridSolutions.com

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