KUHSE ENERGY GROUP

KUHSE MICROGRID MANAGER

for public utilities

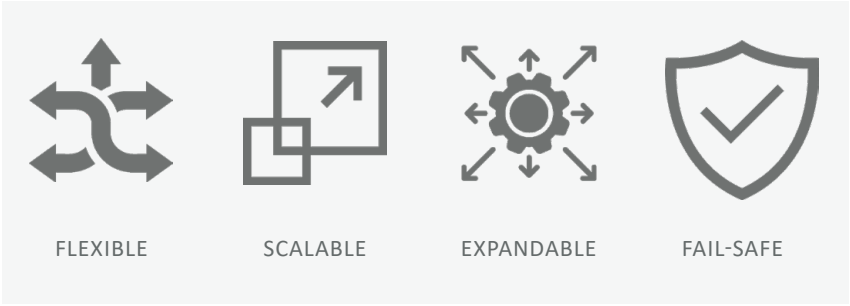
ENERGY IN TRANSITION

Energy goals of public utilities are changing. Rising energy costs, increasing risk of local grid instabilities and the growing importance of energy and emissions trading pose new energy policy challenges to utilities. These changes have a direct impact on corporate goals and require adjustments in energy generation and utilization within microgrids as well as focused optimization of energy management.

KUHSE MICROGRID MANAGER SOLUTION

Real-time control and day-ahead planning of energy flows are intelligently combined in the Kuhse Microgrid Manager solution. Real-time control increases the security of supply, while optimized dispatch planning ensures the economic and ecological performance of the energy distribution network. The optimized operating mode (optimal dispatch) is derived from the intelligent interaction of these two elements.

SUBSTANTIAL CHARACTERISTICS



KEY BENEFITS

- Increased security of supply
  - expansion of the microgrid topology
  - optimized and event-driven dispatch
  - energy autarky (island operation and black start)
- Saving energy costs
  - day-ahead planning and energy optimization
  - peak load compensation and zero feed-in operation
- Additional revenue generation
  - participation in the energy market
- Reduction of CO2 emissions
  - maximum utilization of renewable energies

FEATURES

Real-time controller

- Implementation of operating modes such as
  - black start & island operation
  - zero feed-in & grid export
- Higher-level control of energy generation systems & BESS
- Load management
- Control of energy flows through the point of interconnection
- Frequency / voltage control in island operation
- Reserve power management
- Smoothing and firming of PV and wind power

Optimizer – look-ahead planning

- Day-ahead planning (15-minute cycle)
- Selection of various planning priorities:
  - maximum use of renewables
  - peak shaving
  - minimizing grid imports during high electricity costs
  - fuel / CO2 savings
- Considering, among others
  - PV & wind forecast data
  - fuel and electricity prices
  - load profiles
  - BESS - state of charge (SOC)
  - requirements from energy market / grid operator

Interaction between real-time controller and optimizer

- Transfer of planning data from optimizer to real-time controller
- Execution of setpoint specifications and monitoring of the energy flow by the real-time controller
- Response to unplanned events
  - directly by the real-time controller
  - by switching to another planning scenario

KUHSE - YOUR GE CHANNEL PARTNER

Kuhse Power Solutions, as part of the Kuhse Energy Group, is the first value-added reseller worldwide for the GE microgrid control platform. The partnership with General Electric offers our customers significant advantages as it is designed for long-term cooperation in the areas of sales, development, engineering, and project and customer support. This applies in particular to the various application possibilities of the GE control platform and its associated cyber security solutions.

KUHSE MICROGRID MANAGER PLATTFORM

Kuhse Microgrid Manager solution runs on the field-tested GE control platform, which has been successfully implemented in various applications worldwide for many decades. These include commercial and industrial plants, PV and wind farms, microgrids as well as substations.

PLATFORM HARDWARE SPECIFICATION

- Rugged design; 19“ rack-mounted device (2U), fanless, with SSD drive(s)
- Real-time OS VxWorks 7 and Windows 10 IoT embedded with hypervisor
- Redundancy
  - hardware redundancy coupling
  - network redundancy interfaces with PRP and HSR redundancy protocols
- Interfaces:
  - Ethernet RJ45 / SFP (fiber optics)
  - serial RS232 / RS485
  - slots for I/O expansion cards and FO-Ethernet converters

COMMUNICATION & PROTOCOLS

- IEC 61850 / GOOSE
- IEC 60870-5-101/104
- Modbus RTU / TCP
- OPC-UA / DA & AE
- DNP3 RTU / TCP

CERTIFICATES

- VDE-AR-N 4110, 4120 and 4130
- IEC 62443
- IEC 61850-3
- IEEE 1613
- UL, CE, CCC, FCC Class A

Kuhse Microgrid Manager has a component certification according to VDE-AR-N and therefore meets all necessary requirements as an PPC (EZA-Regler).

YOUR CONTACT PERSON

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