PecStar ® iEMS Presentation

March 15, 2024

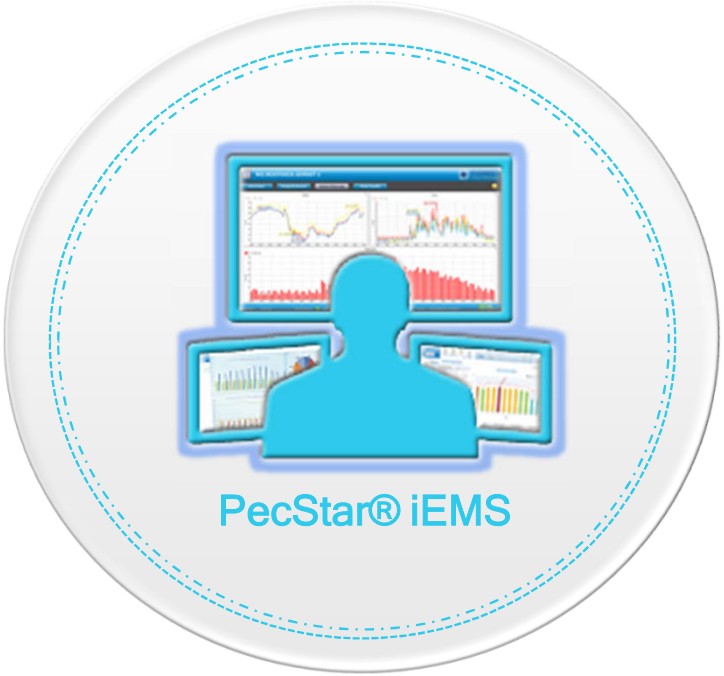
Designed for Reliability *Manufactured to Last*

PecStar® iEMS

PecStar® iEMS is an integrated software solution for the Protection, Monitoring, Control and Management of the electrical, mechanical and other physical assets for Utilities, Industries, Institutions, Manufacturing Facilities, Commercial Buildings and Data Centers.

PecStar iEMS can be considered an online 7x24 electrical health monitoring system for any facility.

Designed for Reliability *Manufactured to Last*

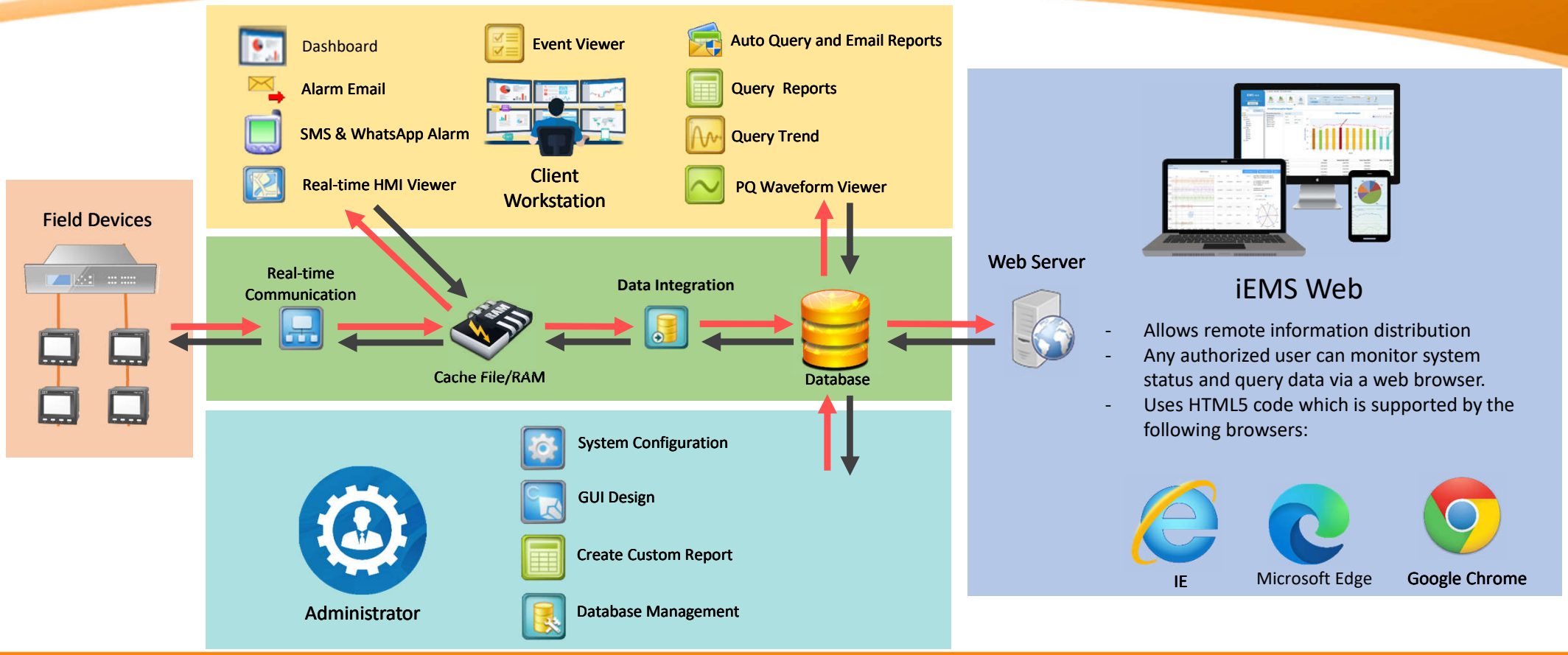


Section 1 - Overview

1 System Architecture

2 System Components

1.1 System Architecture



1.2 System Components

Power Monitoring

- Dashboard
- Real-time Data
- Trends
- Graphs
- SOE (Events)
- Waveforms
- Reports

1.2 System Components

Power Energy

Customizable Daily, Weekly, Monthly or Yearly Energy Analysis and Trending reports deliver comprehensive and flexible assessment.

- Energy Management
- Demand Measurement
- TOU (Time Of Use or Tariff)

1.2 System Components

Power Quality

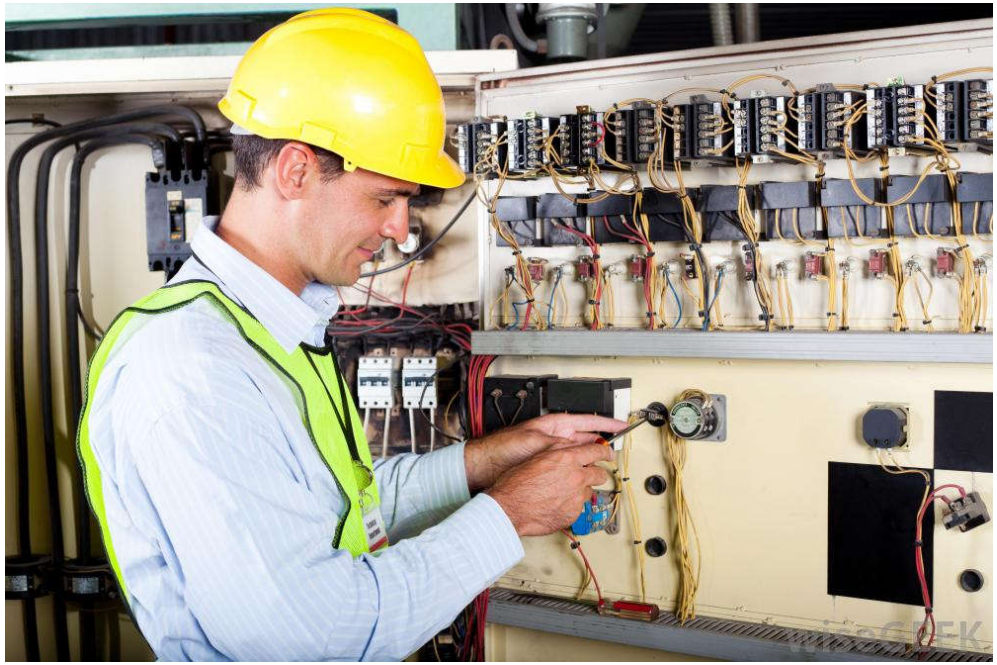
Provide powerful PQ Analysis to help customers visualize, diagnose and understand the causes of PQ events in order to prevent similar problems from occurring in the future, keeping their facilities running continuously and minimizing the probability of potential financial damages.

- PQ Reports
- Events & Waveforms
- ITIC & SEMI
- Harmonics

1.2 System Components

System Maintenance

- User & Role Management
- System Configuration
- Physical vs Logical Mapping
- Feeder Management
- System Diagnosis
- Database Status
- Date and Time Formats
- Unit Setting
- Alarm Sound Setting

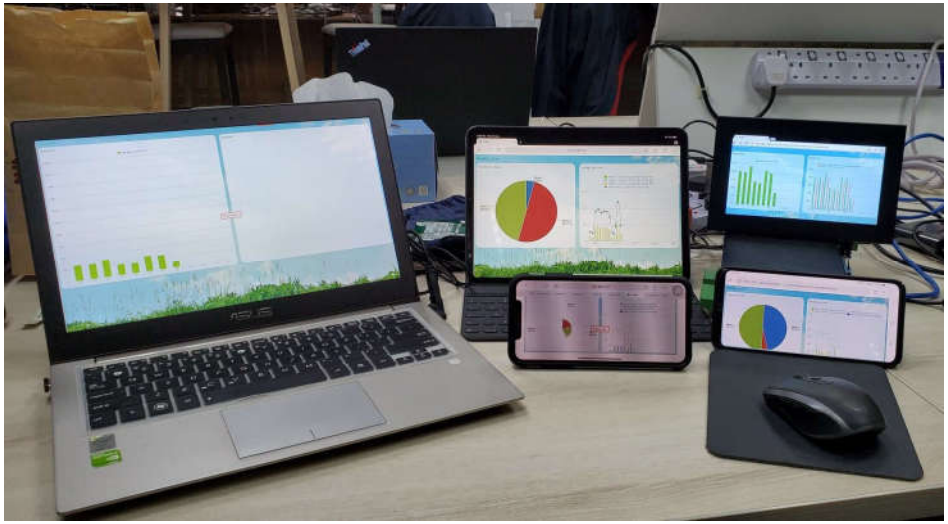


1.2 System Components

Web Access

iEMS Web is a *multi-platform* web-based user interface for presenting data from the PecStar iEMS. Its benefits include:

- Integrate all functions on a unified platform
  - Dashboard
  - Real-time, Graphs, Trends, Reports, Events, Waveforms Display
  - User authorization
- No need to install any software components
- View all functions with a Web browser through the Internet or Intranet
- Visually pleasant
- Provide user-friendly interface
- Available on PC, Laptop, Tablet, Phone and Touch HMI
- Customizable web color, company logo and login page



Section 2 – Applications & Solutions

1. Institutions
2. Manufacturing Plants
3. Data Centers
4. Semiconductor Industry
5. Distributed Monitoring

2.1 Institutions

- Power, Energy, PQ and Environmental monitoring for Government Buildings, Schools, Student Hostels, Hospitals, Prisons, etc.
  - Electricity
  - Water
  - Temperature & Humidity
  - Solar & Emergency Power
- Automatically collect data and generate consumption reports from thousands of meters and sensors located across the entire building
- Harmonics Monitoring for electronic loads (VSD/VFD, UPS, Lighting, etc.) that could produce serious distortions to the Voltage and Current signals and cause overheating and performance degradation to transformers and nuisance tripping of CBs. This problem could be solved by installing active/passive Harmonic Filters at the appropriate locations.
- Instant alarming via system, Email, SMS or **WhatsApp** to provide immediate feedback and maintain safe operation.

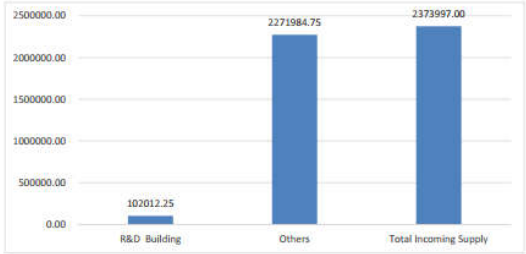
2.2 Manufacturing Plants

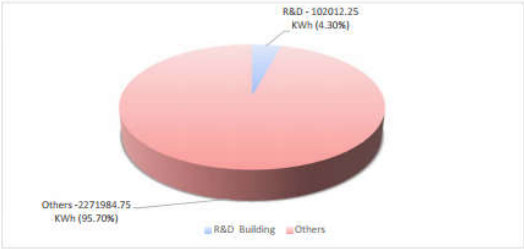
- Integrated WAGES management
  - Water
  - Air
  - Gas
  - Electricity
  - Steam
- Customizable Logical Mapping based on hierarchy by:
  - Floor
  - Area
  - Department
  - Utility Type
  - Production Line
- Continuous online monitoring to detect and locate immediately any Electrical, PQ, Mechanical or Environmental faults

2.2 Manufacturing Plants

- Collect energy consumption data for production processes to determine product unit cost.
- Automatic report generation and distribution via email.
- Load scheduling – Based on the gathered data, Energy Managers can implement optimization strategy by running combination of specific manufacturing processes at certain times (e.g., at night instead of during the day) to reduce the probability for breaching their contracted demand limit which would result in significant financial penalty imposed by the Utility.
- Help Energy Managers to identify and implement improvement strategy to raise energy efficiency and hence save cost.

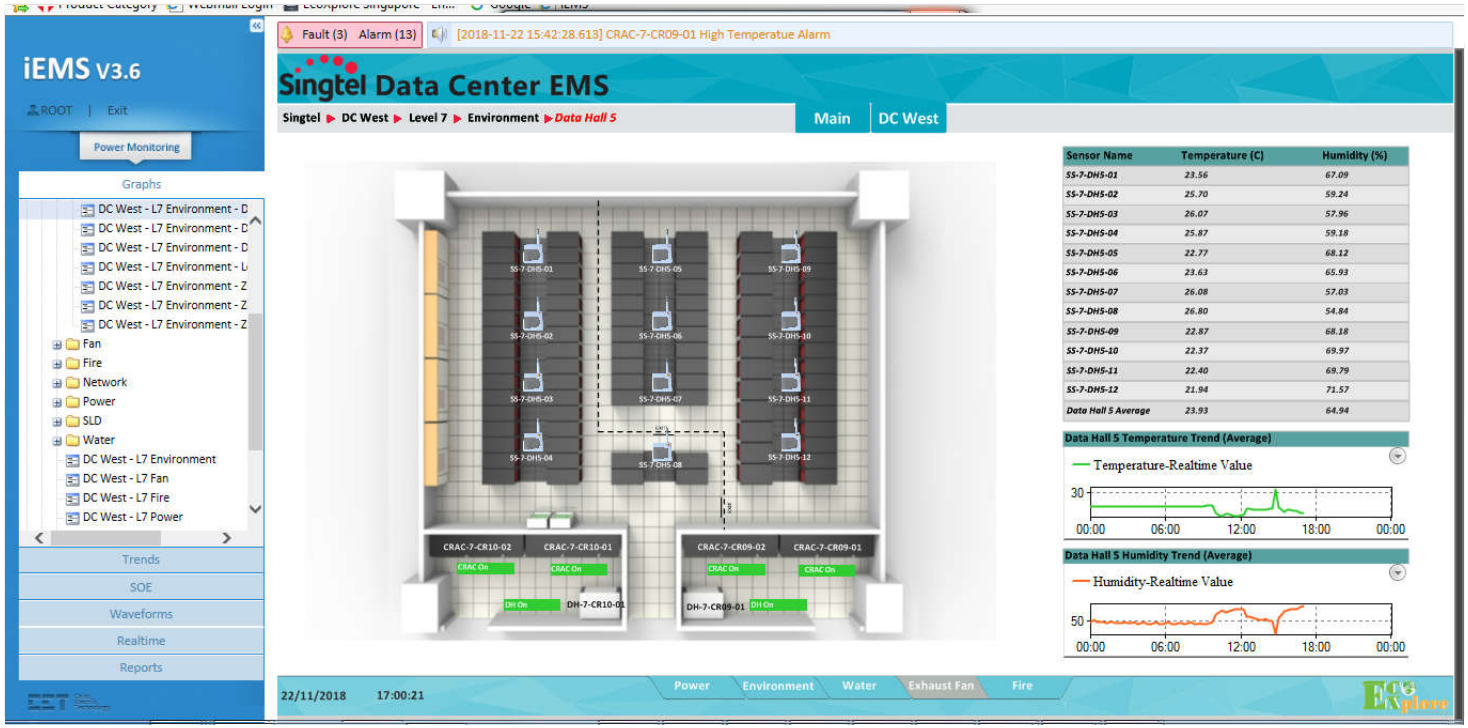
Energy Consumption For Mead Johnson R&D (Apr, 2015)		
Location		kWh Total (kWh)
R&D Building		102012.25
Others		2271984.75
Total Incoming Supply	Power GRID Incoming Supply A - 1452531.00 KWh	2373997.00
	Power GRID Incoming Supply B - 921466.00 KWh	





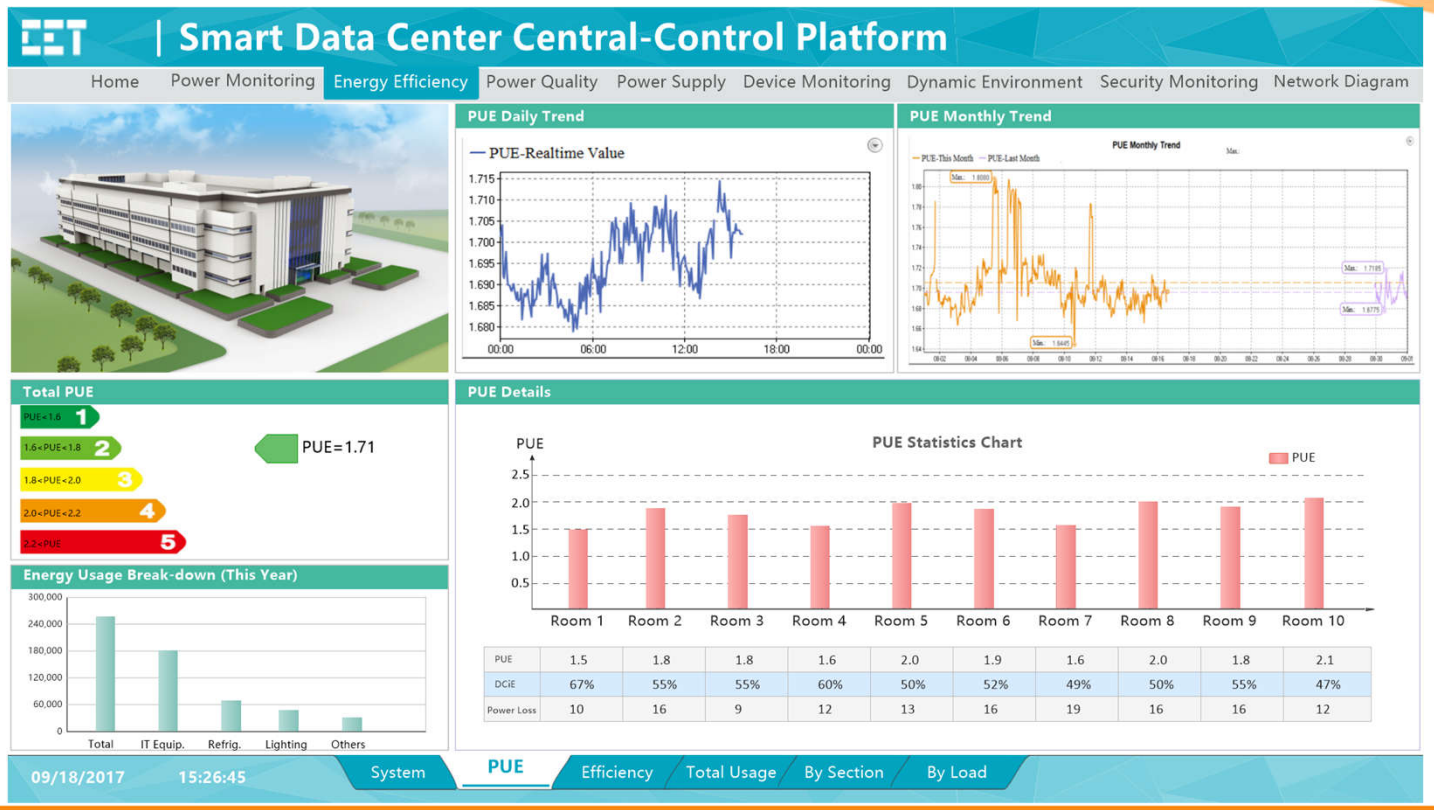
2.3 Data Centers

- Overall Utilities, PQ and Environmental monitoring via CET and 3rd-party IEDs
  - Electricity
  - Water
  - Leakage Detection
  - Fire/Smoke Alarm
  - CRAC (Computer Room AC)
  - Dehumudifier
  - Temperature & Humidity
  - UPS
- Instant alarming via system, Email, SMS or **WhatsApp**



2.3 Data Centers

- Real-time PUE (Power usage Effectiveness) monitoring to help Energy Manager understand the energy efficiency of the Data Center and how far he is away from achieving a theoretical or optimum PUE value of 1.22.

