ABB Smart Grids Projects in Germany
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Focus areas:
- Energy management
- Energy storage
- Distribution grid automation

1. Econnect
2. Green2Store
3. GRID4EU
4. RiesLing
5. SmartArea
6. MeRegio
7. T-City Smart Grids
Objectives

- Planning and optimization of the usage of local, volatile renewable generation with the purpose to charge electrical vehicles with pure green electricity

Customers & partners

- Stadtwerke Trier, University Trier, Trier University of Applied Science

ABB’s response – Smart grid scope

- Development and evaluation of generation and load management for balancing group management with Intra-Day- and Day-Ahead optimization for direct sales of renewable energy
- Integrated solution with ABB MicroSCADA and Optimax PowerFit software

Benefits

- Cost and environmentally optimal local generation and load management with optimized, high accuracy balancing group management
RiesLing – Modular, intelligent secondary substation automation

Objectives

- Development and implementation of monitoring and automation equipment in secondary substations for safe, reliable and economical operation of distribution grids

Customers & partners

- EnBW ODR, EnBW REG, T-Systems

ABB’s response – Smart grid scope

- ABB remote control and measuring equipment for power monitoring, voltage control and fault detection
- Predictive network control
- Secure, managed communication between station and control room based on Deutsche Telekom technology

Benefits

- Modular, scalable solutions for secure, economical and predictive distribution grid operation
Smart Area Aachen
Intelligent secondary substation

Objectives
- Increase distribution grid stability and observability while improving supply quality
- Development of long term cost effective distribution automation technology and products

Customers & partners
- Stadtwerke Aachen, FGH, TU Dortmund

ABB’s response – Smart grid scope
- Analysis of intelligent secondary substation use cases
- Identification & evaluation of secondary substation concepts and new voltage regulation algorithms
- Evaluation of new fault detection methods

Benefits
- Fully tested products and solutions for individual, scalable and economical distribution grid automation tasks, e.g. for measurement, voltage control and FDIR
Smart Area Aachen
Analysis and development of smart planning guidelines

Objectives
- Evaluation of innovative grid concepts and design of new planning guidelines
- Development of scenarios and grid planning guidelines for smart distribution grids

Customers & partners
- Stadtwerke Aachen, FGH, Nexans

ABB’s response – Smart grid scope
- Design of simulation models for analysis of existing and future power supply tasks
- Support in the evaluation of simulation results to set basis for changes of existing network planning processes
- Design of new grid planning guidelines

Benefits
- Fully tested and validated recommendations for new, smart grid enabled grid planning guidelines
Grid4EU – German demonstration
Autonomous, agent supported distribution grid automation

Objectives
- Design, installation and large scale test of observer and control capabilities in MV-networks for fast and robust fault detection & self-healing without SCADA interaction
- Flexible MV-networks for integration of high amounts of DER, while improving reliability and recovery times

Customers & partners
- RWE Deutschland AG, TU Dortmund

ABB’s response – Smart grid scope
- Development of autonomous agents in remote terminal units (RTU) to determine and optimize the current MV network status, e.g. by changing the grid topology
- Automatic Fault Detection, Isolation and Restoration (FDIR) initiated by communication between agents, without need for SCADA interaction

Benefits
- Autonomous observer and agent technology for very fast FDIR and self-healing functionality without need for SCADA system intervention
Green2store
Battery energy storage

Objectives

- Development and evaluation of an "Energy-Storage-Cloud" with identification and evaluation of related use cases
- Specification of storage devices with multi-purpose operation and flexible management concept

Customers & partners

- EWE Netz, BTC, Next Energy, Süwag Energie, Alcatel-Lucent, Office, Elenia

ABB’s response – Smart grid scope

- Evaluation of single and multi-purpose operation methods of storage devices with a focus on network supporting services
- Definition of requirement/functional specifications for storage device with multi-purpose operation

Benefits

- Provide proven technical and commercial selection of storage system and management software for optimal multi-purpose operation
T-City Smart Grid
VPP solution as a Software as a Service offering (SaaS)

Objectives
- Provide proven Virtual Power Plant (VPP) functionality as a Software as a Service offering
- Safe and secure management and operation of all associated tasks and communication out of the cloud

Customers & partners
- T-Systems

ABB’s response – Smart grid scope
- VPP and Demand Response Management System for peak shaving, control power offering and purchase optimization
- Aggregation of decentralized resources together with traditional plants into VPPs and disaggregation of schedules for each individual device

Benefits
- Fully scalable, secure and economical, low-entry barrier for a VPP offering based on proven products
**Objectives**
- Create a market place connecting 1,000 private and commercial energy customers with centralized and decentralized energy providers
- Minimize overall CO₂ emissions in a region

**Customers & partners**
- EnBW, IBM, SAP, Systemplan, KIT

**ABB’s response – Smart grid scope**
- Installation and operation of remote control and measurement equipment in secondary substations
- Enhanced SCADA system utilizing load and generation forecasts for predictive bottleneck and future voltage level calculations

**Benefits**
- Controllable local generation and consumption to allow highly efficient use of existing infrastructure and least effort for grid extensions
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