



# EcoStruxure Power Monitoring Expert

Toronto PLUG 2017

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Power Monitoring Expert Global Offer Manager

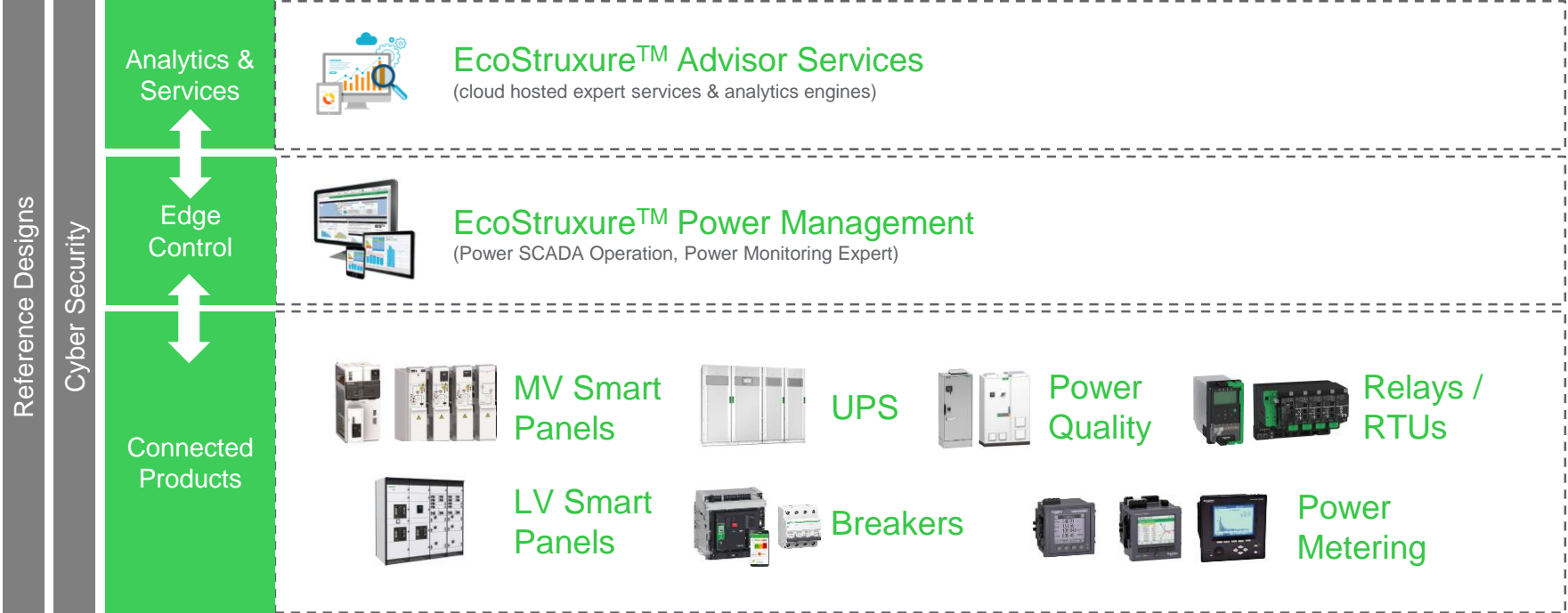
# Agenda

- 1 **EcoStruxure Power**
- 2 **Power Monitoring Expert 8.2 Review**
- 3 **Power Monitoring Expert Roadmap**
- 4 **Q&A**