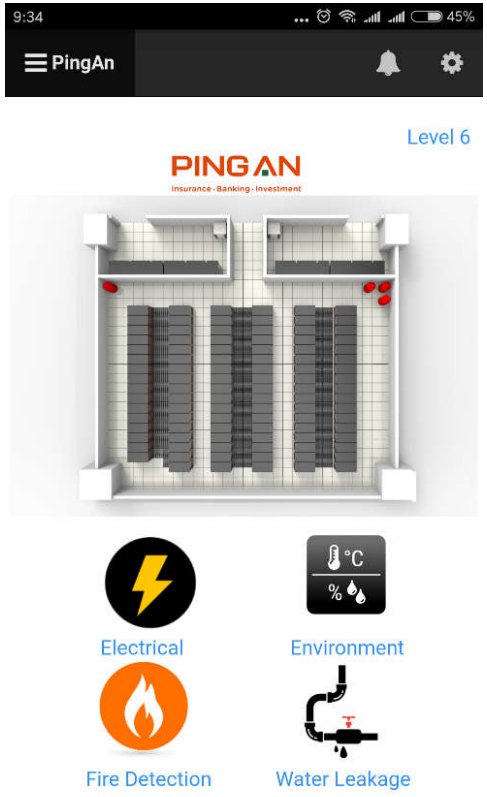


PUE = (Total Facility Energy) / (IT Equipment Energy)

Thus having a PUE of one would mean that you have a perfect data center where all the power coming into the building makes it to the IT equipment with none used for cooling systems or lighting or lost in transmission to the IT equipment. 13 Oct 2014

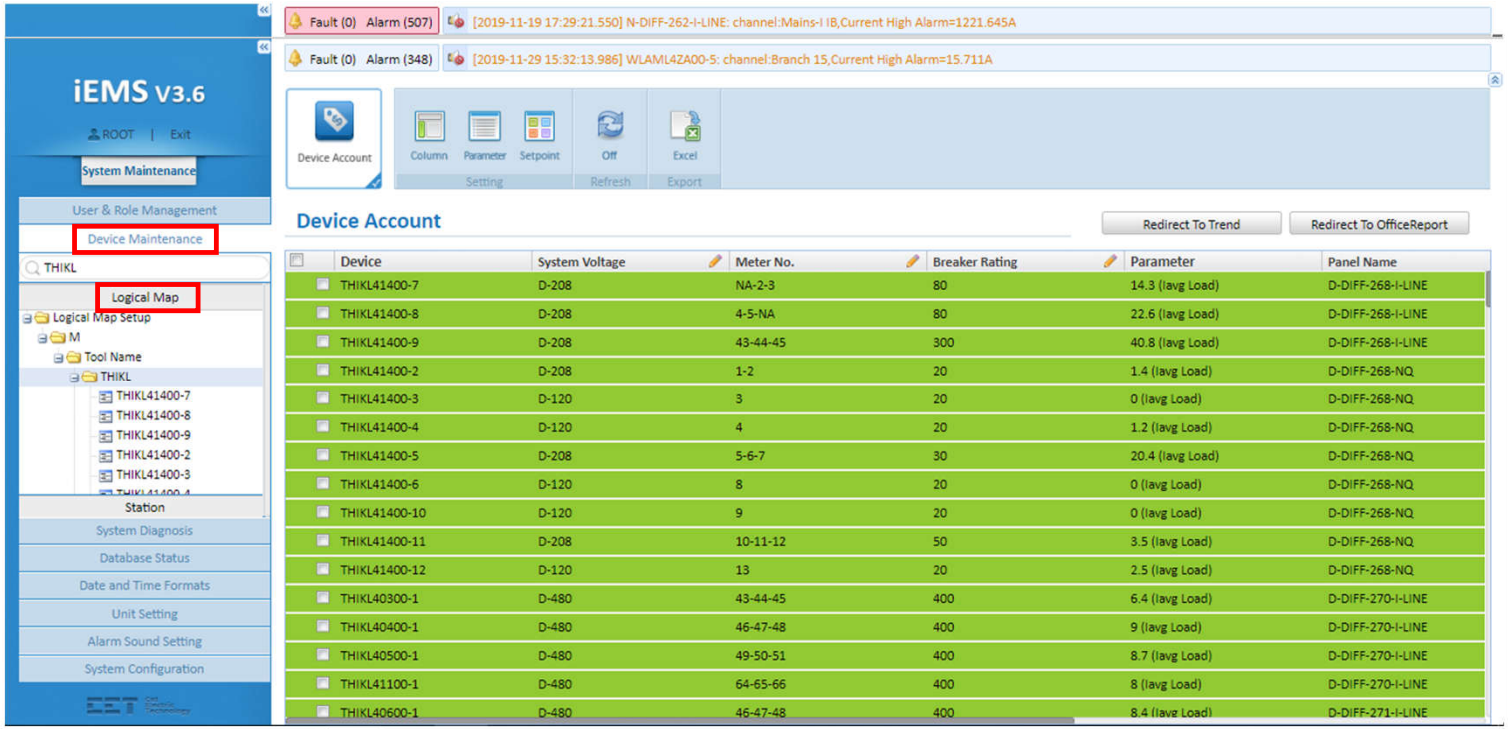
2.3 Data Centers

- Share real-time data and alarm with all Data Hall Tenants (in a Co-Location arrangement) via Mobile App and Web Interface, thus giving them instant access and reducing their concerns about the security of their assets.



2.4 Semiconductor Industry

- Continuous online monitoring of electrical status and energy usage for thousands of feeders with instant overload alarms to help Facility Managers locate PQ faults and identify abnormal operating conditions as well as implement preventive maintenance plan to avoid un-scheduled shutdown with heavy financial losses.

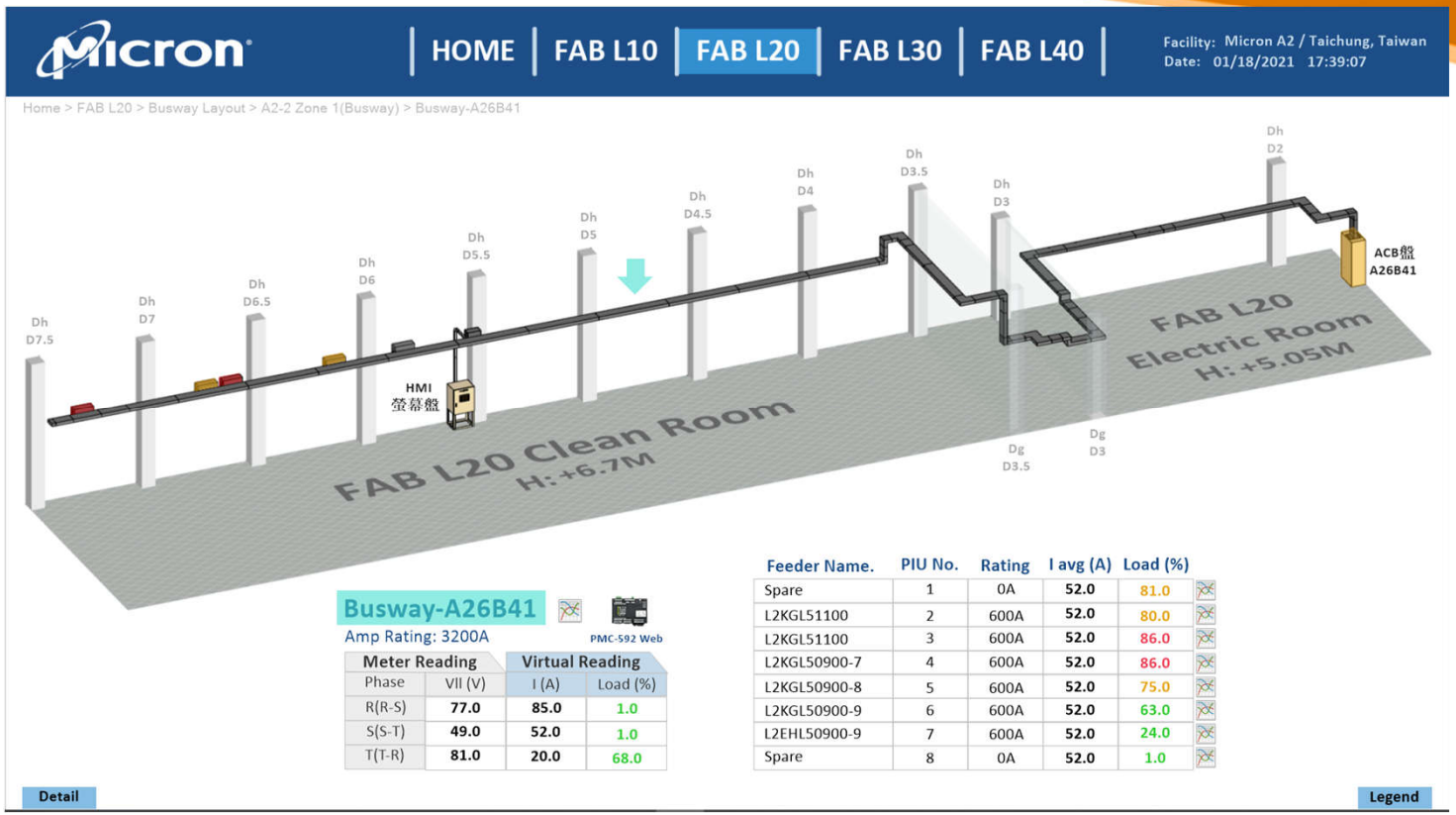


2.4 Semiconductor Industry

- Powerful PQ analysis provides industry standard visualization and diagnosis to help customers understand the potential causes of the PQ events.
- Prevent similar problems in the future by keeping the facilities running 24x7 and minimizing the probability of potential financial damages.

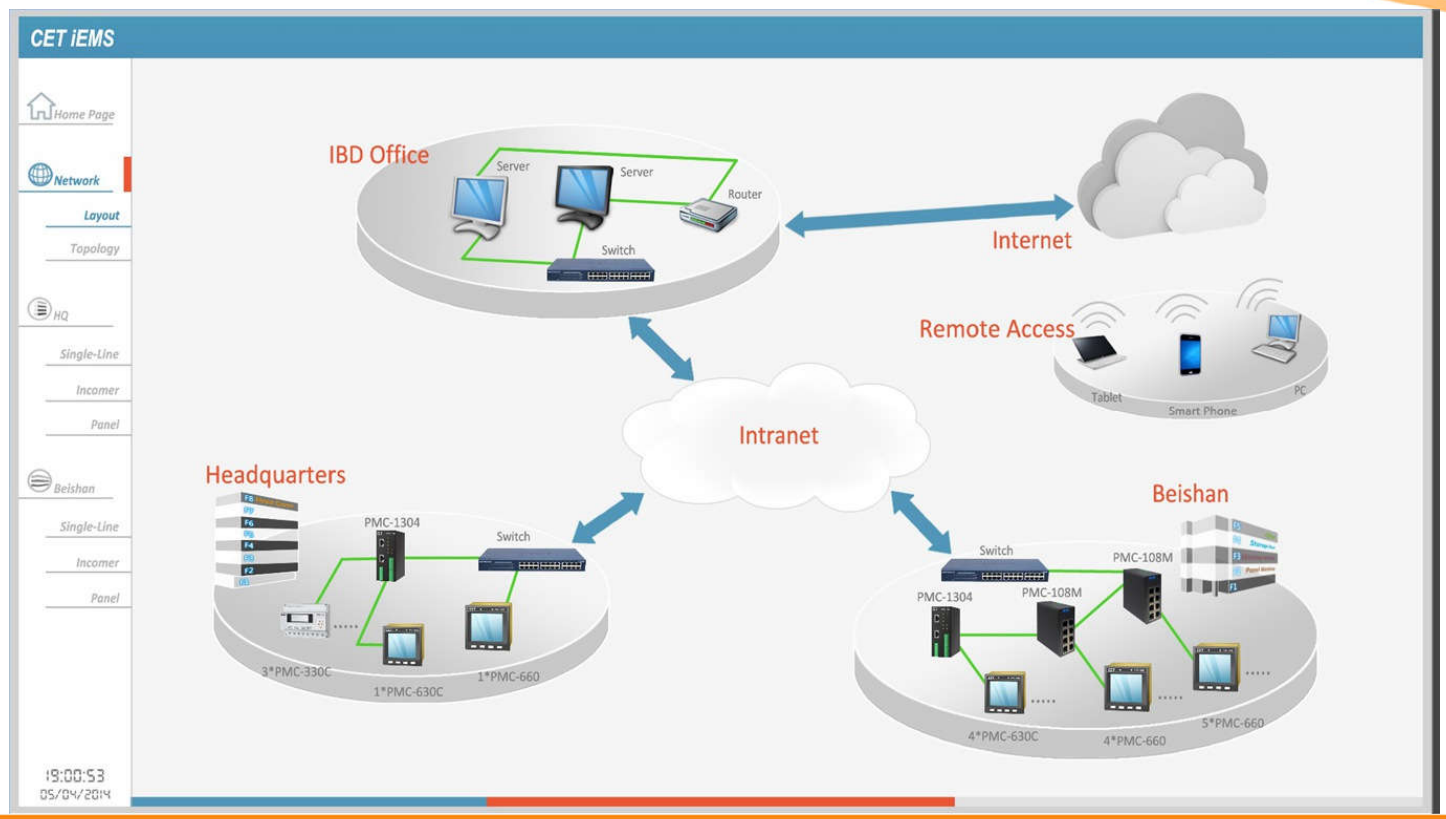
2.4 Semiconductor Industry

- Busway load and conditions monitoring and management:
  - Overload alarm
  - Temperature & Humidity alarms
  - Help Facility Managers determine whether there is any spare capacity for additional loading

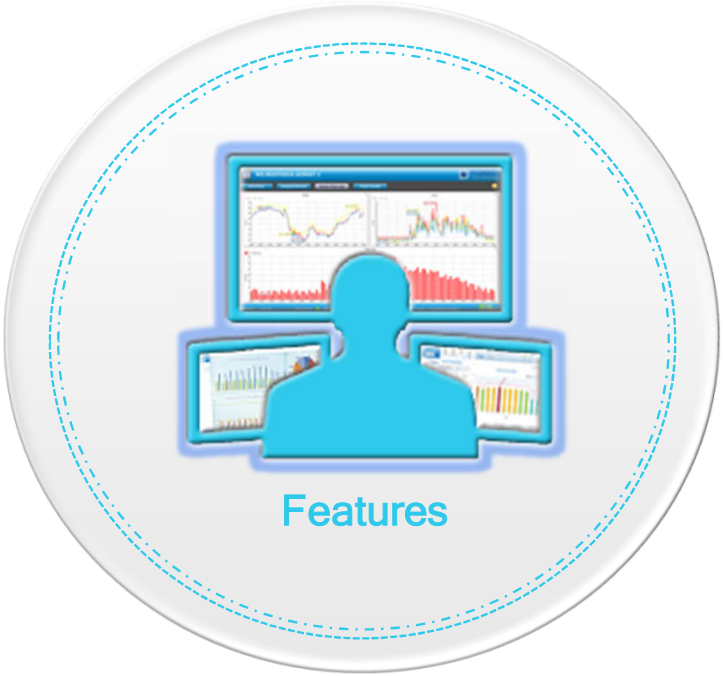


2.5 Distributed Monitoring

- Centralized Energy and Environmental Monitoring of multiple branch offices in different locations via Intranet with VPN connection.
- Centralized Energy Monitoring of multiple Government Schools across different Districts via wired Broadband WAN or 4G network for the promotion of energy conservation awareness among staff and students.



Section 3 – Features



1	System Integration
2	Realtime Data Acquisition
3	Dashboard
4	GUI Monitoring
5	Trend Analysis
6	SOE Analysis
7	Waveform Analysis
8	Report Generation
9	Energy Usage Analysis
10	Demand Analysis
11	Power Quality Analysis
12	Feeder Management
13	System Security
14	Database Management

3.1 System Integration

Large Protocol Library

Powerful platform for the integration of CET's PMC and 3rd-party IEDs from major suppliers through a large protocol library

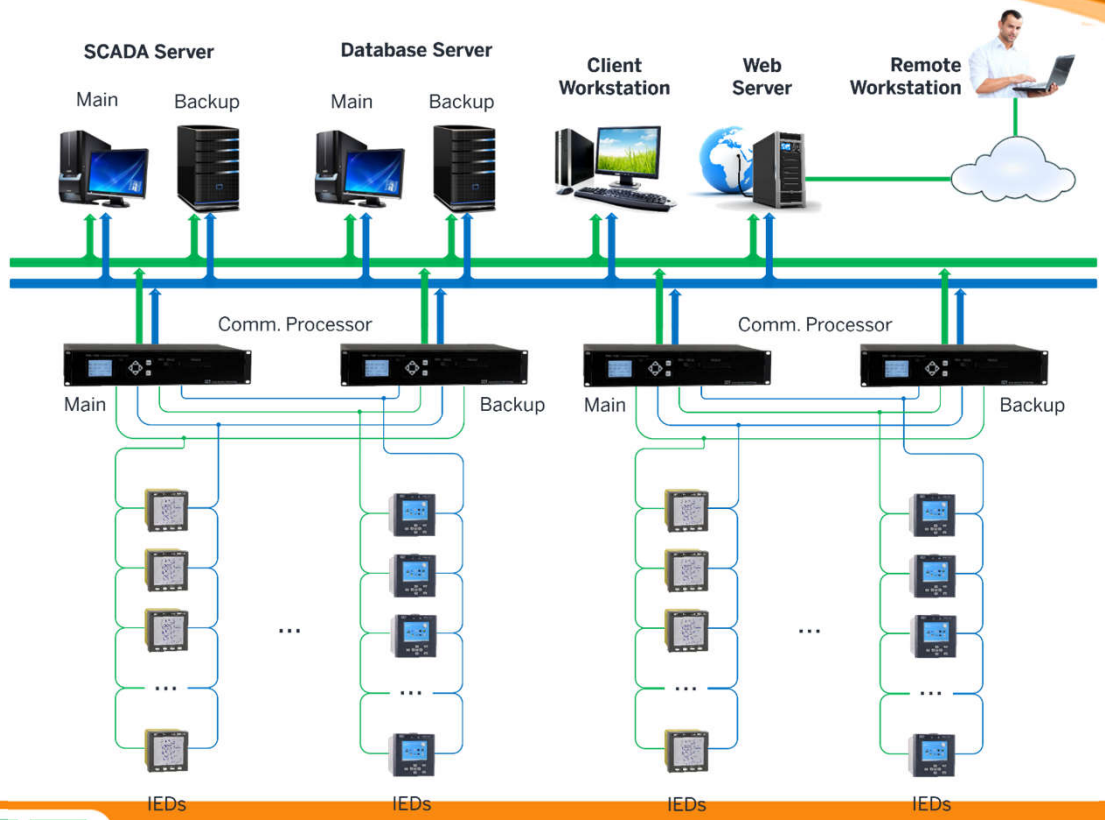
- Hundreds of devices drivers
- Industry standard protocols
  - Modbus RTU/TCP, ION, DNP, BACnet IP
  - IEC 61850, IEC 60870-5-10x, PQDIF
  - LoRaWAN Network Server via HTTP or MQTT
- Manufacturer-specific protocols
  - ABB, Beckwith, GE, LSIS,
  - Schneider MiCOM, Siemens, SEL and others
- 3rd-Party System Interface via OPC UA/DA Client/Server, SNMP Client, HTTP service, Custom DB Exchange Service

3.1 System Integration

Scalable System Architecture

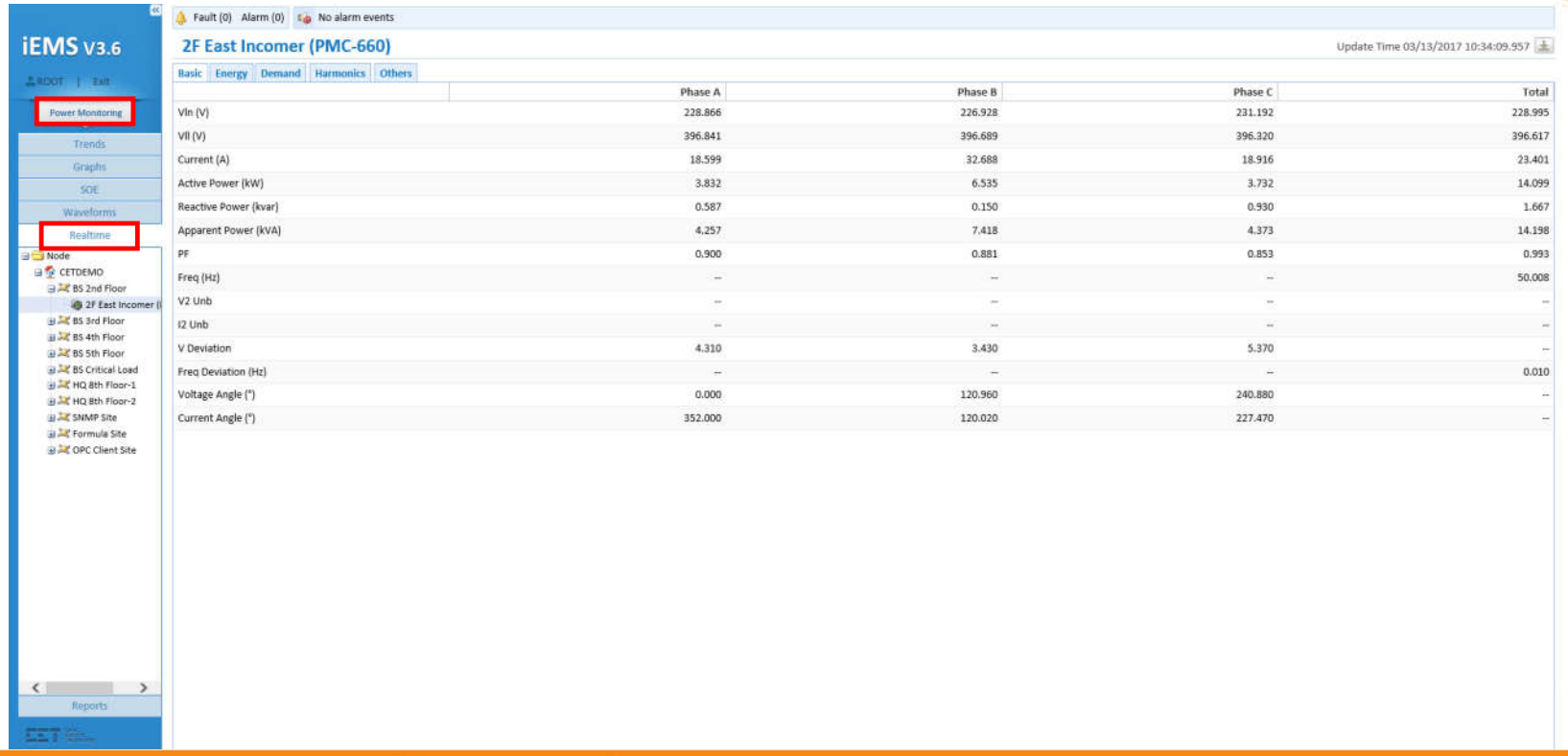
Fully distributed, hierarchical and modular architecture supports systems of different sizes and configurations.

