A Yokogawa Company

PXiSE Energy Solutions

Product Specifications

Renewable Power Plant Controller

Maximize ROI by unifying solar, wind, and energy storage assets under one platform

The PXiSE Renewable Power Plant Controller (PPC) helps large energy generation and storage portfolio owners, developers, and EPCs optimize the efficiency and production of any combination of front-of-the-meter (FTM) and utility-scale behind-the-meter (BTM) renewable energy assets.
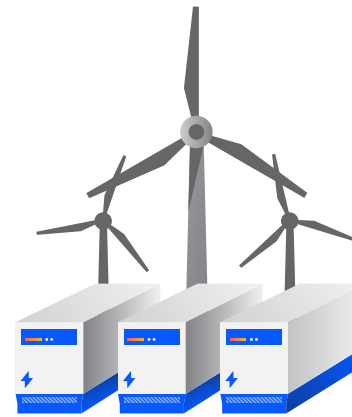
Advantages

PXiSE's PPC offers several advantages
- Integrated controls
- Reduced costs, maximized revenue
- Scalability and adaptability
- High-speed, high safety, high returns
- Combats intermittency issues

See our Renewable Power Plant Controller fact sheet or visit **pxise.com/ppc** for details.
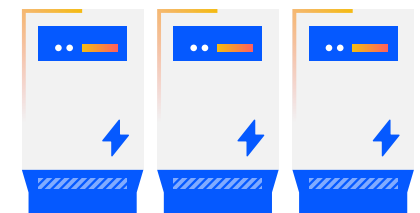
Project configurations

Wind + Storage

Solar + Wind + Storage

AC- or DC-coupled Solar + Storage

Stand-alone battery energy storage system

YOKOGAWA ◆

Functional specifications

Optimization
• Efficiency including heat rate, max renewable generation
• Storage co-optimization
• Reliability, power quality resiliency
• Power ramp rate and power smoothing

Controls
• Breaker and CAP bank control
• Curtailment
• Direct control of inverters with enforced, closed-loop feedback
• Frequency droop and voltage droop
• Shape power @ POI including ramp rate, peak shifting, hold power
• Power smoothing
  ◦ Ramp-rated real power control @ POI
  ◦ Battery SoC management and balancing
• VAR control
  ◦ Voltage and power factor control @ POI
  ◦ Automatic voltage regulation (AVR)

Control latency
• Up to 60Hz or 60x/second for data measurement, controller decision-making and dispatch

Communications
Can be sited locally or at a remote operating center
• Ethernet
• Support for redundant TCP/IP connections

Communication protocols
• Support for all major SCADA protocols including Modbus, DNP3, OPC UA, and IEC61850
• AGC/RTU interface

ISO interface
• ISO market optimization
• Charge/discharge notice
• Curtailment order, buyer curtailment order, buyer bid curtailment
• Ancillary Services dispatch

Alarms
• Standard alarm package
• Email and SMS (text) notification to specified recipients
• Varying range of detail for operators to engineers

Software specifications

Installed programs
• PXiSE Renewable Power Plant Controller (PPC)
  ◦ Accommodates stacking main/subordinate controllers for complex configurations
• OSIsoft PI System OEM license
• Microsoft Active Directory

Cybersecurity
• Certificate-based security
  ◦ Third party or self-managed certificates
• Microsoft Active Directory authentication and user access management
• Compliant with NERC requirements according to user security standards
• Fully redundant system using warm failover

Data management
• Plant data reporting and archiving
  ◦ PPC system data (PI Data Archive)
  ◦ Asset data model for organizing and contextualizing all data (PI Asset Framework)
• Standard configuration includes all required points, templates, and asset model
• User-enabled analytics

HMI
Responsive, web-based human-machine interface (PI Vision)
• Plant overview
• Substation overview
• Inverter detail
• Trackers detail
• MET stations detail
• Meter detail
• Control detail
• Alarm banner
• BESS detail (if applicable)
• PMU visualization

Hardware specifications

Computing hardware
• Industrial computer such as DELL PowerEdge 740, SEL 3355 or any Windows compatible device

Hardware integration
Hardware agnostic system is compatible with common suppliers'
• Battery management systems (BMSs)
• Energy management systems (EMSs)
• RTACs
• Remote Gateways (RIGs)
• PV and BESS inverters
• AC and DC combiners
• Wind farm controllers
• Protection relays/switchgears

PMUs
• PMU data is obtained from SEL relays and/or meters