SICAM PAS PQS
Advanced Substation Automation and Power Quality System
SICAM PAS PQS
Siemens Energy: The World’s Only Integrated Energy Company

Energy Data Management
- Prophet Solution
- FDWH

Communication
- PowerLink/SWT 3000
- LiveLine
- Broadband PLC
- PDH / SDH

Protection
- SIPROTEC
- Reyrolle

AMIS
- AMIS meter
- AMIS data concentrator

Energy Data Management

Control Center
- Spectrum PowerCC
- Spectrum Power 3
- Spectrum Power 4
- Spectrum Power TG
- DEMS

Substation Automation
- SICAM PAS
- SICAM 230
- SICAM 1703
- SICAM miniRTU/eRTU

Power Quality
- SIMEAS

Tools
- Spectrum PowerCC IMM
- SICAM PAS UI
- Toolbox II
- DIGSI

Smart Grid Division
SICAM PAS PQS
Substation Automation: Two Solutions One Result

- PC based solution based on embedded standard for Hard- and Software
- Distributed connection to switchgear
- Integrated configuration mode → online configuration & testing
- HMI based on Simatic WinCC

Software oriented

- Solution based on rack mounting with PC visualization
- Distributed and centralized connection to switchgear
- Separate tool for parameterization

Hardware oriented
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Hardware: Data Concentrator

Overview

• Data Collection & Protocol Conversion
• PAS CC Visualization Software
• Power Quality Analysis
• PLC (Function Block & ST)
• Pre-installed Windows Embedded Standard 7
• OS System Updates Included
• Backup & Restore without Recovery DVD
• Various HD / Mass Storage Options
• No rotating parts (except the HDD-option)
• Maintenance Free
• 19” Rack Mount
• Modular Hardware System
• Field Upgradable
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Hardware: Protection Relays

**Generation**
- Generator protection 7UM
- Transformer protection 7UT
- Generator Synchronizing 7VE

**Transmission**
- Distance protection 7SL
- Line Diff protection 7SD
- Feeder protection 7SA
- Busbar protection 7SS

**Distribution**
- Transformer protection 7UT
- Line Diff protection 7SD
- Overcurrent protection 7SJ

**Industrial**
- Overcurrent Protection 7SJ8
- Motor Protection 7SK8
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Hardware: Mini RTU and Remote I/O

- LCD display
- 11x LED
  - 3 state (POK, RY, ER)
  - 2x for RS-232
  - 2x for RS-485
  - 2x for Ethernet (top)
  - 2x for Ethernet (front side)
- SD-Card
- RJ45/Ethernet
- LCD-Display
- 4 buttons
Power Quality Recorder

- Continuous recording of electrical quantities, e.g. for analyzing power quality
- Power Quality Parameter according to IEC 61000-4-30 Class A
- Email, SMS directly from device
- Flexible value limit and event definition (fault recording function wave form and binaries triggers)
- 8 voltages and 4 current connections
- Synchronization GPS, DCF 77, IRIG-B and NTP
- V aux AC: 100 V to 240 V and V aux DC: 110 V to 320 V
- Automatic and scheduled data polling
- Topology view configuration
- Automatic Reporting
- Excel export functions
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Hardware: Digital Fault Recorder and PMU

- Fast-scan-recorder: sampled measured values, 3s/90s
- Slow-scan-recorder: effective values, 90s/90min, up to 2 instances
- Continuous recorder: RMS values, up to 5 instances
- Power Quality recorder* (class S according to IEC61000)
- Sequence of events recorder*
- Free routing of measured values to the individual recorders
- Free combination of the measuring groups for power calculation
- Variable sampling rate: 1/ 2/ 4/ 8/ 16kHz
- 16 GByte ring buffer

* In preparation
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Software: Configuration

Data acquisition
with 1 ms time stamp resolution

Support of the substation automation functions
Switching authorities (Local/Remote), Grouping, Sequences

Automation functions
PLC & ST (Interlocking, Grouping, Complex Logic)

Redundancy at Data Concentrator
Simple check box process

Automatic transmission and archiving of fault recording
Protection devices / Meters / PQ Devices
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Software: Power Quality

Incident Explorer

- Listing of PQ violations
- View and acknowledge PQ alarms
- PQ Inspector
- Detailed and Powerful Analysis of Power Quality Data
- Detail Graphical Fault Analysis
- PQ Explorer
- Power Quality Alarm list
- Graphical Visualization of PQ Data
- Report Browser
- Chronological overview of scheduled reports
- Graphical view of PQ report schedules
- Root Cause Analysis of PQ Violations
In the past, substations HMI systems were usually installed in central location within the substation which was often permanent and expensive.

This approach has advantages especially in large manned stations.

As cost pressure increased, the use of these local or remote web browser operator terminals has become popular where technicians and engineers which require only occasional local visualization of the substation operations.

Both approaches are now available and widely popular offering diagnostic functions in addition to ease of operation and monitoring.
Thank you for your attention!