- Single workstation
- Multi-nodes client-server
- Redundant networking and hot standby servers
- Up to 128 SCADA Stations with max. 128 communication channels and 5000 devices per Station



3.2 Real-time Data Acquisition

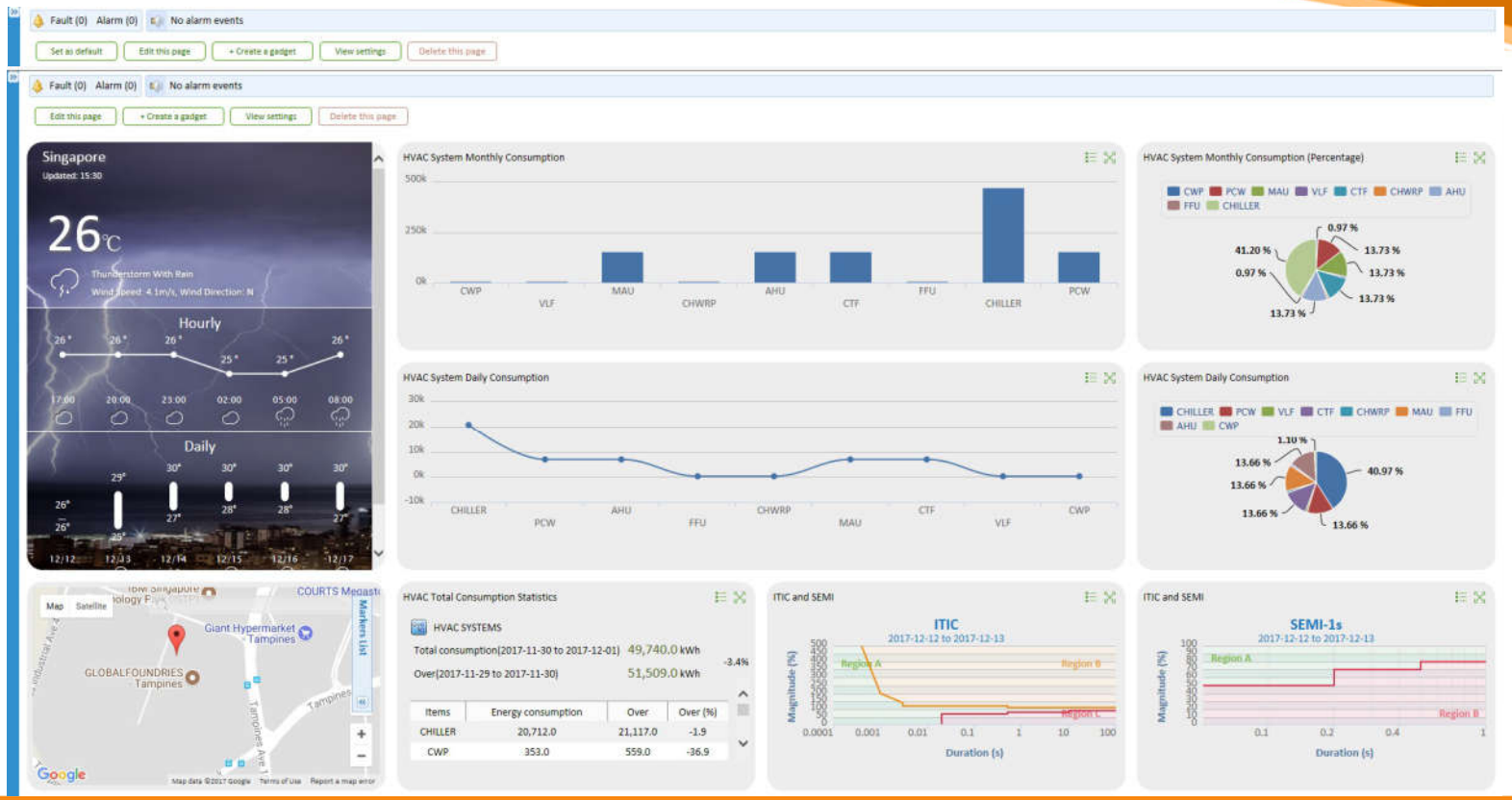
- Communication status for all nodes are displayed:
  - Stations
  - Sites
  - Devices
- Select a device and the real-time data are displayed:
  - V/I/Power/PF/Freq.
  - Energy
  - Demand
  - Harmonic
  - Other
  - Include updated time
- Real-time data is grouped in tabs by device type
- Support export to Excel



	Phase A	Phase B	Phase C	Total
Vln (V)	228.866	226.928	231.192	228.995
Vll (V)	396.841	396.689	396.320	396.617
Current (A)	18.599	32.688	18.916	23.401
Active Power (kW)	3.832	6.535	3.732	14.099
Reactive Power (kvar)	0.587	0.150	0.930	1.667
Apparent Power (kVA)	4.257	7.418	4.373	14.198
PF	0.900	0.881	0.853	0.993
Freq (Hz)	--	--	--	50.008
V2 Unb	--	--	--	--
I2 Unb	--	--	--	--
V Deviation	4.310	3.430	5.370	--
Freq Deviation (Hz)	--	--	--	0.010
Voltage Angle (°)	0.000	120.960	240.880	--
Current Angle (°)	352.000	120.020	227.470	--

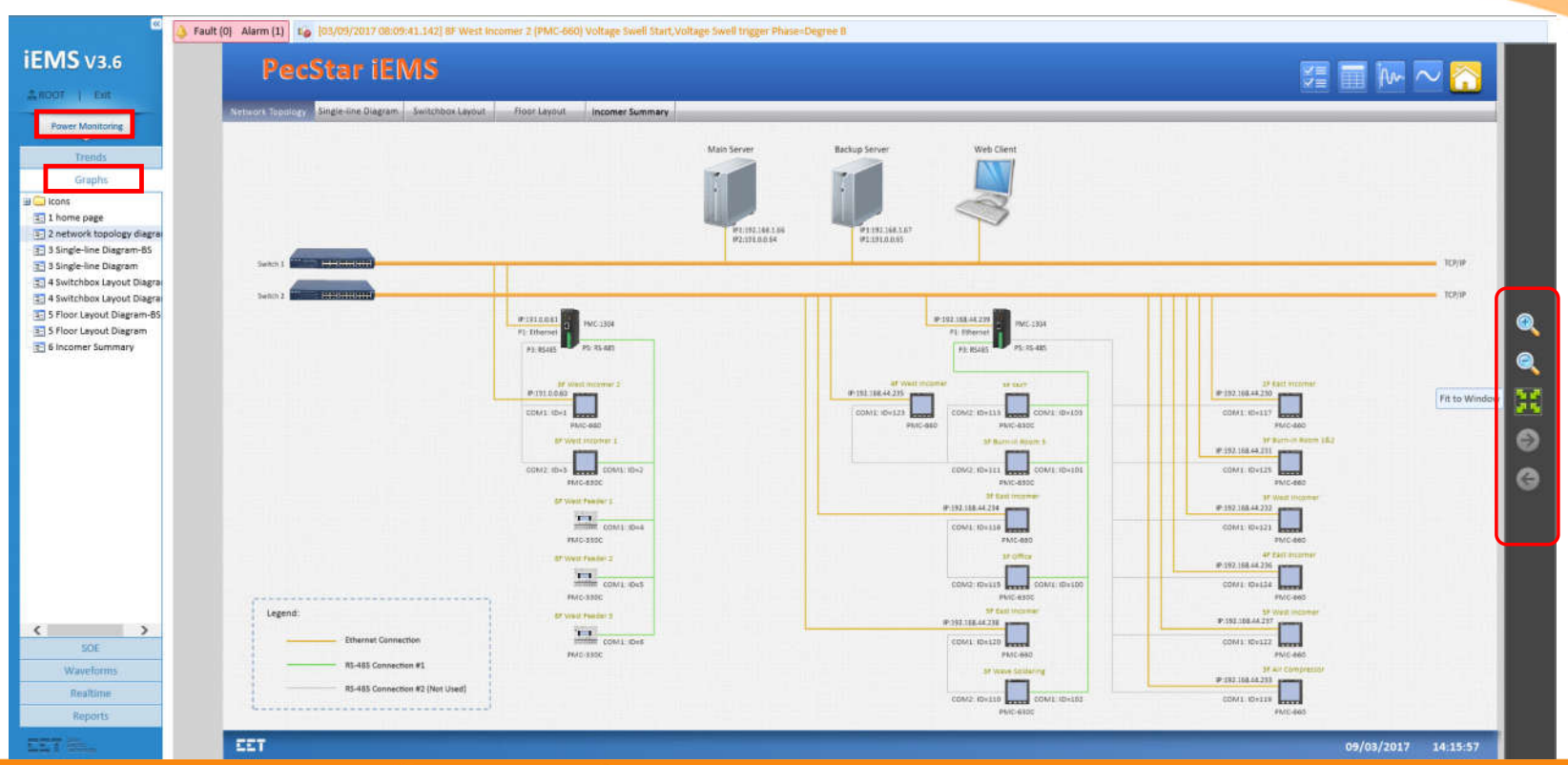
3.3 Dashboard

- User-friendly and flexible Gadget configuration and Dashboard page design to typically display KPI data (because Dashboard is usually used in a non-interactive environment as a Slideshow)
- Dashboard Gadgets
  - Trend Curve
  - Bar Chart
  - Pie Chart
  - ITIC and SEMI
  - Consumption Table
  - Alarm
  - GIS
  - Page navigation



3.4 GUI Monitoring

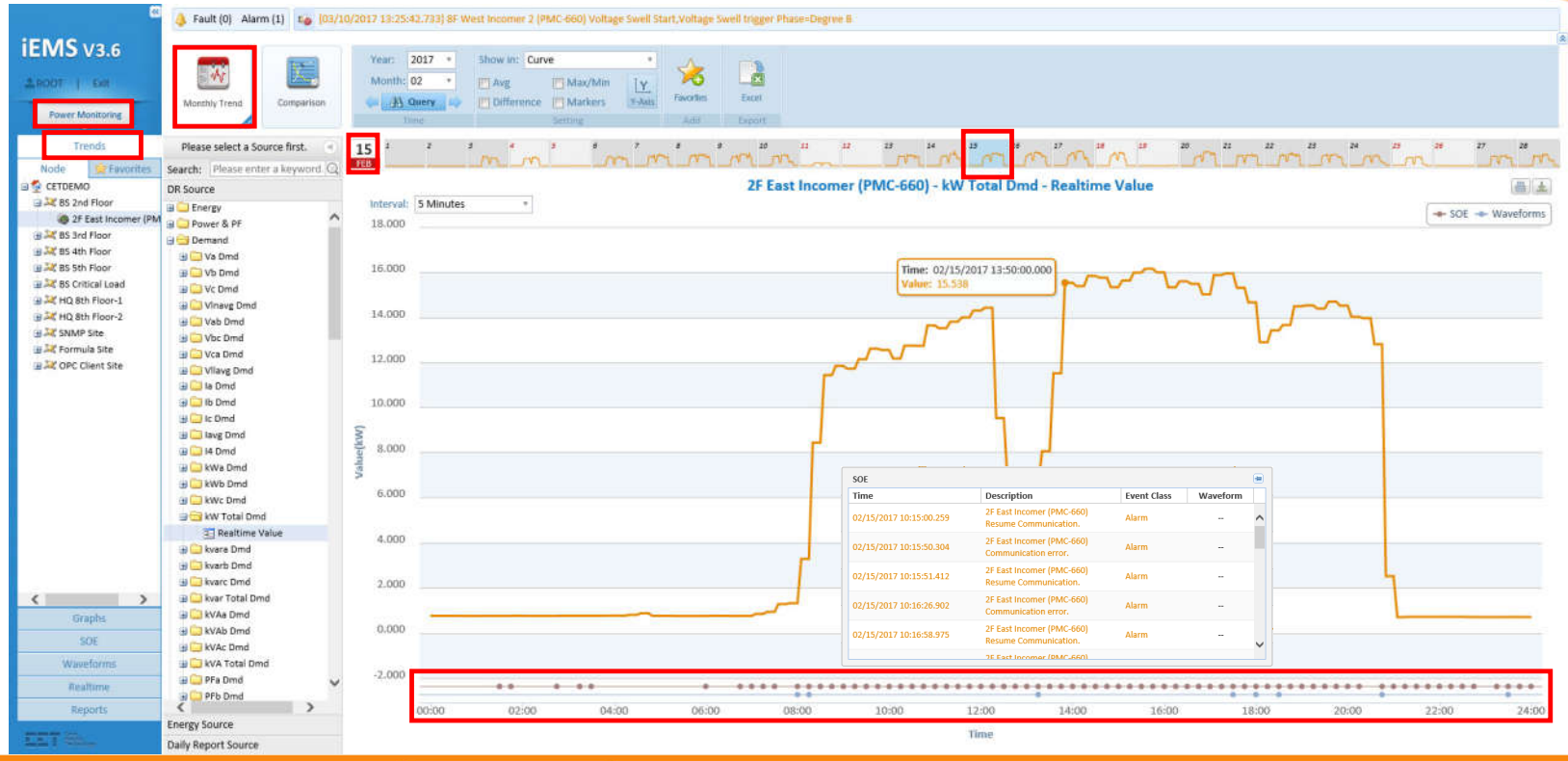
- Display customizable User Diagrams (created with our PecDraw software) by selecting from the left-hand pane.
- Ability to embed a sub-diagram in a “floating window” that can be activated by mousing over an icon
- Viewing toolbar on the right-hand side that supports the following functions:
  - Zoom in and out
  - Fit to window
  - Forward to next graph
  - Back to last graph



3.5 Trend Analysis

Monthly & Daily Trend

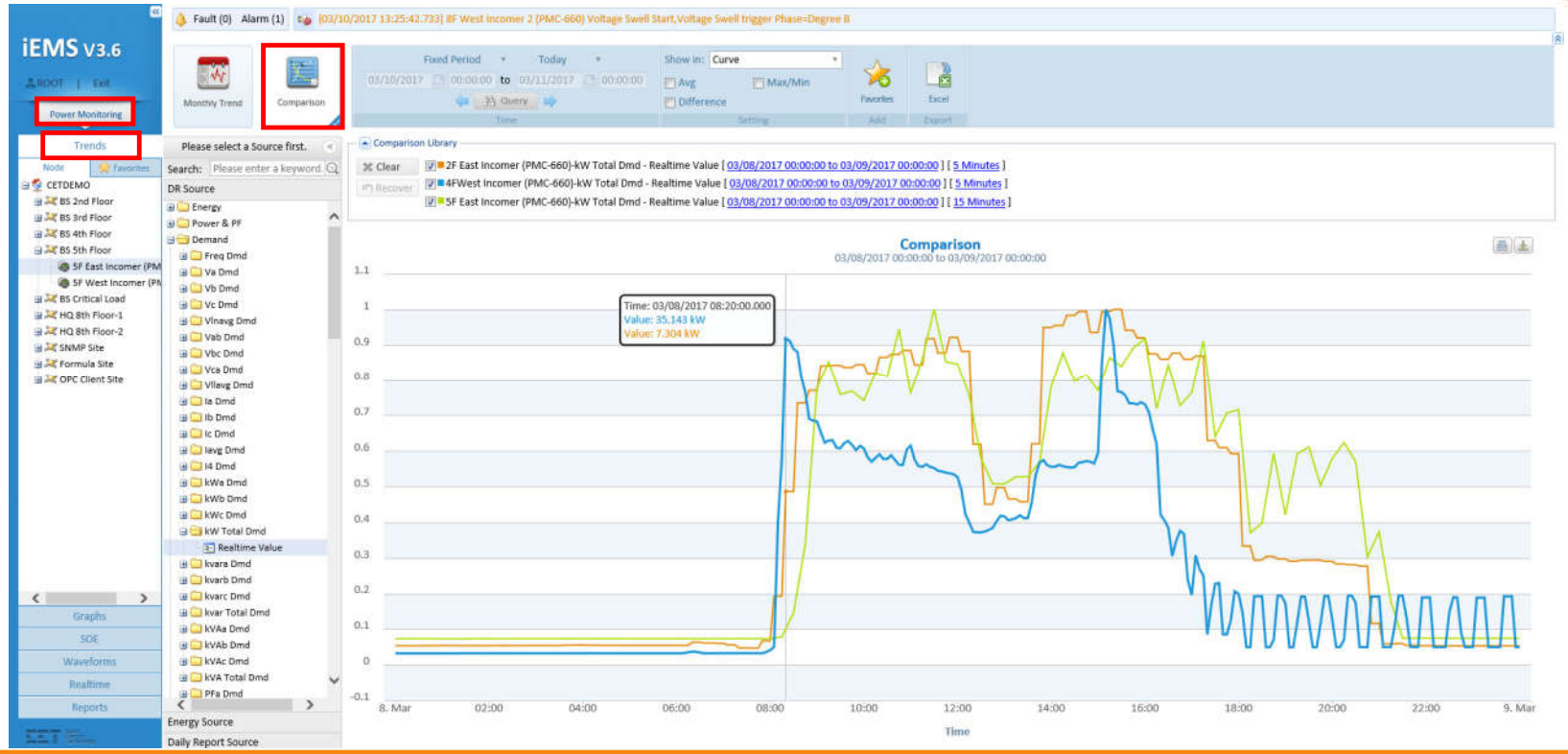
- View the Monthly trend:
  - Specify measurement
  - Specify day
  - Calendar overview
  - Selectable Interval
- Trend showing format:
  - In Curve or Table view
  - Avg, Max/Min, Difference
  - Markers
- SOE and Waveforms can be shown in a floating window with detail information
- Trend can be exported:
  - Excel
  - PNG, JPEG, PDF, SVG
  - Print



3.5 Trend Analysis

Comparison

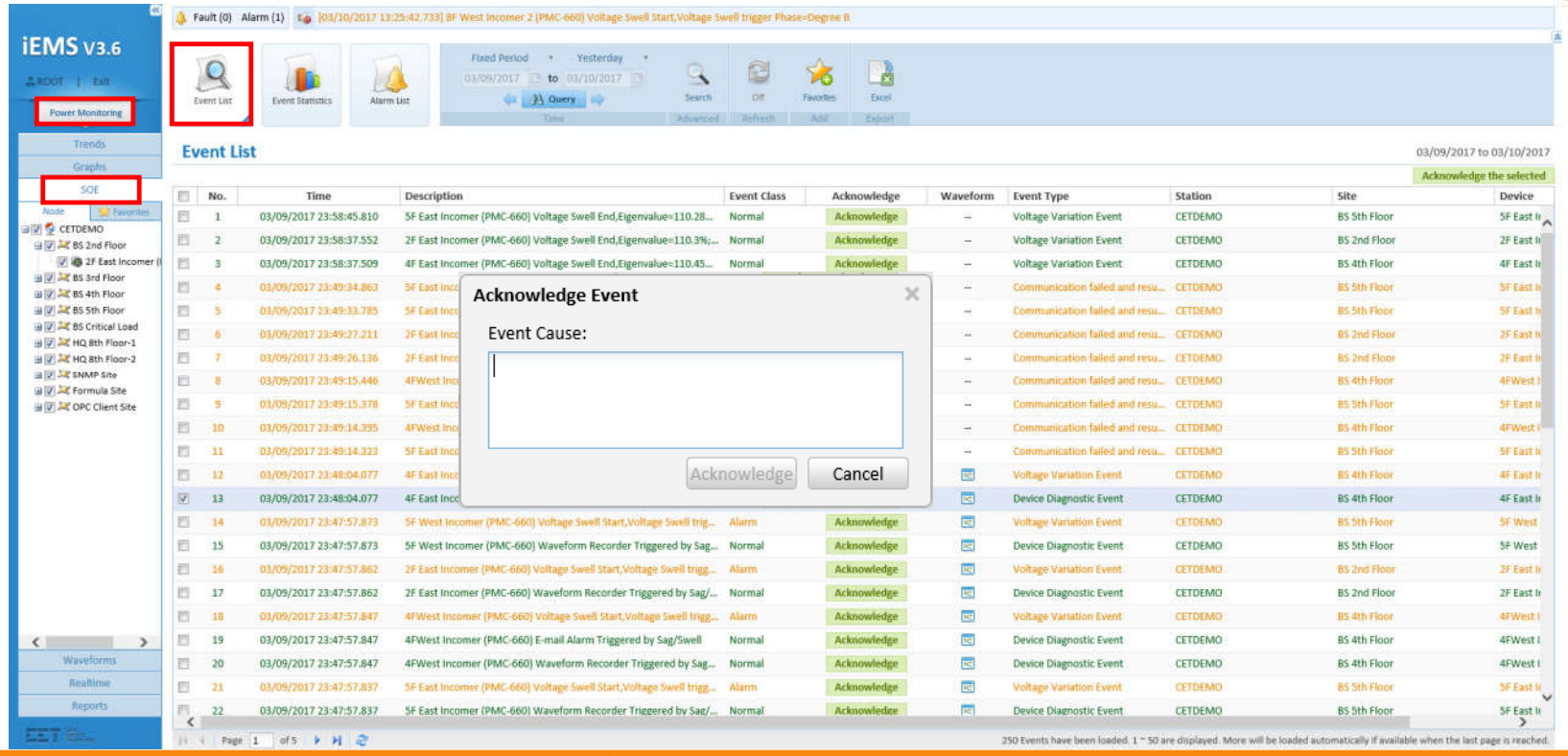
- Overlapped trends for multi-dimensional analysis:
  - Multiple measurements
  - Multiple devices
  - Multiple time range
- Trends can be pre-configured and saved in a library for ease of use:
  - Hide/Show checkbox
  - Delete or clear
  - Specify time and interval
  - Max. 24 trends
- Configurable color for the different trend lines



3.6 SOE Analysis

Event List

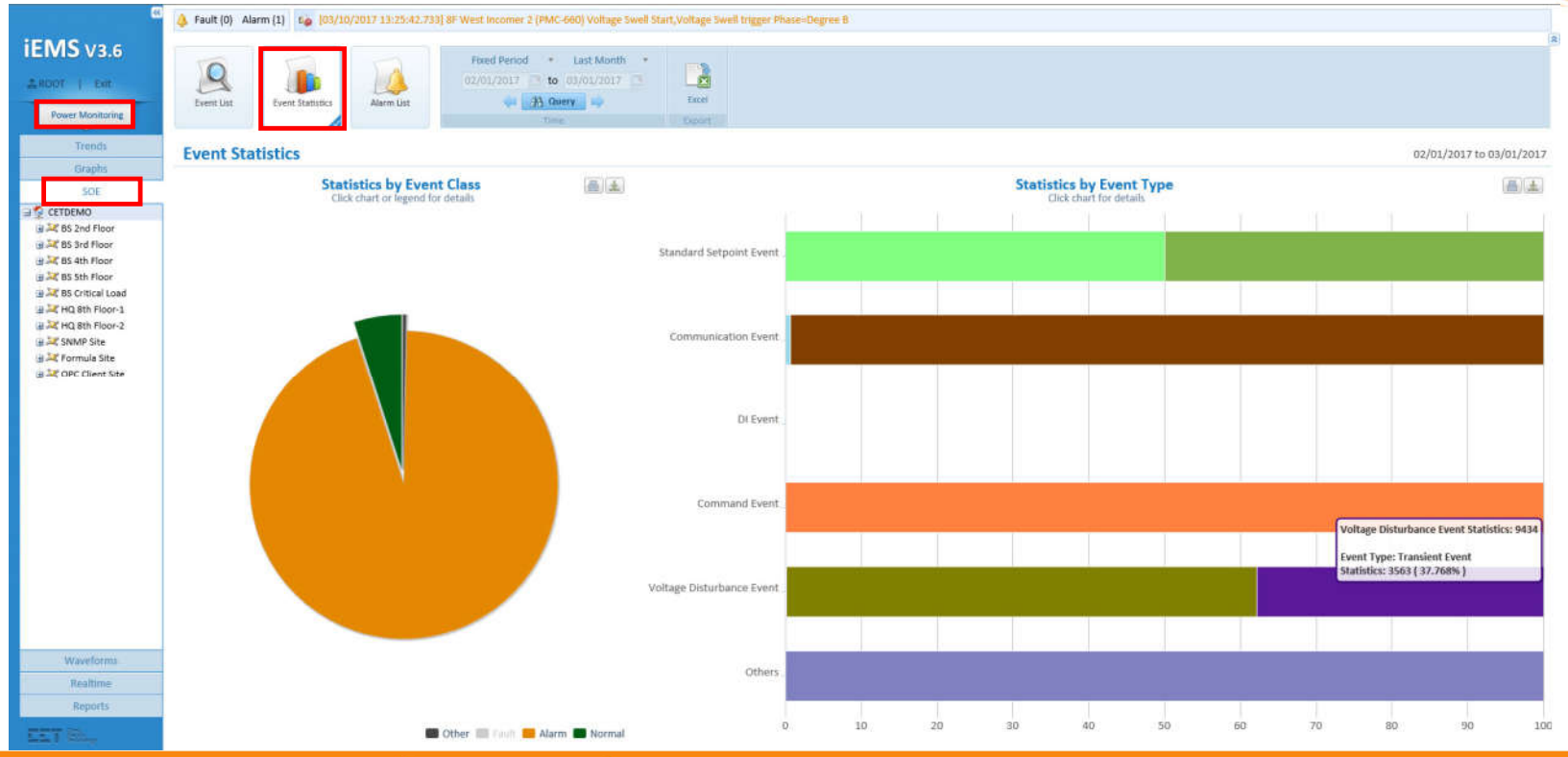
- Events are listed with:
  - Timestamp
  - Description
  - Event Class
  - Event Type
  - Station/Site/Device
- Acknowledgment for single or multiple events:
  - Event time
  - Event cause
  - Ack. user
- User can view waveforms associated with the event by clicking the WF icon.
- Support auto refresh.



