

Smart Grid Solutions and Retrofitting for old Substations



Overview

This is an advanced power quality monitoring and events detection SCADA system. It is combined with remote monitoring and control of the electrical network apparatus, operating under a single and integrated application software and a state-of-art field data acquisition hardware capable of implementing both functions internally from a single box. The system is centralized and provides a remote web monitoring with clients. The system is mainly based on National Instrument's state of the art industry standard hardware and software technologies.

System Components

- ✓ Decentralized and integrated application
- ✓ Engineering Workstation
- ✓ Operator Workstations
- ✓ Communication Server
- ✓ Telecommunication network and SM cards
- ✓ UPS
- ✓ RTUs and subRTUs

Software Functions

- ✓ Visualization of virtual operating diagrams of substations
- ✓ Interactive remote monitoring and control over any existing apparatus
- ✓ Advanced power quality measurement and analysis based on IEC61000-4-15 and IEC61000-4-30
- ✓ Real-time monitoring of voltage and current waveforms
- ✓ Setting configuration of RTU parameters
- ✓ Local web-interface on RTUs
- ✓ Data storing into database
- ✓ Alarm and events handling and monitoring
- ✓ Historical data
- ✓ Advanced data viewing options using NI DIAdem
- ✓ Report generation
- ✓ Different user authentication levels

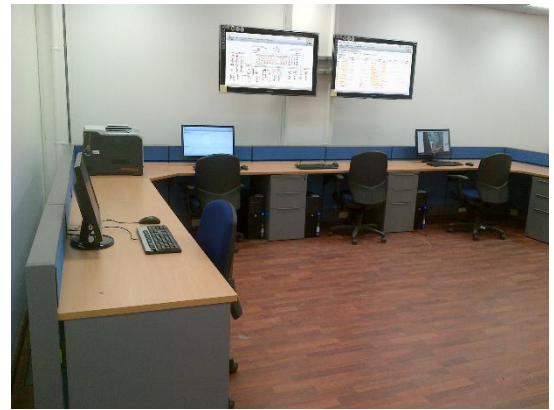
Benefits

- ✓ The panel is strictly protected from dust, water and also has a lock with a key
- ✓ Remote monitoring over substation apparatus in real-time
- ✓ Prompt notification about alarms for fast and effective maintenance
- ✓ Communication over industry standard DNP3.0 protocol
- ✓ Capable of any standard communication media (3G, fiber optic, etc.)
- ✓ Reduces maintenance cost and increases effectivity
- ✓ Reduces the risk of power blackouts due to on-time maintenance and fast fault detection
- ✓ Ability to make fault predictions based on historical data statistics

Specifications

Parameter	Value
Number of RTUs	Unlimited
Number of subRTUs	Unlimited
Communication physical layer	Ethernet
Communication application layer	DNP3.0
Voltage Analog inputs	6-channels, 300Vrms, 50ks/s, 24-bit, simultaneous
Current Analog inputs	8-channels, 5Arms, 50ks/s, 24-bit, simultaneous
High Voltage Digital Inputs	28-channels, 250VAC/DC, universal sinking/sourcing
Digital Inputs	32-channels, 24 V to 60 V, 250 μ s, sinking/sourcing
Digital Outputs	32-channels, 5 to 30 V, 1 μ s, sourcing
Operator Workstations	2, based on regular desktop PCs with two large screen monitors
Engineering Workstation	1, based on a regular desktop PC
Communication Server	1, based on a regular desktop PC
Power Supply	120/220VAC, 50/60Hz

Hardware Pictures



Software Screenshots

