Digital Energy

Wide Area Monitoring System (WAMS): PhasorPoint Applications

Applications for advanced energy management

INCREASE VISIBILITY ACROSS THE GRID TO MAKE INFORMED DECISIONS

GE's advanced suite of power system performance and dynamics applications provides system operators with the capability to not just respond, but excel, in an increasingly volatile environment

Overview

GE PhasorPoint is a real-time synchrophasor-based measurement and monitoring solution for system operators and transmission companies in the key areas of online stability, situational awareness, security analysis, grid planning and asset optimization. PhasorPoint standard applications provide a fundamental sets of WAMS applications and visualization tools while advanced applications provide foremost analytic and visualization solution for monitoring the dynamics of the power system.

Standard Applications

Symmetrical Components
Positive, negative and zero sequence phasor can be calculated for PMU that only provides Phase A, Phase B and Phase C phasor measurements.

Dynamic Angle Reference
Dynamic angle reference to avoid random perturbations and sudden changes in the reference angle thereby providing a better representation of oscillation and disturbance events

Active & Reactive Power Monitoring
The Active (P) and Reactive Power (Q) Application monitors P & Q levels associated with configured circuits including configurable alert and alarm states across the entire monitored network.

Frequency & Rate of Change of Frequency Monitoring
Displays the frequency and rate of change of frequency (ROCOF) states across the entire monitored network. A user can also review the live maximum and minimum frequency deviation

Voltage Magnitude & Angle Difference Monitoring
A graphical representation of the real-time voltage phasor measurement of the system. This is provided in terms of voltage magnitudes and angle. Angle difference between any two difference voltage nodes can also be configured.

System Condition Monitoring
System Condition Monitoring provides a colour gradient view of voltage, frequency and angle deviations.

Composite Events
Composite Events are user-defined events that are triggered only when a specified combination of underlying events occurs

Replay
If licensed, Replay functionality allows user to play back selected visualization periods of historical data.

User Defined Calculations
Allows user to create new data streams calculated from existing data originating from PMUs. The new data streams appear in both the live and historical data views for display in custom charts

Rate of Change
Allows monitoring the rate of change of specified measurements, generating and visualizing alerts and alarms in the WAMS and informing operators of the potential presence of energy imbalance and location of network disturbances.

My Views
The My Views Manager provides the tools to create custom chart Views. The custom charts can display any live or historical time series data available to PhasorPoint.

Data Export
Users can export data to either CSV or COMTRADE formats for post-event analysis and processing purposes.

Wide Area Monitoring System (WAMS): PhasorPoint Applications

Applications for advanced energy management

Advanced Applications

Islanding, Resync & Blackstart
The Islanding, Resynchronization, and Blackstart (IRB) Advanced Application provides a real-time tool for identifying islanding and providing information valuable in performing a successful resynchronization.

Oscillatory Stability Monitoring
The Oscillatory Stability Management (OSM) Advanced Application provides foremost analysis and visualization tools for monitoring the dynamics of the power system through a study of its oscillatory modes in the frequency range of 0.04 to 4 Hz.

Asynchronous Systems
The Asynchronous Systems Advanced Application (ASC) provides the tools and mechanisms for grouping PMUs according to which synchronous area they are measuring, and for defining separate angle references for each area.

System Disturbance Management
System Disturbance Management (SDM) detects sudden disturbances in the network. This advanced application monitors the rate of change in various measurements, generating and visualising alerts and alarms in the WAMS and informing operators of the potential presence of network disturbances. It is available with 2 optional modules with differing capabilities.

- **General Rate of Change (RoC)**
  The application identify the closest disturbance location based on the principle that during a transient disturbance, the frequency and angle of the power system move more rapidly close to source of the disturbance.
- **Disturbance Characterization**
  The application identify the disturbance type based on the disturbance influence on the angle and frequency behaviour in the grid.

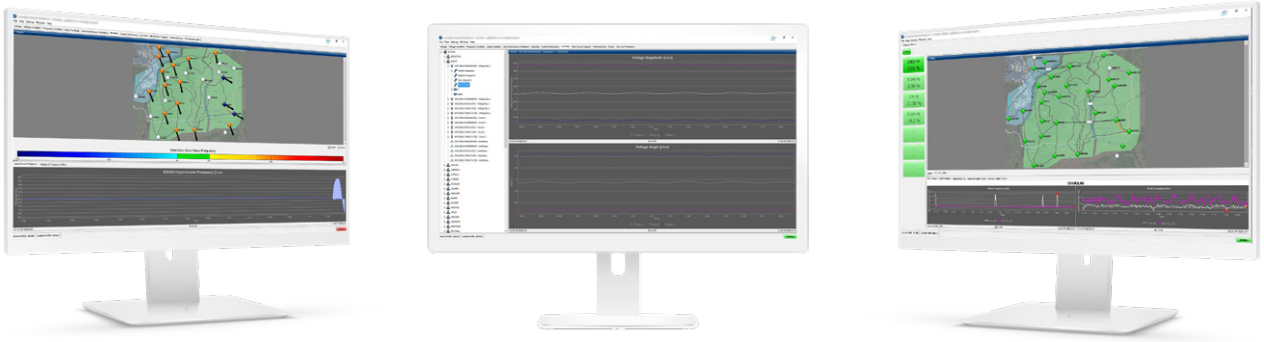
Short Circuit Capacity
The Short Circuit Capacity (SCC) Advanced Application carries out measurements of the sub-transient short circuit capacity at specific bus locations in the network providing system operators with increased insight of the operational situation that can be used during the start up of HVDC terminals, and in protection design.

Sub-synchronous Oscillation Monitoring
The Sub-Synchronous Oscillations (SSO) Advanced Application analyses oscillations in the frequency range of 4 to 46 Hz. This can be used for observing long term behaviour of oscillations and identifying torsional, as well as online alarms for poorly damped or large amplitude oscillations.

Very Low Frequency
The Very Low Frequency (VLF) Advanced Application analyses frequency measurements from PMUs to obtain the amplitude and frequency of oscillations in the frequency range of 0.0019 to 0.16Hz.

Line Parameter Estimation
The Line Parameter Estimation (LPE) Advanced Application uses Phasor Measurement Unit (PMU) voltage and current measurements from two ends of a transmission line to estimate the line parameters.

Power Angle Stability
The PhasorPoint Power Angle Stability (PAS) Advanced Application presents the operating state of a transmission boundary between two areas, in terms of the total aggregate power flow and a derived voltage angle difference. This angle difference is derived from the center of inertia from one area compared to the center of inertia from another area.



Contact Us
ge.com/digital/sales-contact-me