3.6 SOE Analysis

Event Statistics

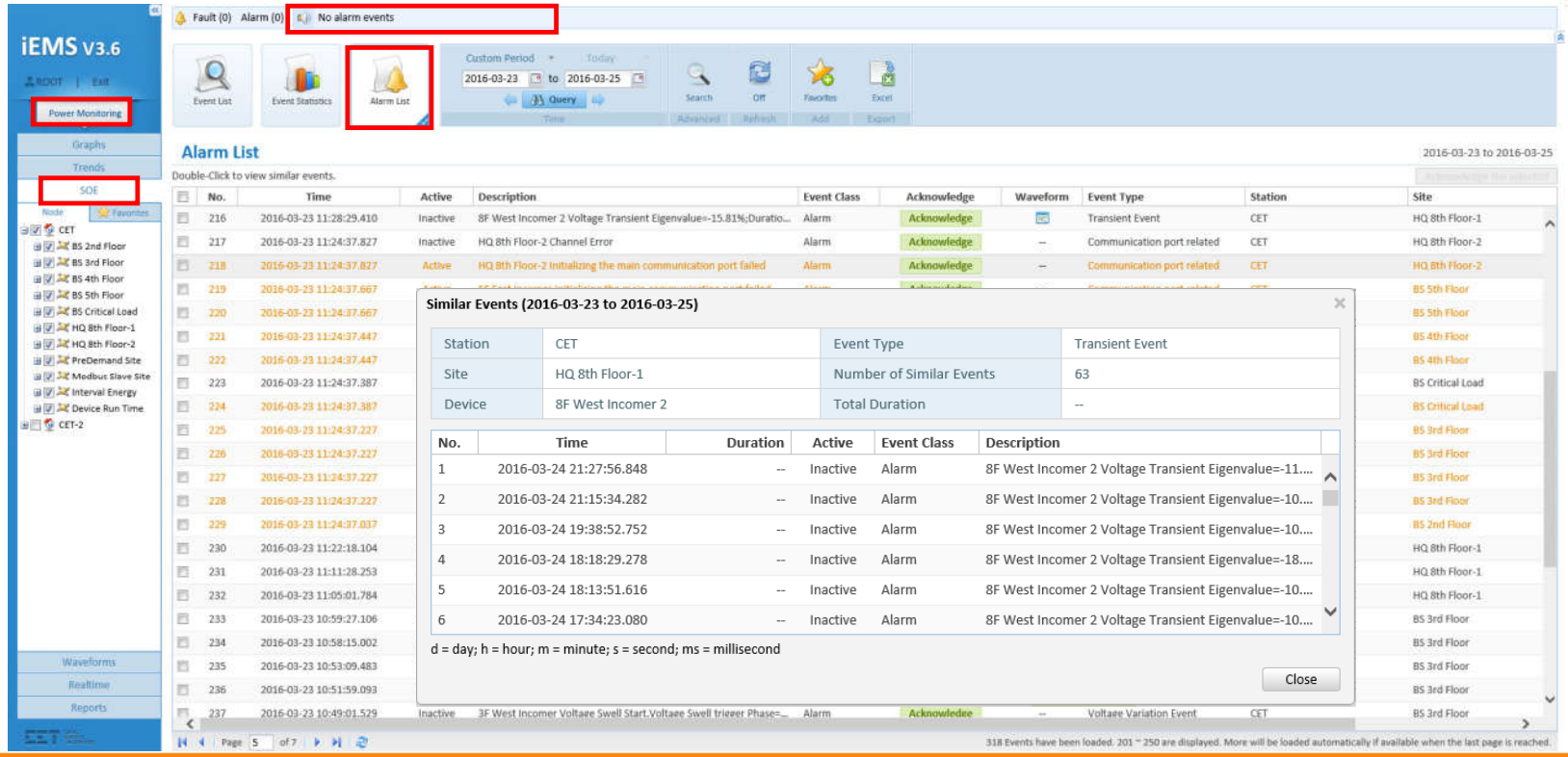
- Event statistics shown in a Pie Chart according to the selected Event Class:
  - Alarm
  - Fault
  - Normal
  - Other
- Event statistics shown in a Bar Chart according to the selected Event Type.
- Mouse over to the Pie or Bar Chart to show event totalization
  - Total number
  - Ratio
- Click on a Chart will go to the Event List page with the selected Event Type or Class



3.6 SOE Analysis

Alarm List

- Only Alarm events are listed:
  - Timestamp
  - Alarm Status (Active or not)
  - Description
  - Event Type
  - Station/Site/Device
- Acknowledgment for single or multiple events:
  - Event time
  - Event cause
  - Ack. user
- Clicking on the real-time alarm at the top of any page will jump to this Alarm List
- Double-clicking on a record will query similar events of the same type and display them in a new window



3.6 SOE Analysis

Events Filtering

- Click the Search button  to filter events by:
  - Keyword
  - With related waveform
  - Active
  - Acknowledge
  - Event Type
  - Event Class
- Event Types:
  - Setpoint event
  - Communication event
  - DI Event
  - Disturbance Event
  - Other
- Filters can be added to Favorites for quick query.

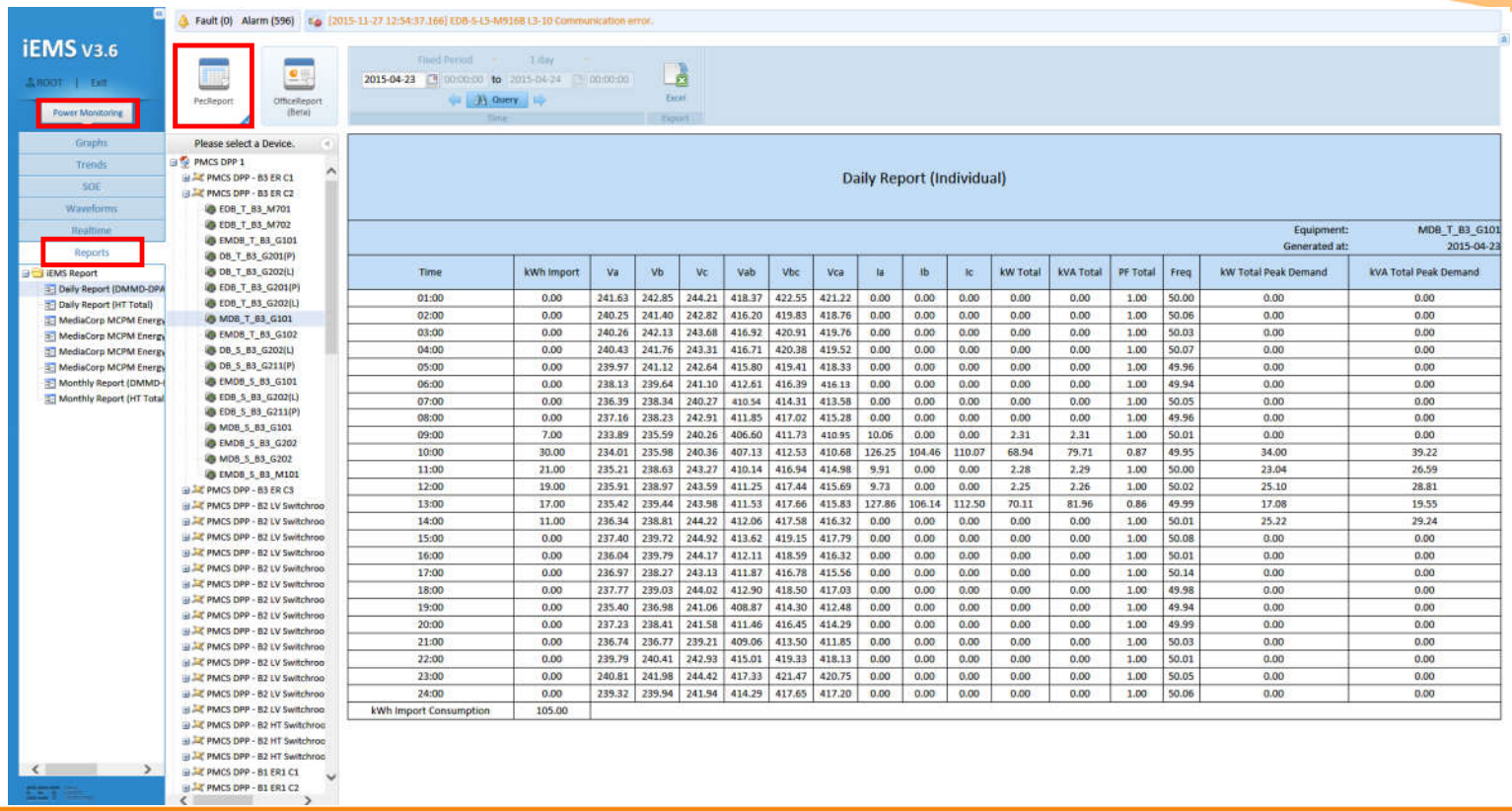
3.7 Waveform Analysis

- Waveform records are listed:
  - Timestamp
  - Station / Site / Device
- Double-clicking a WF event to view its waveforms in a pop-up window:
  - Voltage / Current WFs
  - RMS / Min / Max / Phase Angle
  - Start Time / Trigger Time / Sampling Rate/ Frequency / Sequence Measurements
  - Vector diagram
- Support multi-axis and single-axis display.
- Zoom In / Out and Reset.

3.8 Report Generation

PecReport

- User-friendly GUI for users to create customized reports for their needs.
- Export data to MS Excel or graphical file formats for further downstream processing
- All reports created by PecReport are listed:
  - Daily / Weekly / Monthly / Yearly Report
  - Period Report
  - Dynamic Report
  - Interval Report

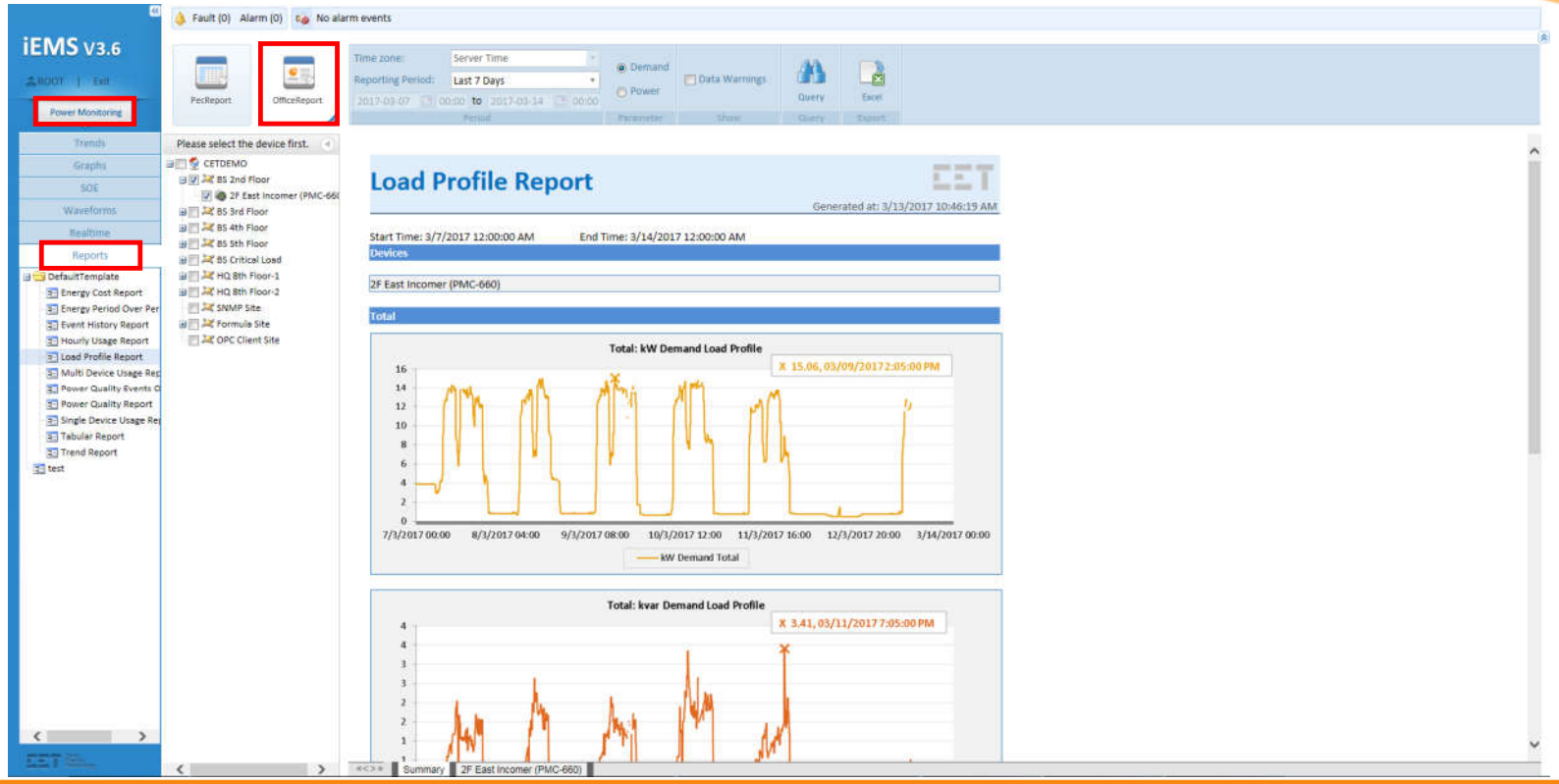


Time	kWh Import	Va	Vb	Vc	Vab	Vbc	Vca	Ia	Ib	Ic	kW Total	kVA Total	PF Total	Freq	kW Total Peak Demand	kVA Total Peak Demand
01:00	0.00	241.63	242.85	244.21	418.37	422.55	421.22	0.00	0.00	0.00	0.00	0.00	1.00	50.00	0.00	0.00
02:00	0.00	240.25	241.40	242.82	416.20	419.83	418.76	0.00	0.00	0.00	0.00	0.00	1.00	50.06	0.00	0.00
03:00	0.00	240.26	242.13	243.68	416.92	420.91	419.76	0.00	0.00	0.00	0.00	0.00	1.00	50.03	0.00	0.00
04:00	0.00	240.43	241.76	243.31	416.71	420.38	419.52	0.00	0.00	0.00	0.00	0.00	1.00	50.07	0.00	0.00
05:00	0.00	239.97	241.12	242.64	415.80	419.41	418.33	0.00	0.00	0.00	0.00	0.00	1.00	49.96	0.00	0.00
06:00	0.00	238.13	239.64	241.10	412.61	416.39	416.13	0.00	0.00	0.00	0.00	0.00	1.00	49.94	0.00	0.00
07:00	0.00	236.39	238.34	240.27	410.54	414.31	413.58	0.00	0.00	0.00	0.00	0.00	1.00	50.05	0.00	0.00
08:00	0.00	237.16	238.23	242.91	411.85	417.02	415.28	0.00	0.00	0.00	0.00	0.00	1.00	49.96	0.00	0.00
09:00	7.00	233.89	235.59	240.26	406.60	411.73	410.95	10.06	0.00	0.00	2.31	2.31	1.00	50.01	0.00	0.00
10:00	30.00	234.01	235.98	240.36	407.13	412.53	410.68	126.25	104.46	110.07	68.94	79.71	0.87	49.95	34.00	39.22
11:00	21.00	235.21	238.63	243.27	410.14	416.94	414.98	9.91	0.00	0.00	2.28	2.29	1.00	50.00	23.04	26.59
12:00	19.00	235.91	238.97	243.59	411.25	417.44	415.69	9.73	0.00	0.00	2.25	2.26	1.00	50.02	25.10	28.81
13:00	17.00	235.42	239.44	243.98	411.53	417.66	415.83	127.86	106.14	112.50	70.11	81.96	0.86	49.99	17.08	19.55
14:00	11.00	236.34	238.81	244.22	412.06	417.58	416.32	0.00	0.00	0.00	0.00	0.00	1.00	50.01	25.22	29.24
15:00	0.00	237.40	239.72	244.92	413.62	419.15	417.79	0.00	0.00	0.00	0.00	0.00	1.00	50.08	0.00	0.00
16:00	0.00	236.04	239.79	244.17	412.11	418.59	416.32	0.00	0.00	0.00	0.00	0.00	1.00	50.01	0.00	0.00
17:00	0.00	236.97	238.27	243.13	411.87	416.78	415.56	0.00	0.00	0.00	0.00	0.00	1.00	50.14	0.00	0.00
18:00	0.00	237.77	239.03	244.02	412.90	418.50	417.03	0.00	0.00	0.00	0.00	0.00	1.00	49.98	0.00	0.00
19:00	0.00	235.40	236.98	241.06	408.87	414.30	412.48	0.00	0.00	0.00	0.00	0.00	1.00	49.94	0.00	0.00
20:00	0.00	237.23	238.41	241.58	411.46	416.45	414.29	0.00	0.00	0.00	0.00	0.00	1.00	49.99	0.00	0.00
21:00	0.00	236.74	236.77	239.21	409.06	413.50	411.85	0.00	0.00	0.00	0.00	0.00	1.00	50.03	0.00	0.00
22:00	0.00	239.79	240.41	242.93	415.01	419.33	418.13	0.00	0.00	0.00	0.00	0.00	1.00	50.01	0.00	0.00
23:00	0.00	240.81	241.98	244.42	417.33	421.47	420.75	0.00	0.00	0.00	0.00	0.00	1.00	50.05	0.00	0.00
24:00	0.00	239.32	239.94	241.94	414.29	417.65	417.20	0.00	0.00	0.00	0.00	0.00	1.00	50.06	0.00	0.00
kWh Import Consumption	105.00															

3.8 Report Generation

OfficeReport

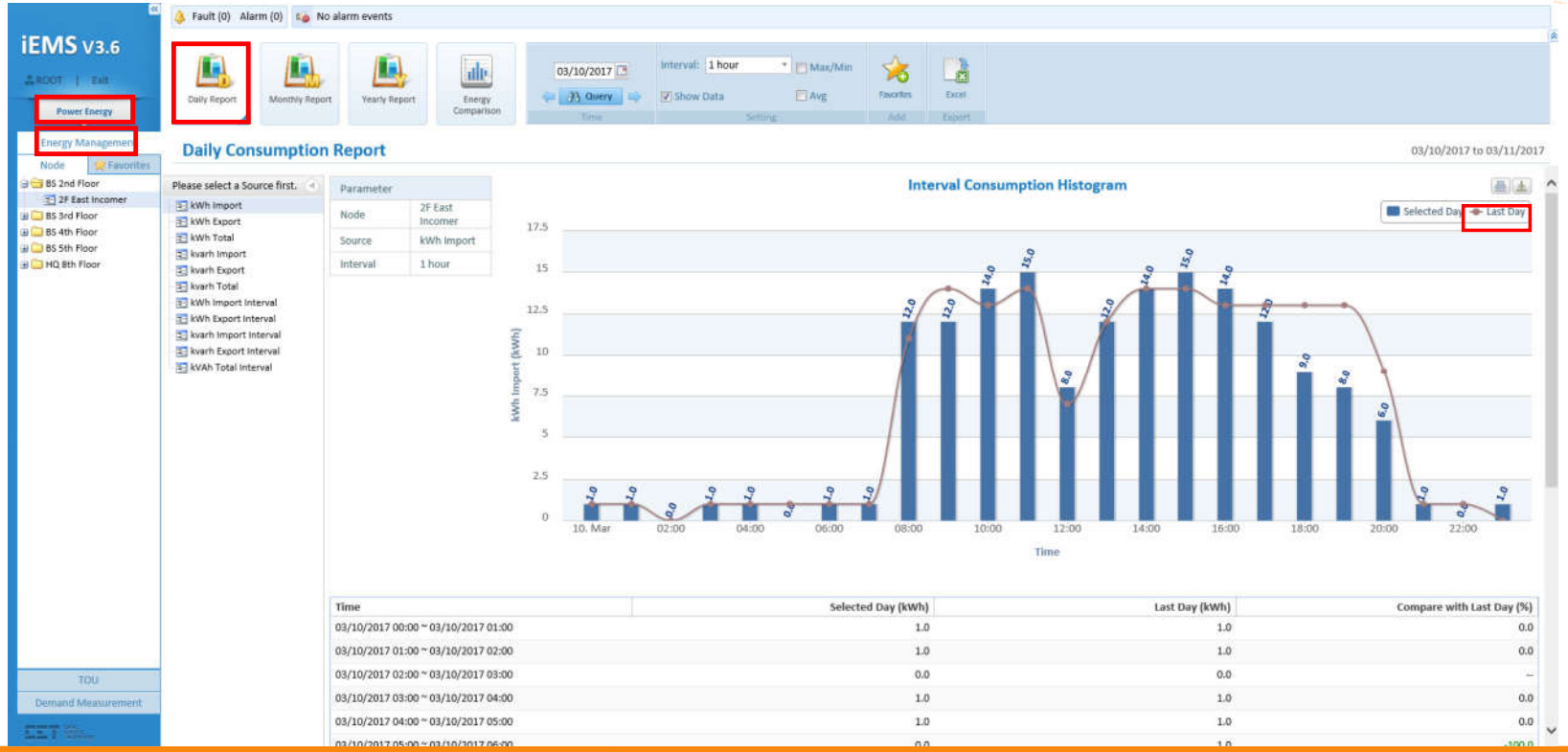
- Available Reports:
  - Energy Cost Report
  - Energy Period over Period
  - Single Device Usage
  - Multi Device Usage
  - Hourly Usage Report
  - Power Quality Report
  - Power Quality Events Only Report
  - Load Profile Report
  - Event History Report
  - Tabular Report
  - Trend Report
- Support Server Time & Local Time.



