DISTRIBUTED ENERGY RESOURCE MANAGEMENT SYSTEM

ABB Ability™ DERMS
Operational confidence.
ABB Ability™ DERMS
Distributed Energy Resource Management System

As the number of intermittent renewable and distributed energy resources (DERs) integrated onto the grid increases, advanced digital solutions are required to manage the challenges posed by increased network complexity and load variability.

Industry challenges

Widespread development of renewable energy technologies coupled with regulatory and policy directives has seen increasing levels of distributed generation connected to the distribution network. Power distribution networks are being transformed by the connection of DERs such as rooftop solar, electric vehicles and energy storage. This increasing complexity of distribution networks creates operational challenges for network or system operators.

Solution

ABB Ability DERMS enables electric distribution companies and system operators to efficiently manage the entire lifecycle of distributed energy resources from registration to optimization, their control, measurements and verification to achieve a safe, secure and efficient operation of the electric distribution network.

DERMS is a module of ABB Ability Network Manager ADMS and shares the same synchronized as-operated network model and geospatial operator environment. It’s a digital solution that monitors real-time grid conditions and leverages advanced algorithms to optimize and schedule a mix of both utility-owned and grid-edge (behind-the-meter) DER assets.

Benefits

- Grid reliability and performance – significantly reduce voltage excursions and increase network reliability
- Increased feeder load factor and capacity to deliver active power
- Network visibility at the Grid Edge – gain insights to DER events and effectively monitor and control assets downstream of the substation and behind the meter
- Significantly increase network hosting capacity for DERs and achieve regulatory targets for renewable generation, with minimal investment in network infrastructure
- Reduce capital expenditure on centralized generation and realize lower operational costs offered by distributed generation
- Lower O&M costs – reduced wear on grid assets and infrastructure

By optimizing active and reactive power targets, DERMS can control and dispatch DERs in real-time enabling system operators to alleviate grid constraints quickly and efficiently. ABB’s DERMS also helps utilities integrate DERs more efficiently through a DER registration process that captures electrical characteristics and constraint points of a DER for real-time optimization and control.
How do you maintain network reliability in the presence of high DER penetration?

ABB Ability DERMS can help.
Features

- **Pre-integrated, out-of-the box with Network Manager ADMS** – Single as-operated reference network model used by both ADMS and DERMS with synchronization of state changes and power flow calculations

- **Provides network situational awareness** through a single unified ADMS geospatial control center operator environment

- **Asset agnostic** – Supports various DER and traditional distribution assets, e.g., batteries, smart inverters, capacitor banks, voltage regulators and other controllable loads

- **DER registration** – Easily capture asset electrical characteristics and profile to effectively manage DER events

- **DER forecasting** – Gain insights into future renewable generation and controllable load capacity

- **User-configurable** DER asset profile and constraints

- **Real-time DER optimization and control** – Quickly respond to network constraints by scheduling optimal mix of DERs to meet supply/demand objectives

- **High performance and scalability** – Distributed architecture enables the computation of thousands of assets on a distribution network
ABB Ability
DERMS

- Load flow analysis
- Distribution SCADA
- Single geospatial UX
- Single ADMS network model
- On-premise deployment

Capabilities
- Active power management
- Volt/VAR optimisation
- DER forecasting
- DER registration
- Grid-edge monitoring & control

Solution features

ABB Ability DERMS

Network Manager ADMS

SCADA
Advanced network applications
Outage management system
Analytics

Utility CRM/CIS

Customer portal

Real-time Communication

EV charging
Microgrid
Load control
Wind
Smart buildings
Solar
Prosumers
Storage
Distributed generation market outlook
Are you ready for tomorrow’s grid?

IDC predicts that by 2019, 30% of utilities will need to invest in DERMS to integrate externally-originated asset, market and grid data.

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Solar

In just 10 years, the world’s total solar capacity increased by an impressive 4,500%, from a mere 6.6 GW in 2006 to over 300 GW in 2016.

SolarPower Europe (SPE) forecasts that global solar installed capacity could hit 1 TW by 2021.

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In 2016 alone, global solar installed capacity grew by 50%, almost 80 GW.

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IDC predicts that through 2020, solar will drive up DERMS implementations and expansions to existing ADMS by as much as 50%.

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Facts and figures from:
1. SPE’s Global MarketOutlook 2017 - 2021
5. GTM Research’s U.S. Energy Storage Monitor: Q3 2017
Wind

Global Wind Energy Council (GWEC) estimates that the cumulative installed capacity of wind could hit **800 GW by 2021**.

GWEC projects that by **2030** wind power could reach **2.1 TW**, and supply up to **20% of global electricity**.

Energy Storage

GTM Research expects energy storage market in the USA to grow to **2.5 GW by 2022**, 11 times the size of the 2016 market (231 MW).

By **2022**, up to **52% of all battery storage** in the USA could be behind the meter.