# EcoStruxure Power

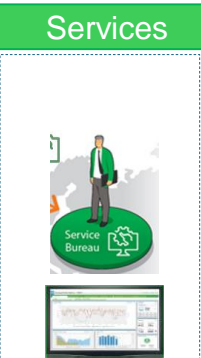
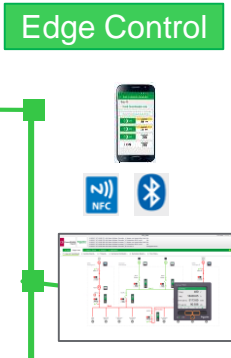
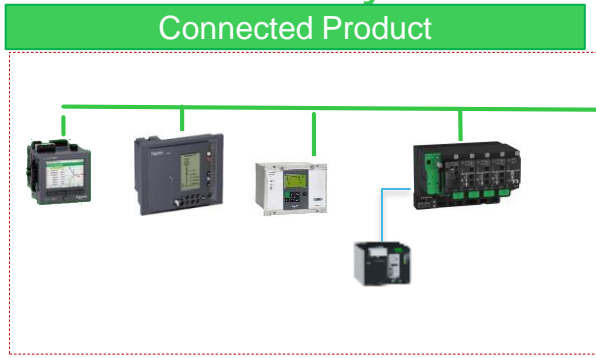
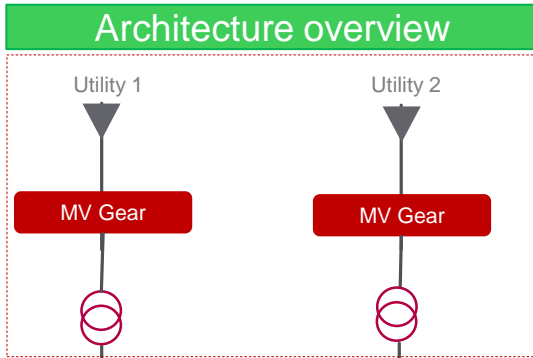
Digitized Power Distribution

# EcoStruxure Power is a vertically integrated stack of services & products...

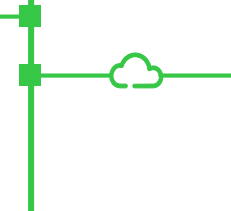
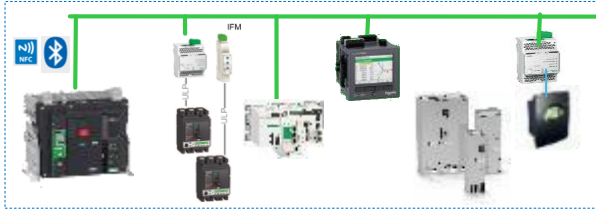
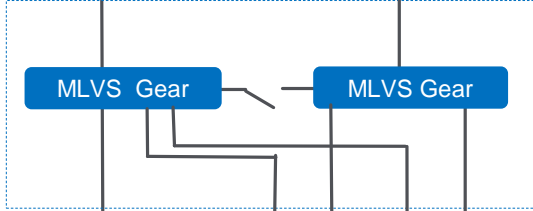


# ...across the medium / low electrical distribution system...

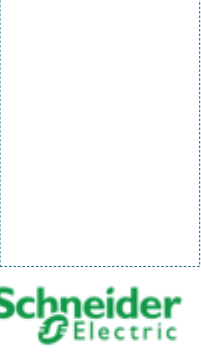
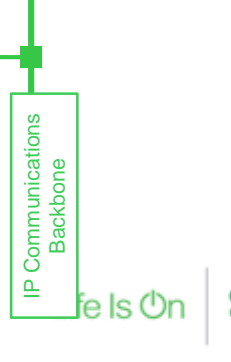
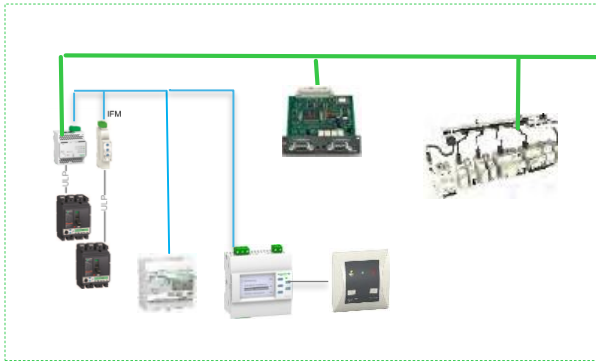
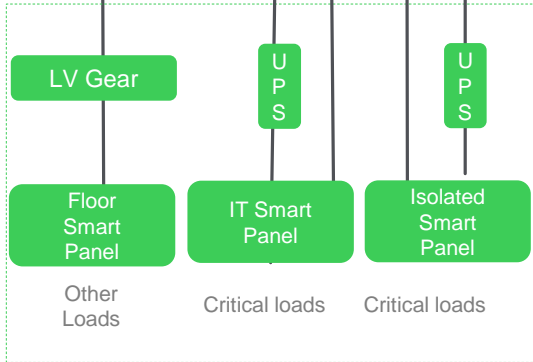
Medium Voltage



Low Voltage



Final distribution



# EcoStruxure Power Monitoring Expert 8.x review

PME in the last 3 years...