3.9 Energy Usage Analysis

Daily Usage Report

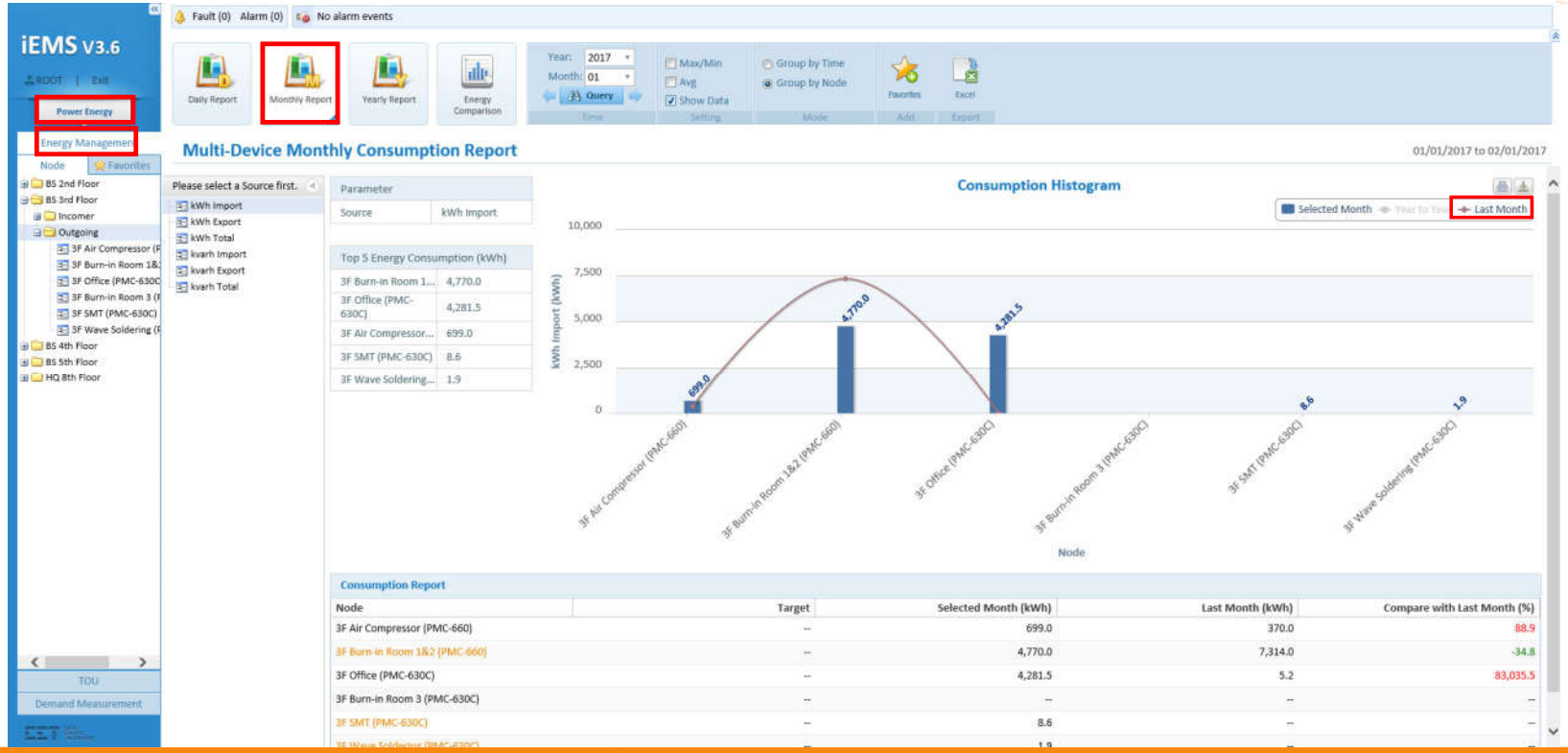
- Display the Daily Energy report:
  - Show in Bar Chart
  - Show readings in a Table
  - Show data over Bar Chart
  - Comparison with last day
- Selecting an Energy Group on the left-hand pane will show the total energy consumption of the group and its top 5 consumption devices.
- Interval: 15 minutes, 30 minutes or 1 hour.



3.9 Energy Usage Analysis

Monthly Usage Report

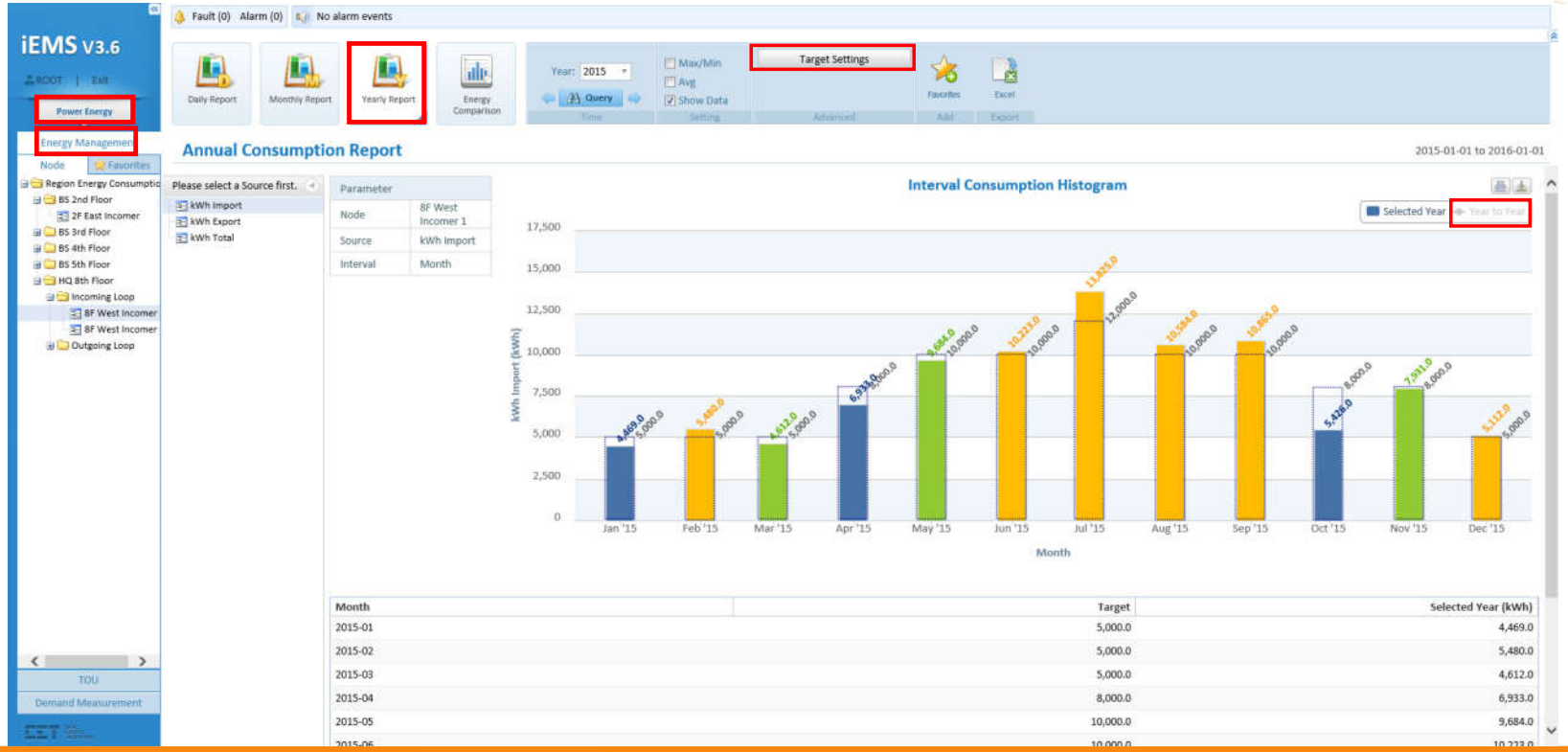
- Display the monthly energy report:
  - Show in Bar Chart
  - Show readings in Table
  - Show data over Bar Chart
  - Comparison with last month
- Selecting an Energy Group on the left-hand pane will show the total energy consumption of the group and its top 5 consumption devices.
- Increase in Energy Usage is highlighted in red and decrease in green.



3.9 Energy Usage Analysis

Yearly Usage Report and Target Analysis

- Display the annual energy report:
  - Show in Bar Chart
  - Show readings in a Table
  - Show data over Bar Chart
  - Comparison with last year
- Selecting an Energy Group on the left-hand pane will show the total energy consumption of the group and its top 5 consumption devices.
- Click **Target Settings** to set the target of each month and each node.
- Different colors indicate the target compliance status.

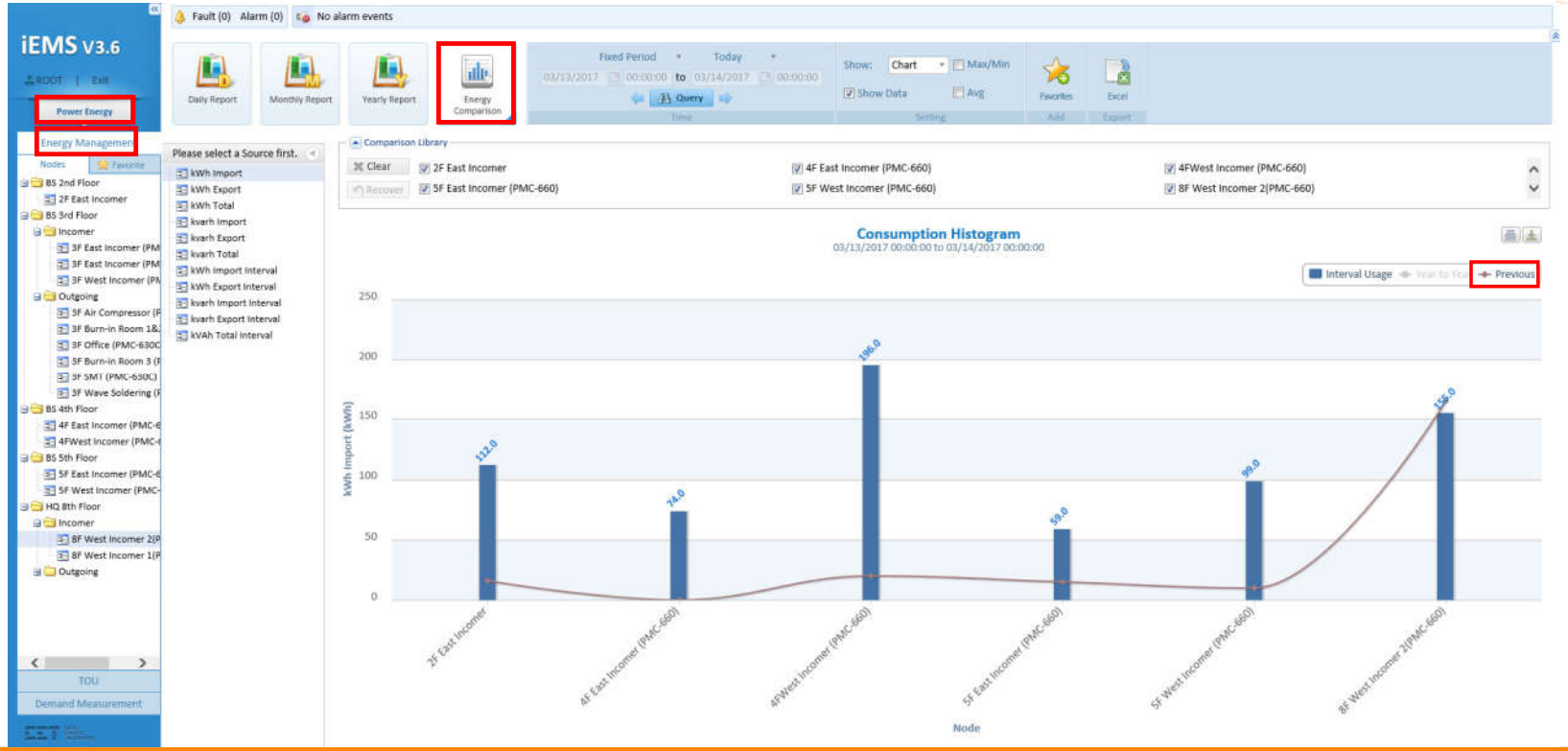


Month	Target	Selected Year (kWh)
2015-01	5,000.0	4,469.0
2015-02	5,000.0	5,480.0
2015-03	5,000.0	4,612.0
2015-04	8,000.0	6,933.0
2015-05	10,000.0	9,684.0

3.9 Energy Usage Analysis

Usage Comparison

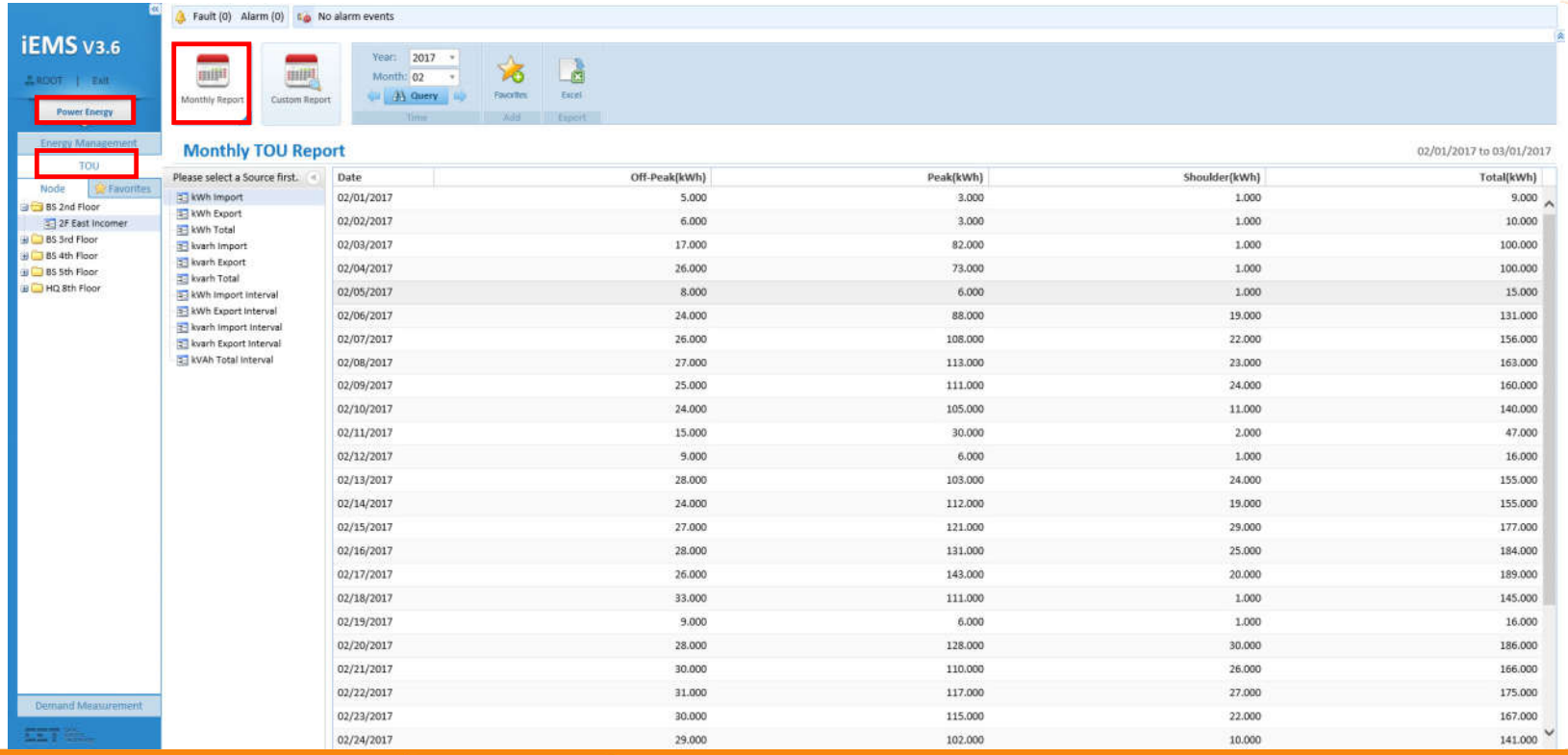
- Display the energy comparison report of multiple devices:
  - Show in Bar Chart
  - Show readings in a Table
  - Show data over Bar Chart
  - Compared with previous period with overlapping Curve
- Period: 1 Day, 1 Week, 1 Month, 1 Quarter or 1 Year
- Ability to add to the Comparison Library for quick access



3.9 Energy Usage Analysis

TOU (Time Of Use – a.k.a. Tariff)

- Display the TOU Monthly Energy report in a Table:
  - TOU Schema is defined in PecConfig
- Support export to Excel.

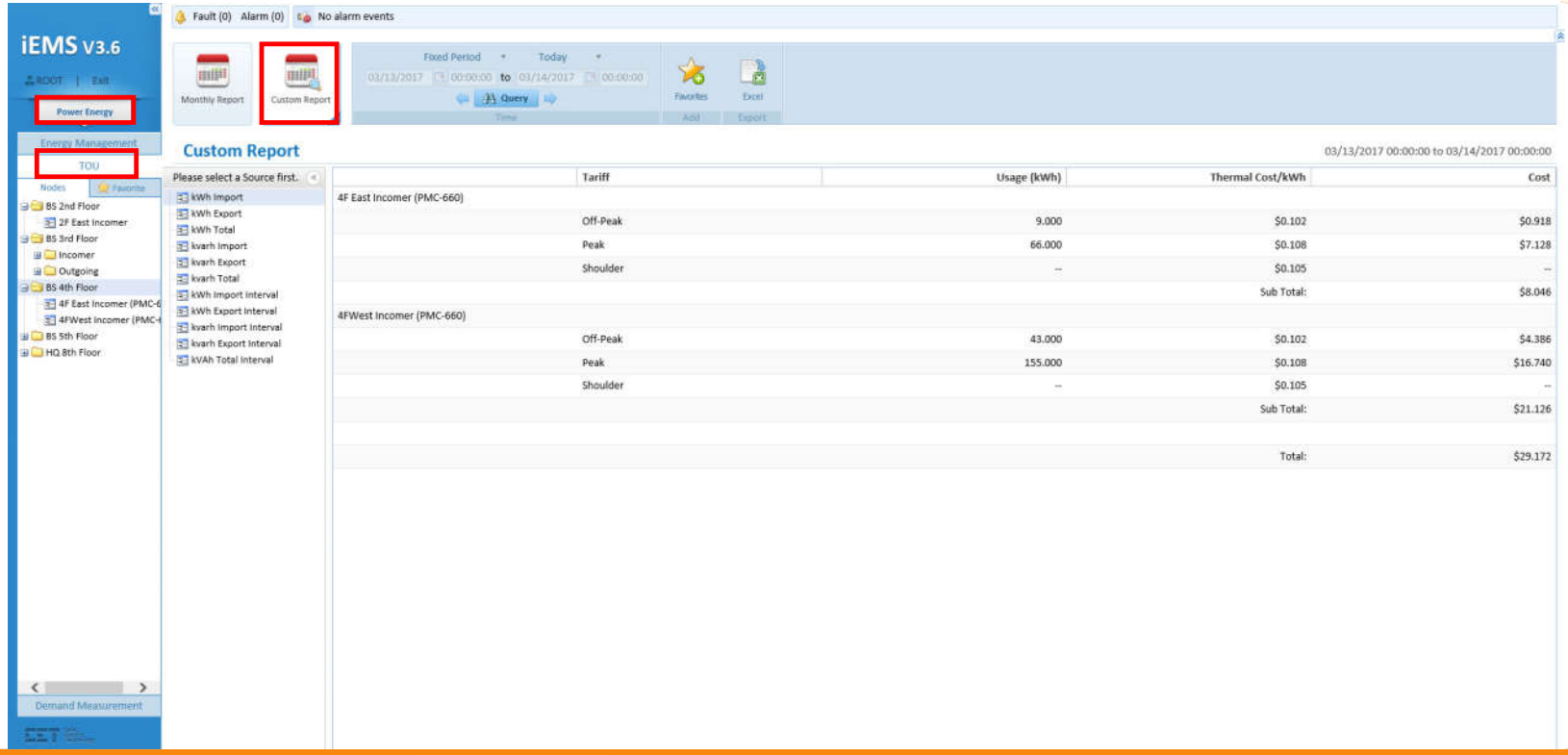


Date	Off-Peak(kWh)	Peak(kWh)	Shoulder(kWh)	Total(kWh)
02/01/2017	5.000	3.000	1.000	9.000
02/02/2017	6.000	3.000	1.000	10.000
02/03/2017	17.000	82.000	1.000	100.000
02/04/2017	26.000	73.000	1.000	100.000
02/05/2017	8.000	6.000	1.000	15.000
02/06/2017	24.000	88.000	19.000	131.000
02/07/2017	26.000	108.000	22.000	156.000
02/08/2017	27.000	113.000	23.000	163.000
02/09/2017	25.000	111.000	24.000	160.000
02/10/2017	24.000	105.000	11.000	140.000
02/11/2017	15.000	30.000	2.000	47.000
02/12/2017	9.000	6.000	1.000	16.000
02/13/2017	28.000	103.000	24.000	155.000
02/14/2017	24.000	112.000	19.000	155.000
02/15/2017	27.000	121.000	29.000	177.000
02/16/2017	28.000	131.000	25.000	184.000
02/17/2017	26.000	143.000	20.000	189.000
02/18/2017	33.000	111.000	1.000	145.000
02/19/2017	9.000	6.000	1.000	16.000
02/20/2017	28.000	128.000	30.000	186.000
02/21/2017	30.000	110.000	26.000	166.000
02/22/2017	31.000	117.000	27.000	175.000
02/23/2017	30.000	115.000	22.000	167.000
02/24/2017	29.000	102.000	10.000	141.000

3.9 Energy Usage Analysis

Customized TOU Report

- Display the Energy Cost report of an Energy Group for each device in a Table:
  - Tariff
  - Energy Usage
  - Cost
- Period: 1 Day, 1 Week, 1 Month, 1 Quarter or 1 Year
- Support export to Excel



	Tariff	Usage (kWh)	Thermal Cost/kWh	Cost
4F East Incomer (PMC-660)				
	Off-Peak	9.000	$0.102	$0.918
	Peak	66.000	$0.108	$7.128
	Shoulder	--	$0.105	--
			Sub Total:	$8.046
4FWest Incomer (PMC-660)				
	Off-Peak	43.000	$0.102	$4.386
	Peak	155.000	$0.108	$16.740
	Shoulder	--	$0.105	--
			Sub Total:	$21.126
			Total:	$29.172

3.10 Demand Analysis

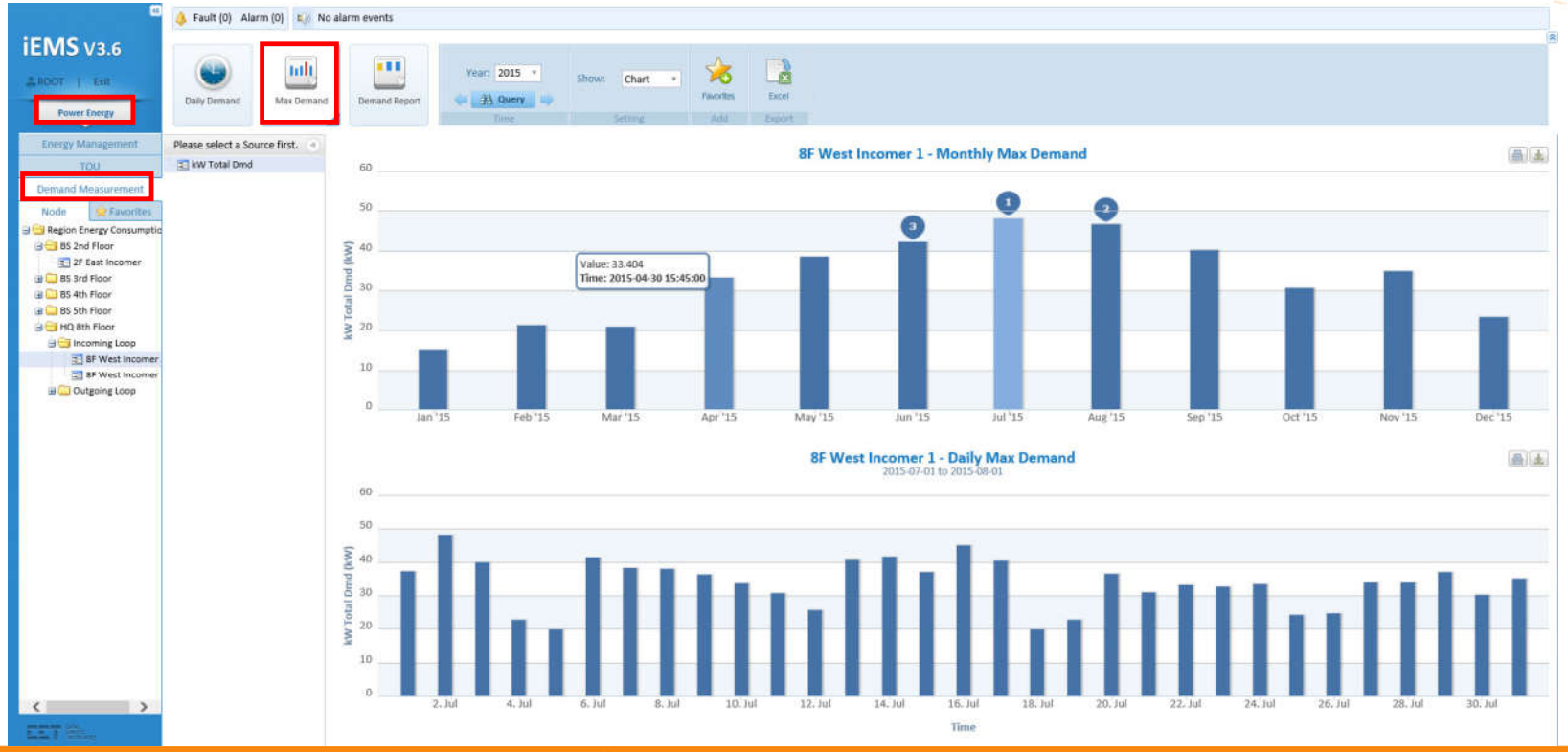
Daily Demand

- Display the Total and Per-Phase Demand (kW, kvar, kVA) in Bar Chart or Table:
  - Present Demand
  - Previous Demand
  - Predicted Demand
- User can set multiple contract Demand Limits (as in TOU) to provide easy visualization on whether the limits have been breached.
- Demand values which exceed the contract limits are highlighted in red.

3.10 Demand Analysis

Max. Demand

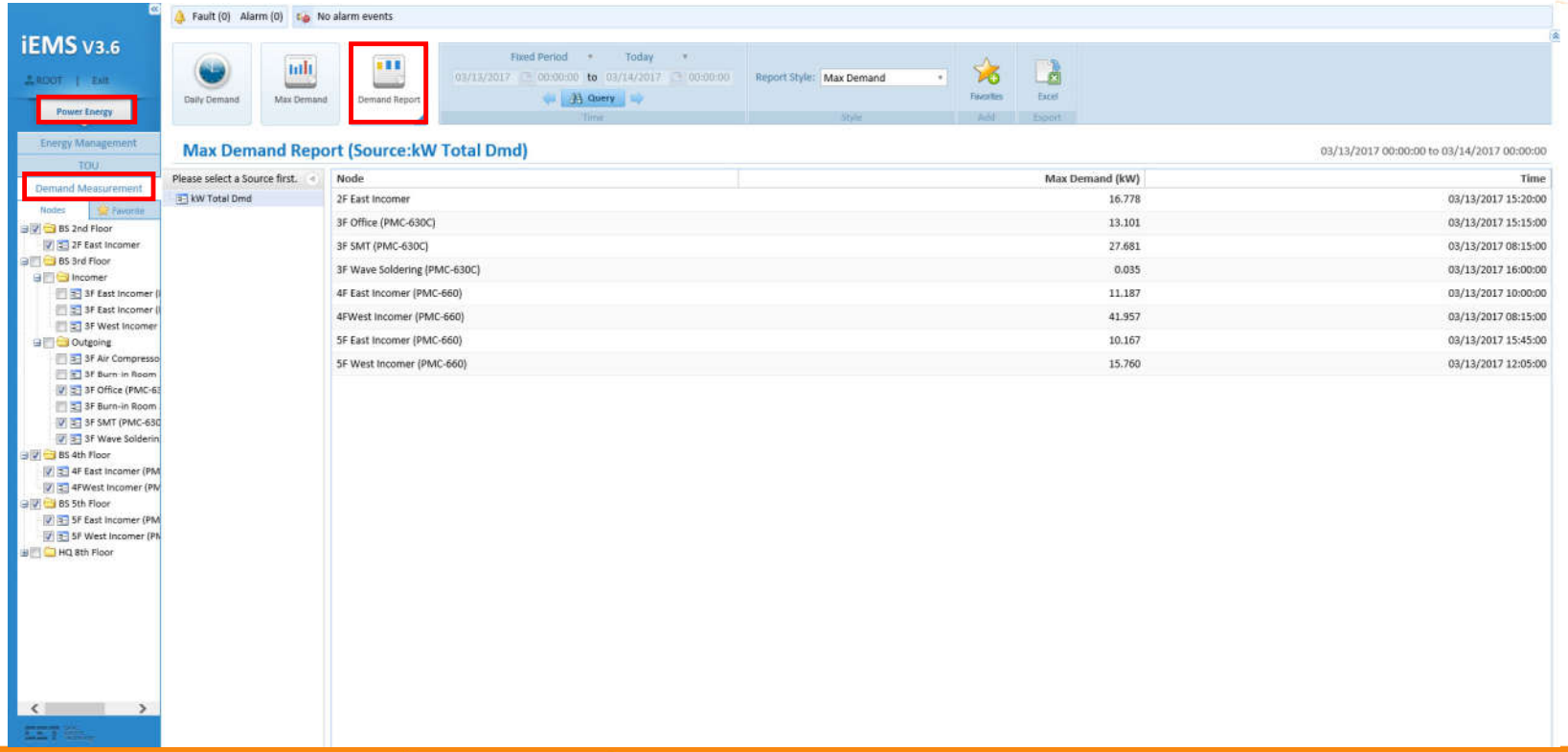
- Display the monthly max demand of kW Total Demand in Bar Chart or Table:
  - Each month of the year
  - Each day of the month
- Top 3 monthly max demands are marked in the Chart



3.10 Demand Analysis

Demand Report

- Display the Total and Per-Phase Demand (kW, kvar, kVA) Report:
  - Max. Demand
  - Demand Setpoint
- Detailed Information:
  - Node
  - Value
  - Timestamp
- Fixed period: 1 Day, 1 Week, 1 Month or 1 Quarter
- Support custom period



3.11 Power Quality Analysis

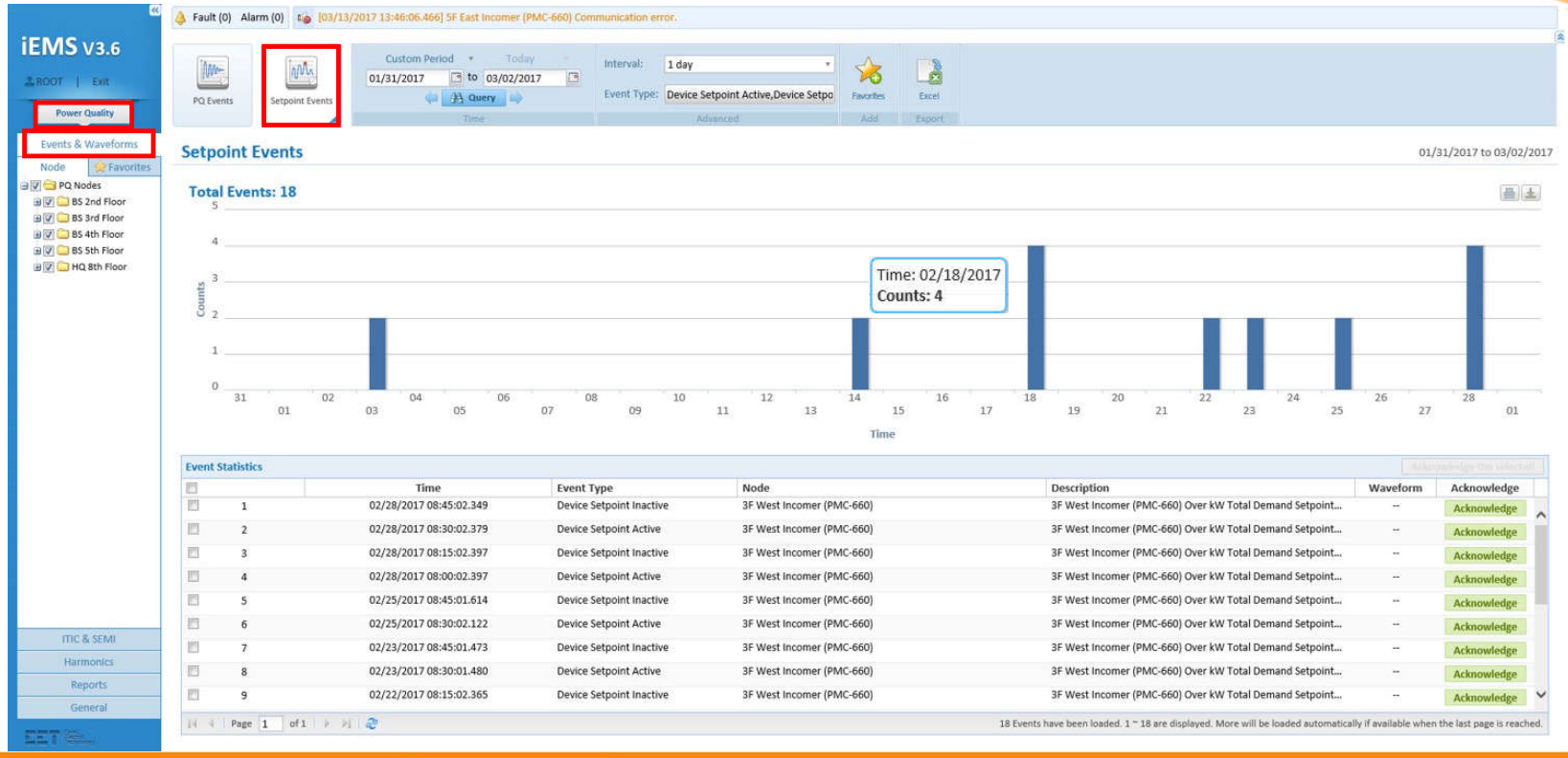
PQ Events & Waveforms

- Total counts and detailed information are listed.
  - Timestamp
  - Event Type
  - Direction
  - Duration
  - Magnitude (%)
  - Node
- Events are shown by group or individually
  - Transient
  - Dip
  - Swell
  - Interruption
- User can view the Waveform and acknowledge the Event

3.11 Power Quality Analysis

Setpoint Events

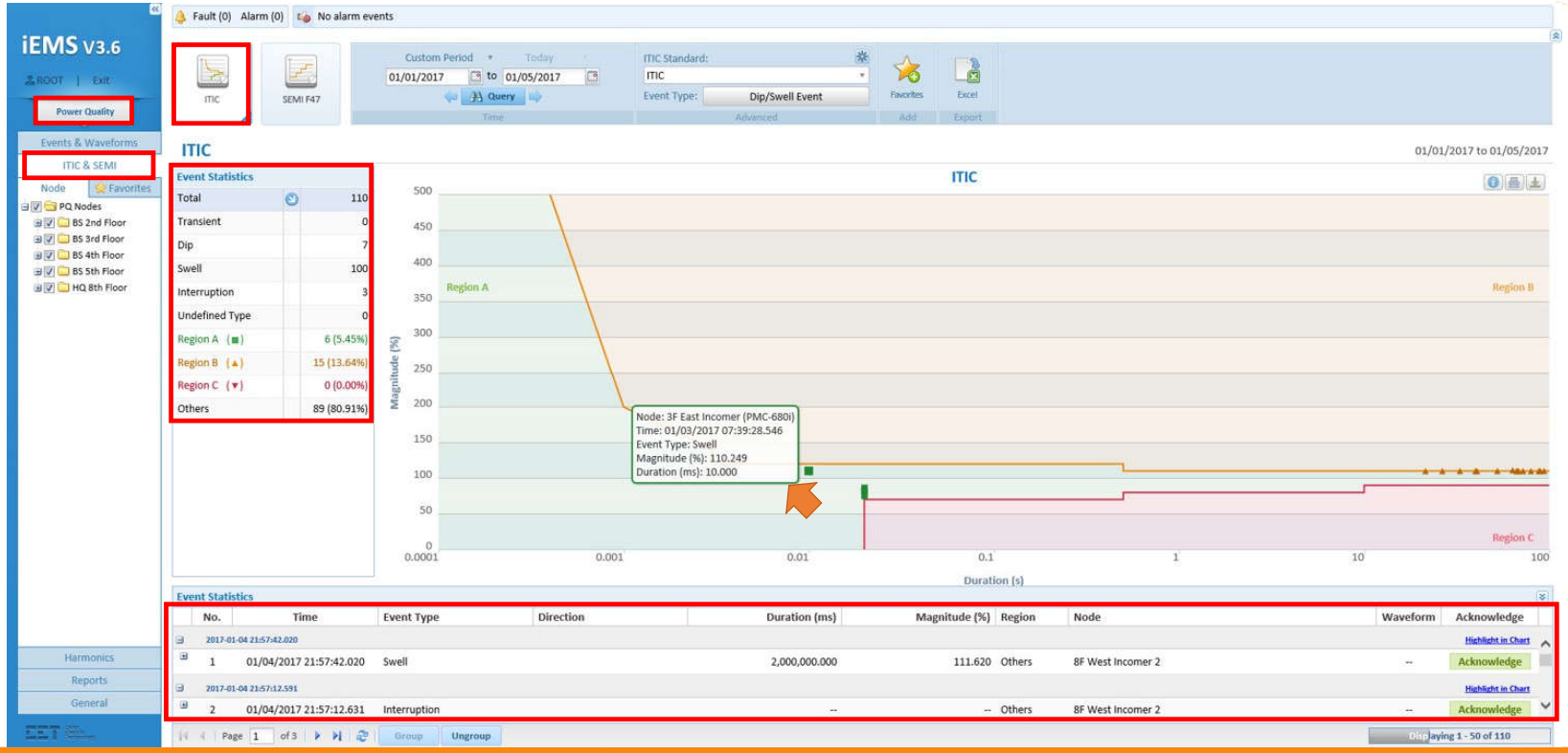
- Total counts and detailed information are listed
  - Timestamp
  - Event Type
  - Node
  - Description
- Events statistics of device setpoints are shown
  - Setpoint Active
  - Setpoint Inactive
- User can view the Waveform and acknowledge the Event



3.11 Power Quality Analysis

ITIC

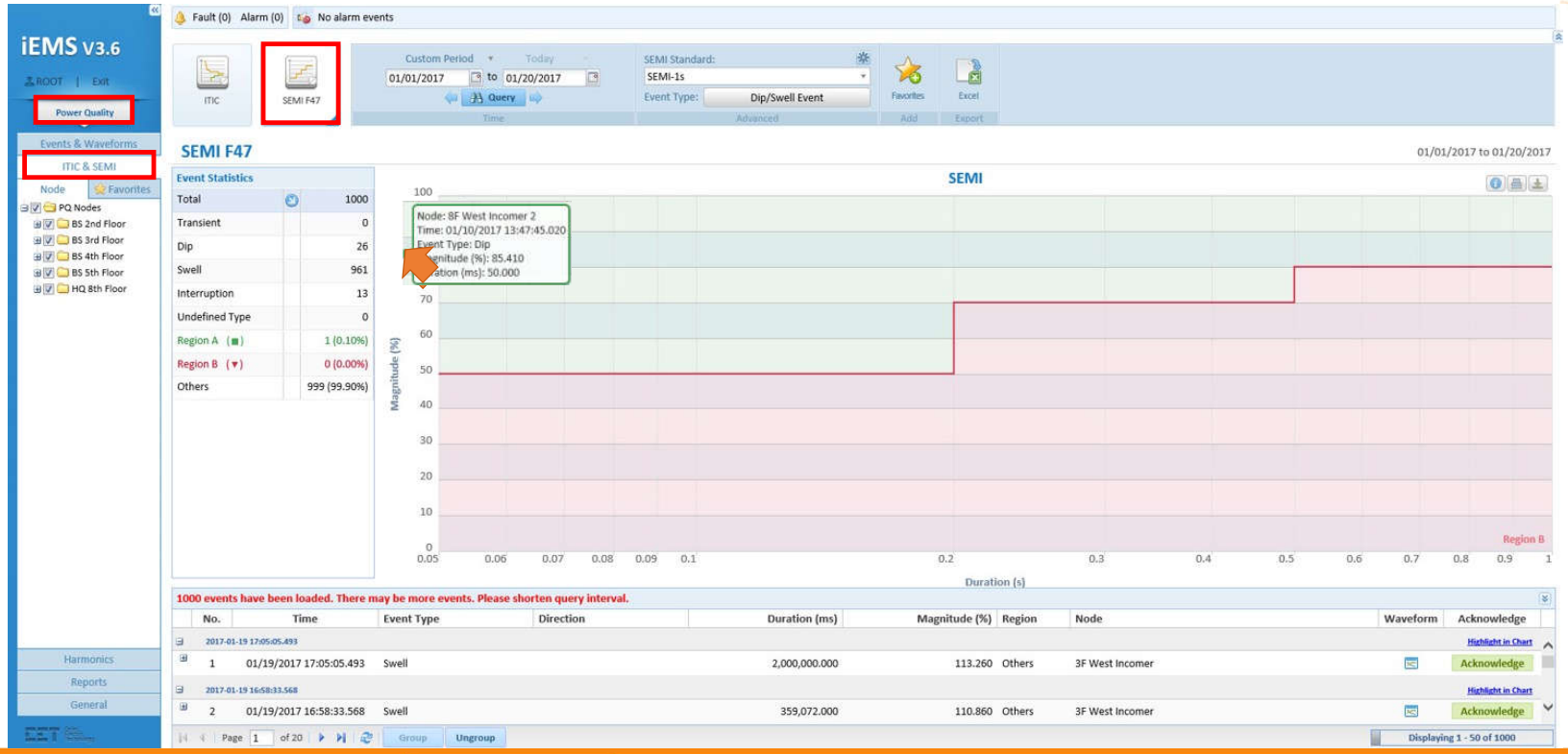
- Events' detailed information are listed at the bottom
  - Timestamp
  - Event Type
  - Direction
  - Duration (ms)
  - Magnitude (%)
  - Region
  - Node
  - Waveform if available
- Summary of the different Event Counts and the Regional statistics are displayed
- Support custom ITIC config.



3.11 Power Quality Analysis

SEMI F47

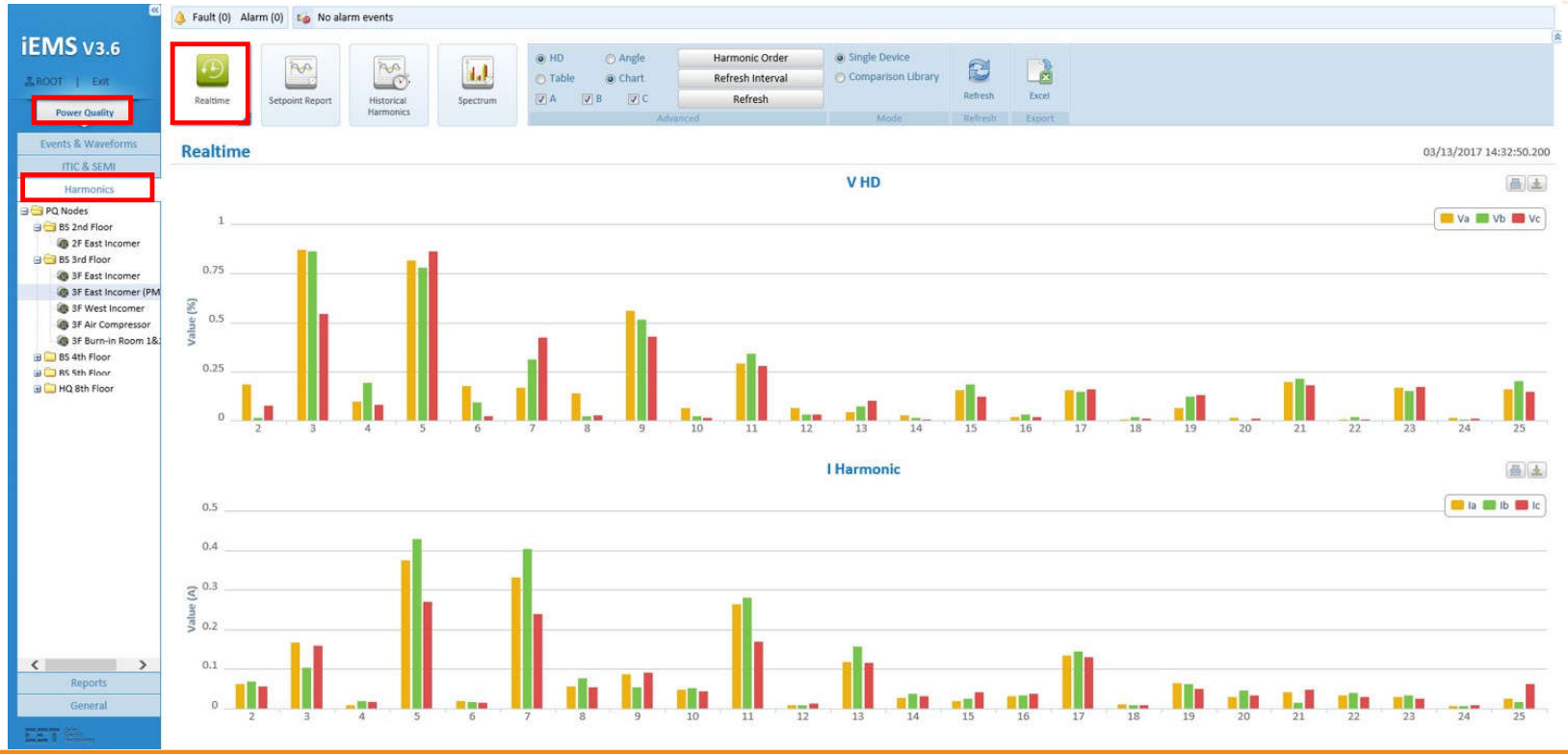
- Events' detailed information are listed at the bottom
  Timestamp
  - Event Type
  - Direction
  - Duration (ms)
  - Magnitude (%)
  - Region
  - Node
  - Waveform if available
- Summary of the different Event Counts and the Regional statistics are displayed
- Support custom SEMI config.



3.11 Power Quality Analysis

Harmonics Monitoring

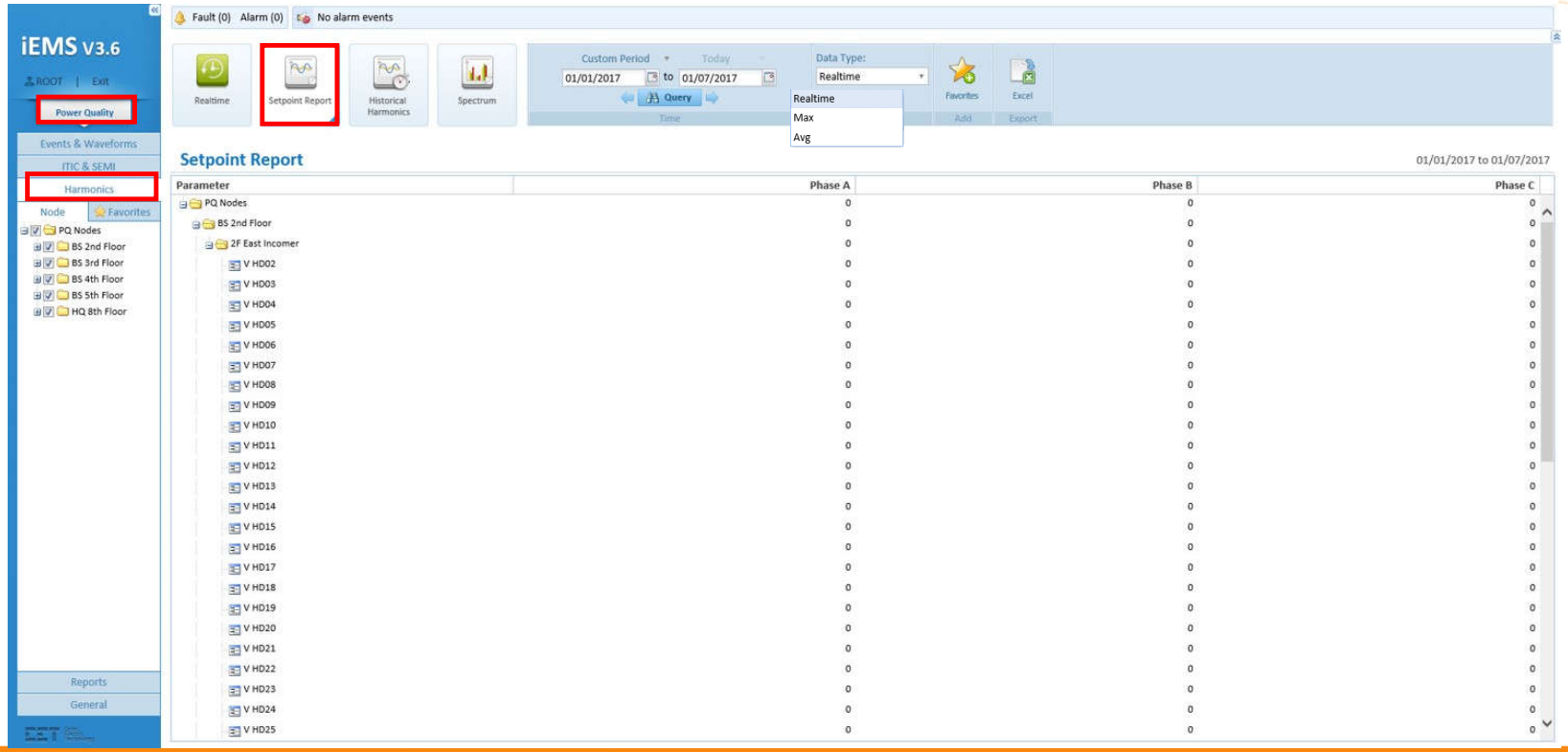
- Real-time harmonics histograms of voltage and current are shown in different colors:
  - Va
  - Vb
  - Vc
  - Ia
  - Ib
  - Ic
- Hide or show the harmonics histogram by simply click the legend or phase label.
- Max. 63 harmonics



3.11 Power Quality Analysis

Setpoint Report

- Setpoint statistic report of individual harmonic for each device:
  - Va
  - Vb
  - Vc
  - Ia
  - Ib
  - Ic
- Max. 63 harmonics



3.11 Power Quality Analysis

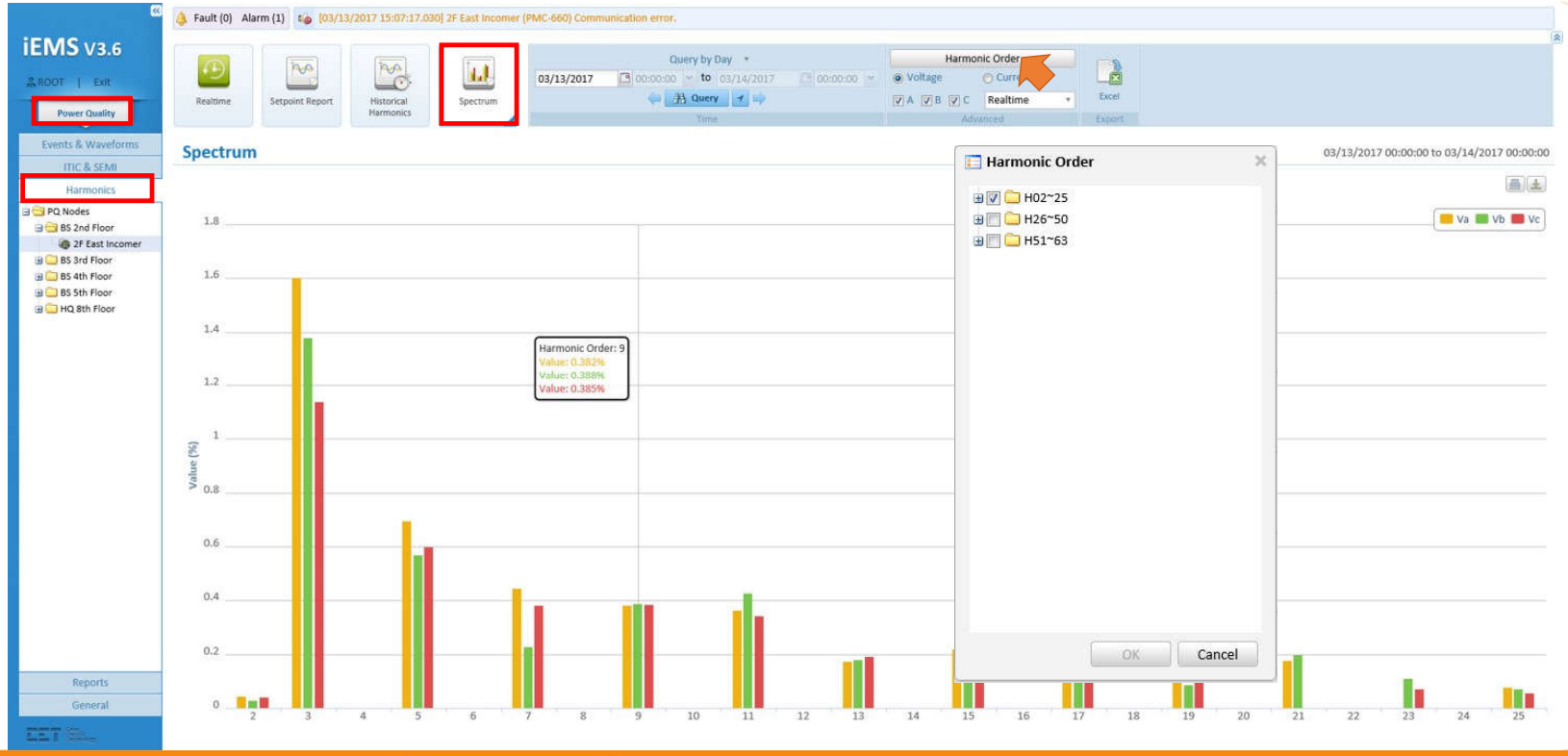
Historical Harmonics

- Historical harmonics of individual harmonic voltage and current can be shown in curve or Table:
  - Va
  - Vb
  - Vc
  - Ia
  - Ib
  - Ic
- The trend is shown based on the default recording interval, but it can also be shown in other intervals.
- Ability to add to the Comparison Library for quick access

3.11 Power Quality Analysis

Harmonics Spectrum

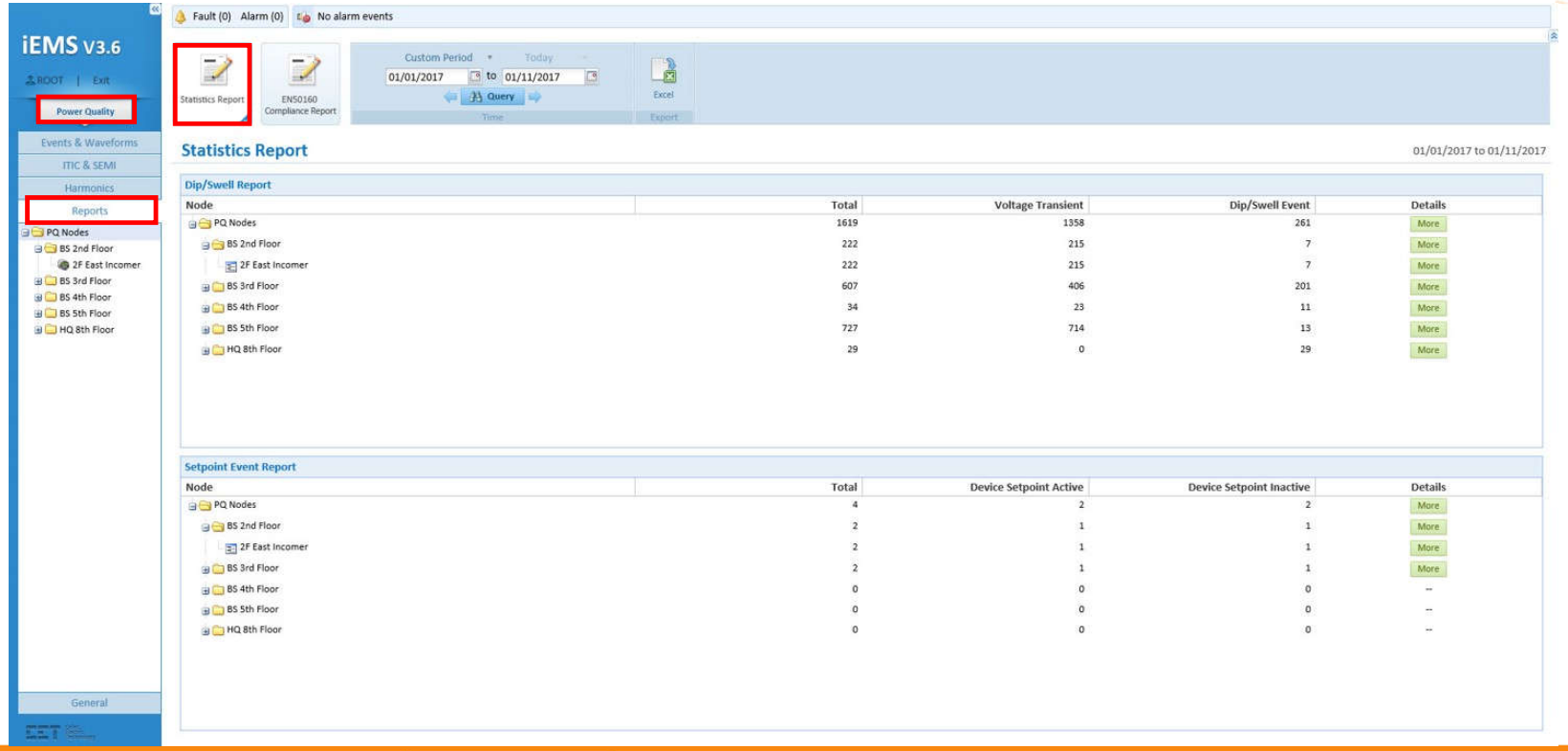
- Harmonic spectrum of Voltage and Current can be shown by day or custom period:
  - Va
  - Vb
  - Vc
  - Ia
  - Ib
  - Ic
- Max. 63 harmonics
- Supports to export in Excel format



3.11 Power Quality Analysis

PQ Statistics Report

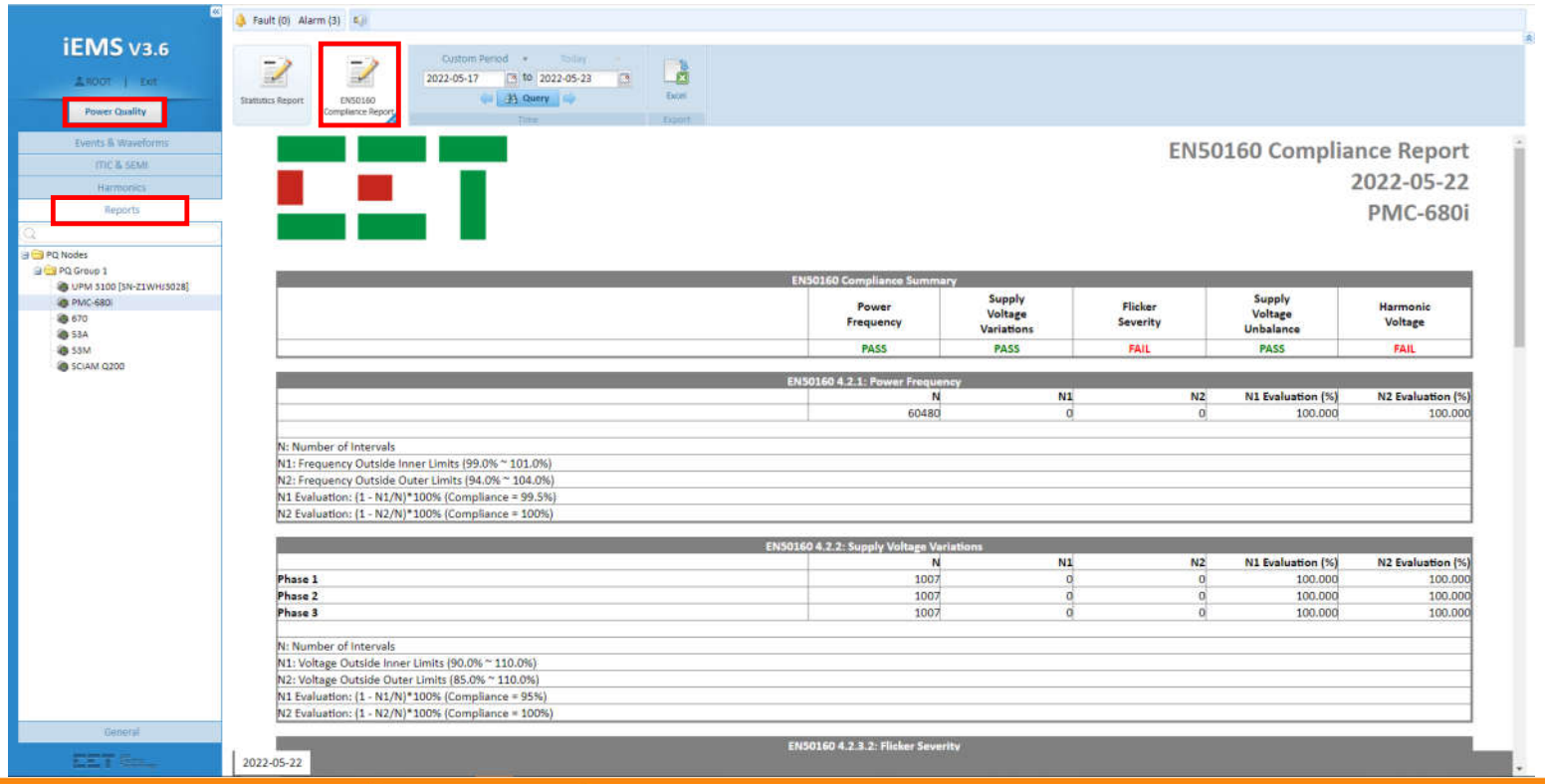
- PQ Statistics reports include the total PQ Event counts and the counts of the individual Event Types of according to the following Event Types:
  - Transient
  - Dip/Swell
  - Device Setpoint Active
  - Device Setpoint Inactive



3.11 Power Quality Analysis

EN50160 Compliance Report

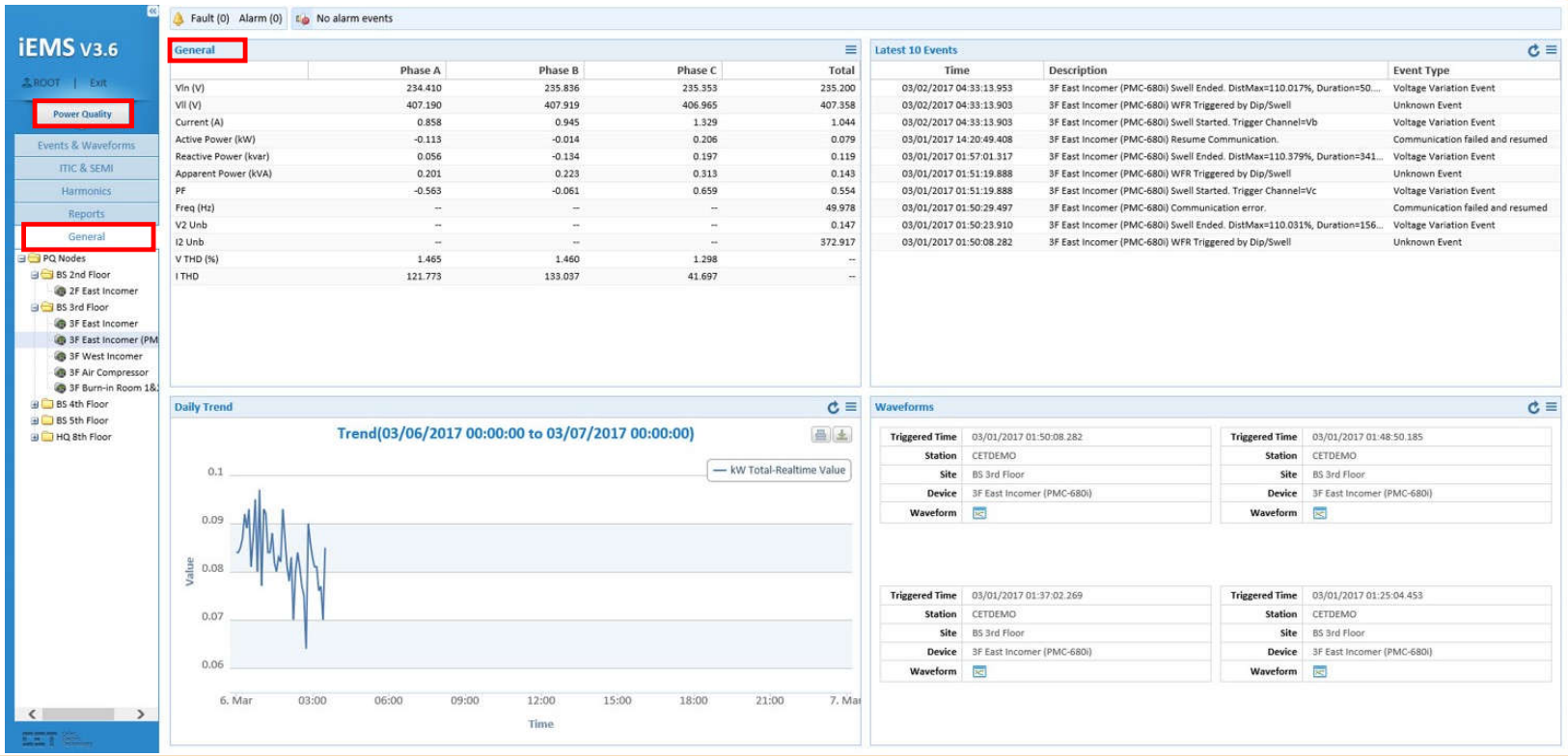
- EN50160 PQ Compliance reports are available for devices that support it:
  - Power Frequency
  - Supply Voltage Variations
  - Flicker Severity
  - Supply Voltage Unbalance
  - Harmonic Voltage
  - Supply Voltage Dips
  - Supply Voltage Interruptions
  - Temporary Over-voltages
- Supports to export in Excel format



3.11 Power Quality Analysis

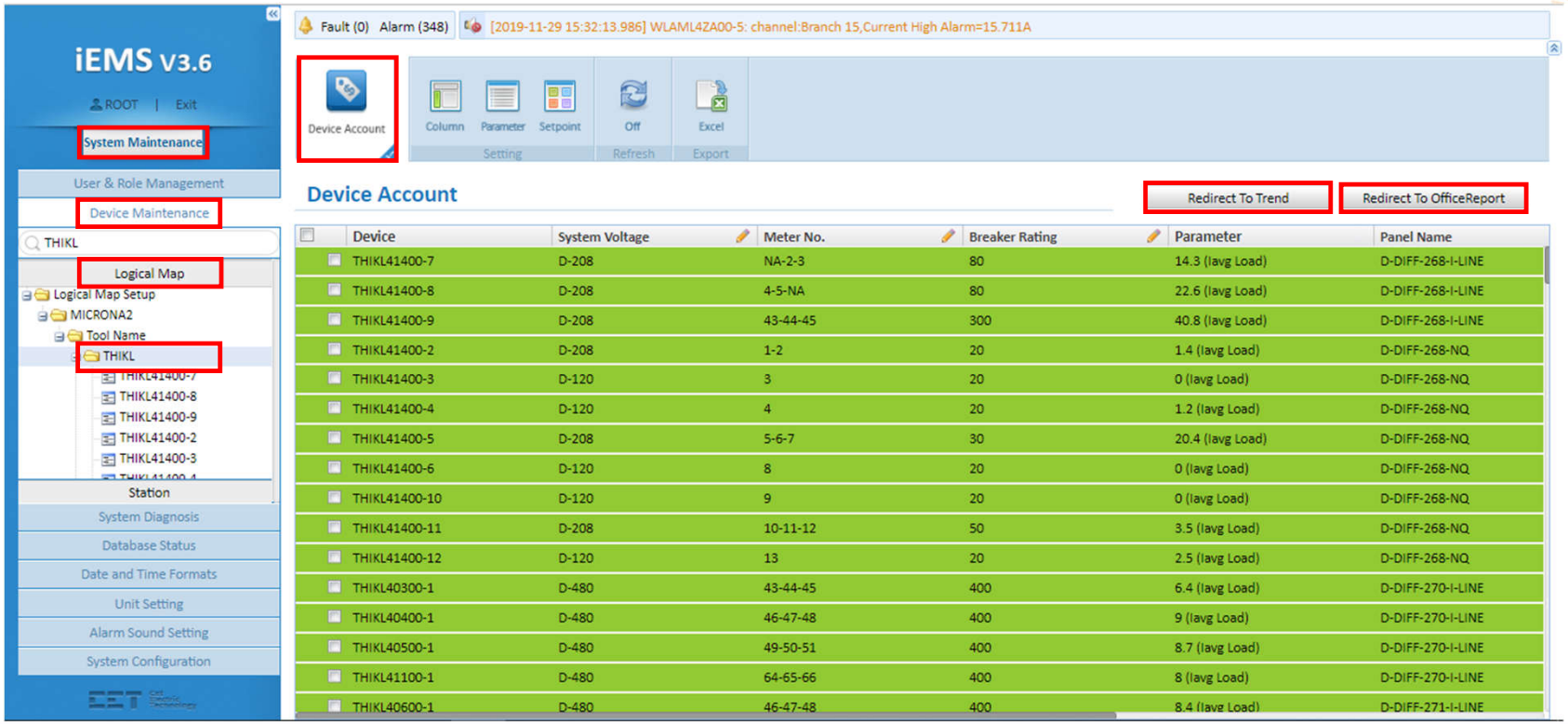
Summary Report

- This page displays the summary information of each device :
  - General real-time data
  - Latest 10 events
  - Daily trend of kW Total
  - Latest 4 Waveform records
- Easily view the Waveform by clicking the WF button on this page
- Click the Detail button to jump to the respective page for detailed information



3.12 Feeder Management

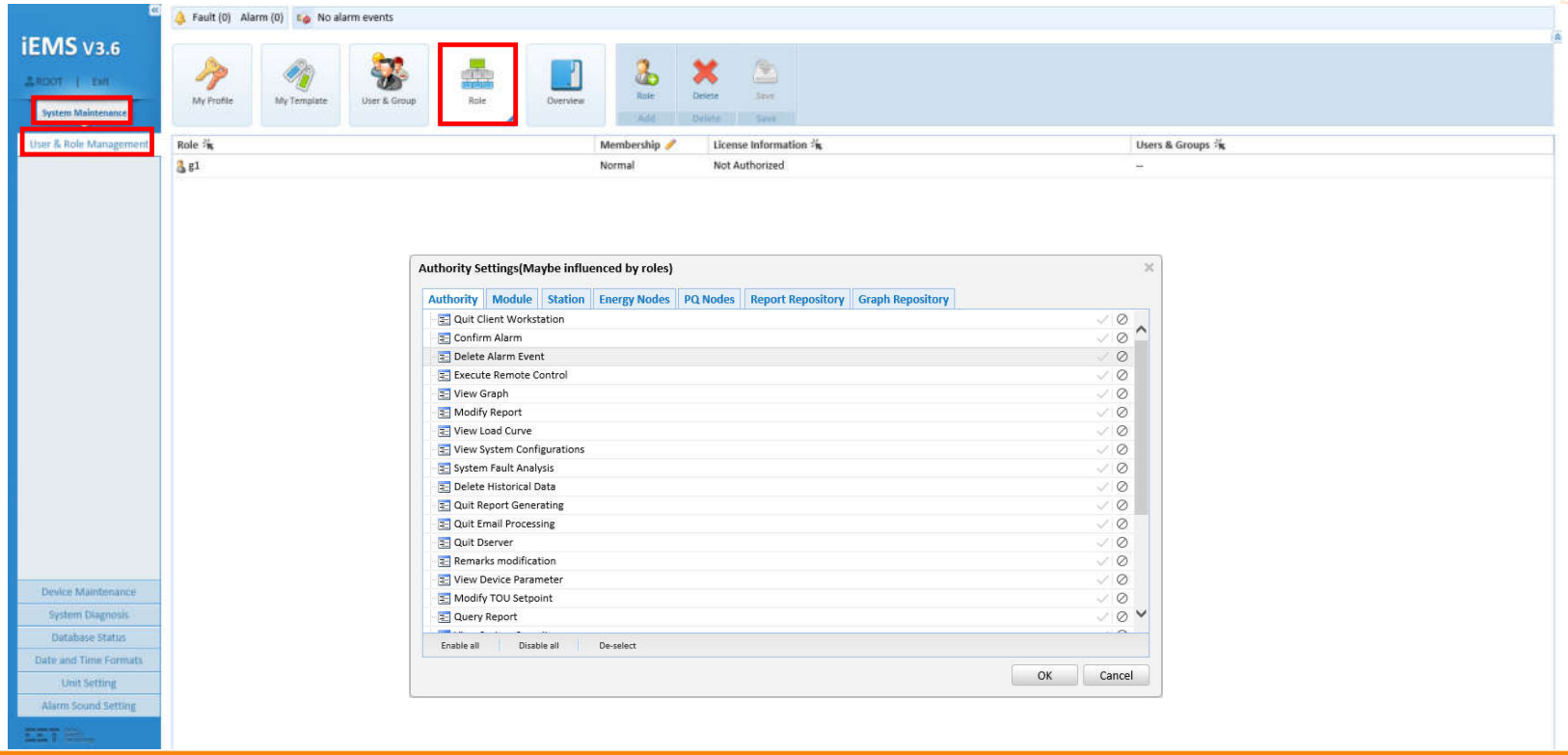
- Customized and searchable individual feeder information for ease of management
- Configurable overload alarm and identify the load level by color
- Click to open trend analysis and generate weekly reports for selected feeders



3.13 System Security

Role Definition

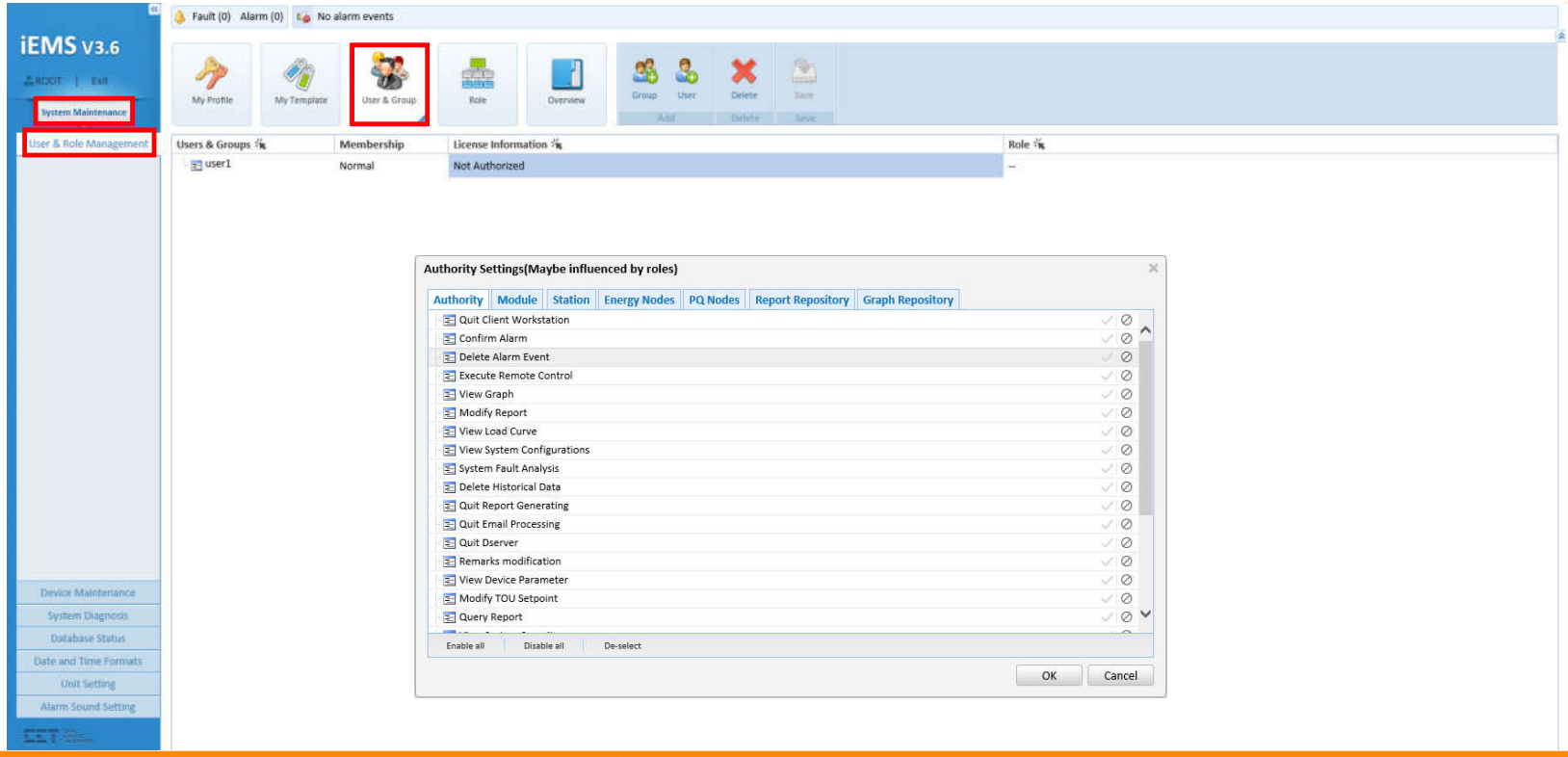
- Roles are listed:
  - Role name
  - Membership
  - License information
  - Users & Groups
- Ability to configure multi-level roles with different authority levels such as manager, supervisor, engineer, operator, etc.



3.13 System Security

User & Group control

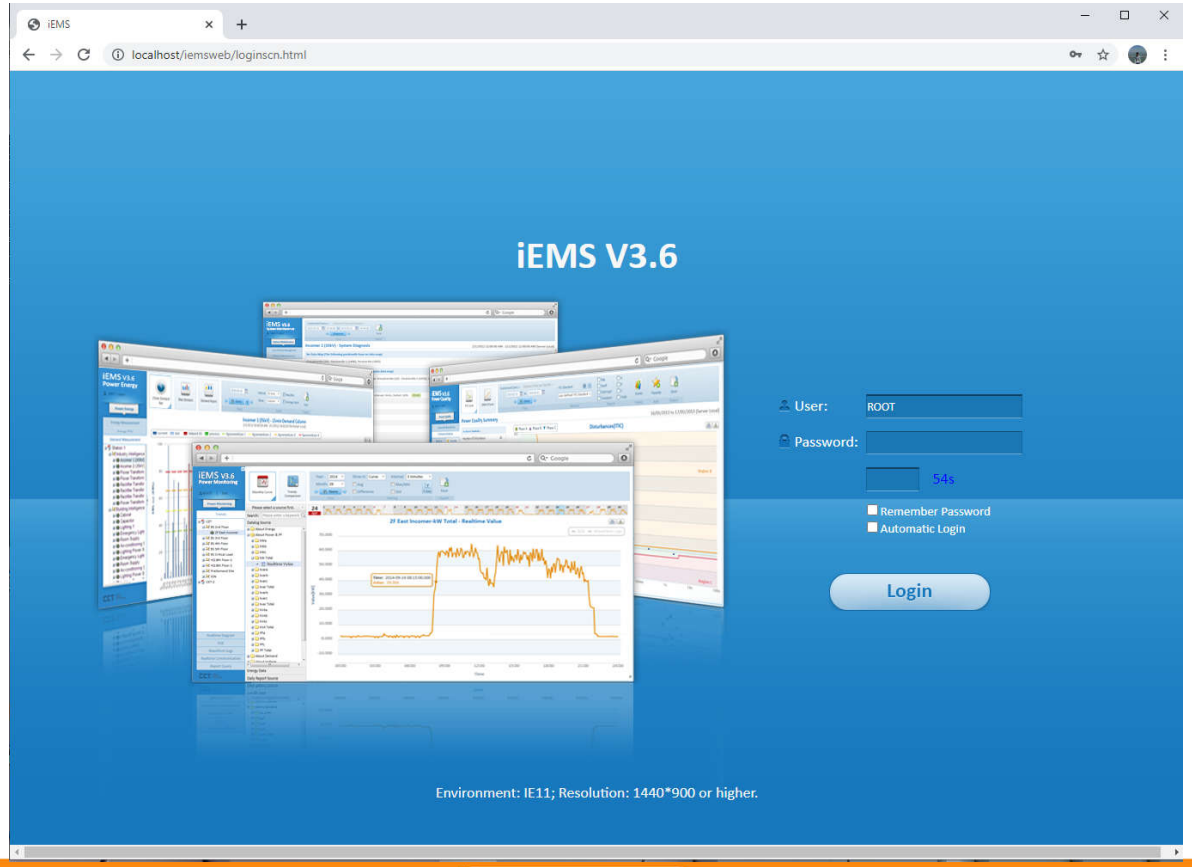
- Users and Groups are listed:
  - User name
  - Membership
  - License information
  - Role
- Ability to add User Groups and Users with individual password and assignable roles
- Secure Password requirements such as min. password length (8 characters) that contains upper and lower cases, special character and number with configurable password expiration (1-365 days)
- Account will be locked after 5 consecutive unsuccessful login attempts

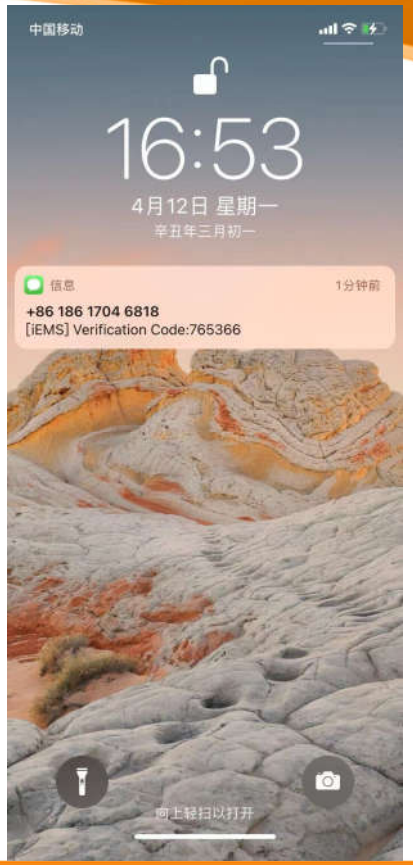


3.13 System Security

2FA Login

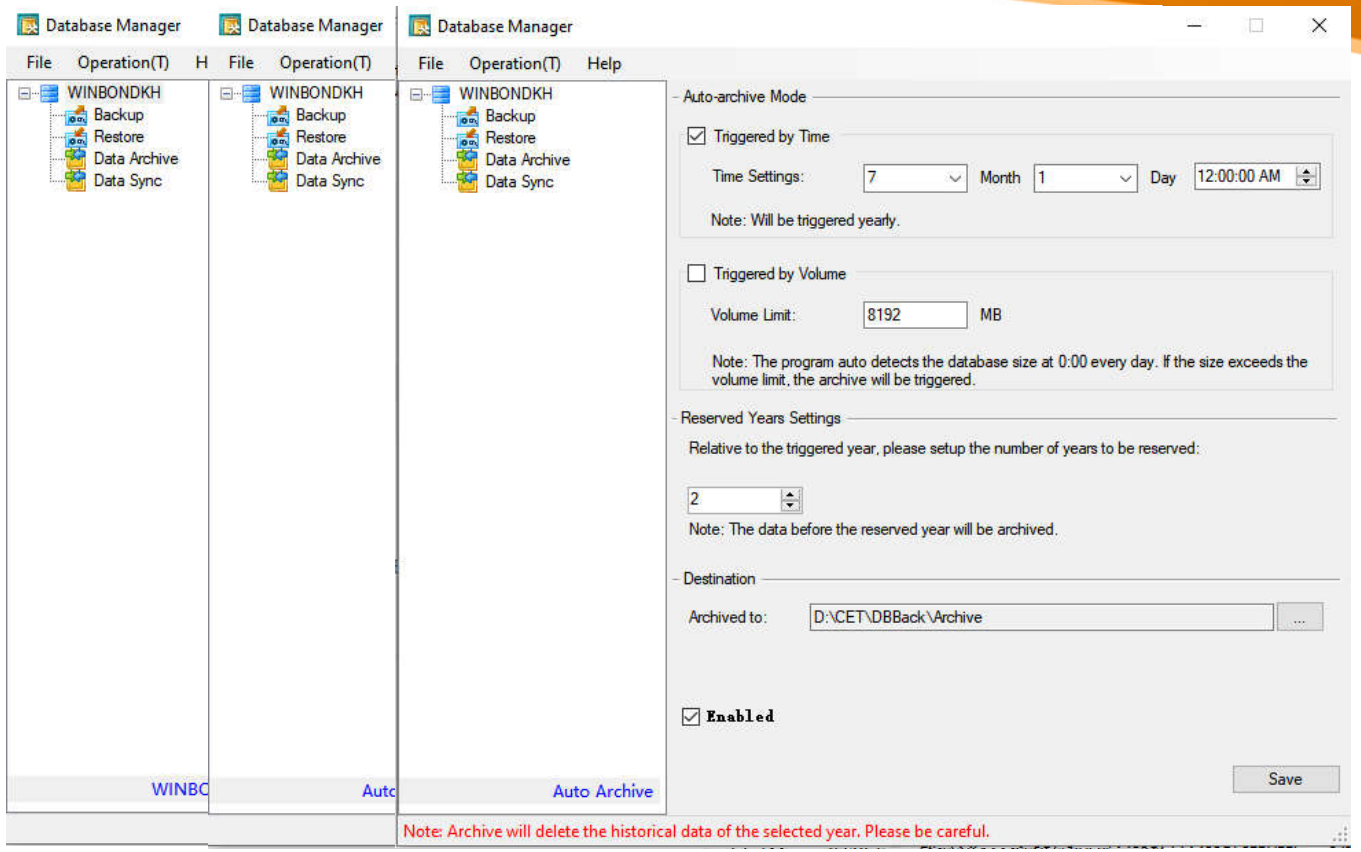
- Improve system security with optional 2FA login
- User would need to enter both password and SMS verification code to log into iEMS Web.
- 2FA currently supports SMS messaging only, which would require the customers to install a SMS modem with a SIM Card that supports SMS messages.
- Potential to support WhatsApp for 2FA in the future if there is customer demand





3.14 Database Management

- Microsoft SQL Server 2008/2012/2014/2016/2017/2019
- PostGreSQL (*Freeware*)
- Ability to backup, restore, archive and sync data between redundant servers to keep data asset safe
- Configurable Auto Backup (daily, weekly, monthly)
- Auto Archiving
  - Triggered by time (yearly)
  - Triggered by volume (particularly applicable to small systems that run Microsoft SQL Express with a 10GB limitation)



Thank You

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