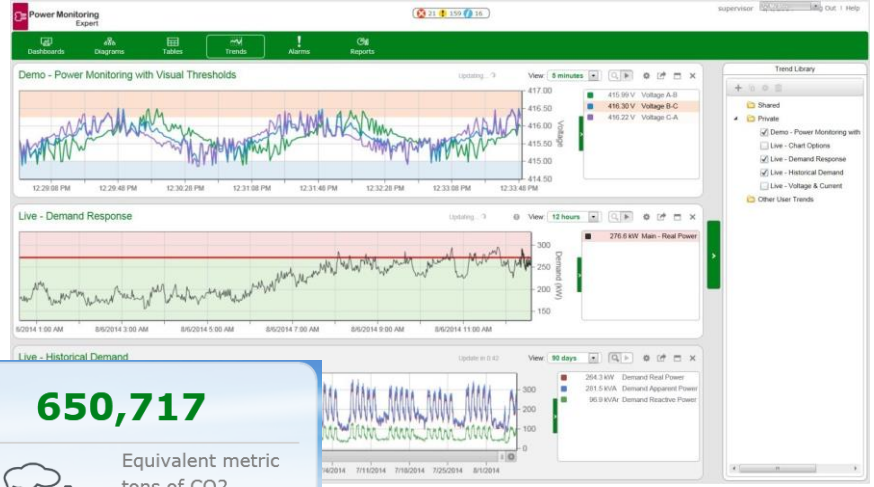
A woman with dark hair and glasses is smiling and looking towards the right. She is wearing a light-colored, short-sleeved blouse with a polka-dot pattern. She is sitting at a desk with a silver laptop open in front of her. Her hands are clasped together near her chin. The background is a blurred office environment with windows and posters on the wall.

# PME 8.0

End User Functionality Focus (2015)

# Power Monitoring Expert 8.0


- Web based real time trends
- Harmonics Compliance report
- EN51060 2010 Reports
- Native notification of Alarms (Smart notifications)
- Simpler Report Customizations
- New Reports and Dashboard Gadgets
- Additional Software Modules
- Faster communication performance
- Easy Alarm configuration
- BMS Integration
- New device drivers



650,717

Equivalent metric tons of CO2 Emissions

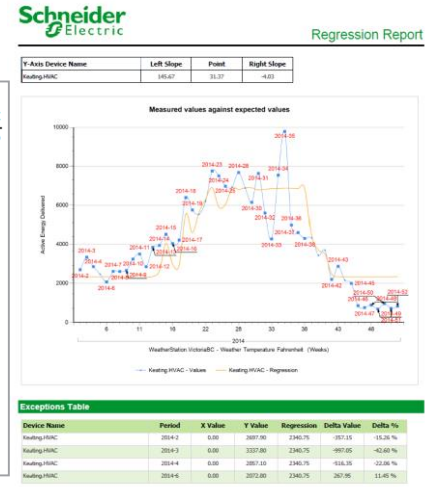
This Year



**Schneider Electric** Harmonic Compliance Report

3/22/2015 12:00:00 AM - 3/27/2015 12:00:00 PM (Server Local)

IEEE519.Main					
Voltage Compliance - % of Fundamental					
	Individual Voltage Distortion (%)	Total Voltage Distortion (THD (%)			
IEEE 519 Limit (%)	3.0	5.0			
Maximum Value	-	-			
Non-compliant 3-second Intervals	0	0			
Missing or Invalid Intervals	0	0			
Total Intervals	475,800	475,800			
% Time out of compliance	0.00	0.00			
Compliance	Pass	Pass			
Current Compliance - % of IL					
IsorL = 50	Individual Harmonic Order (Odd)			TDD (%)	
Ratio Window Limit (50 - 100)	<11	115h<17	175h<23	235h<35	355h
IEEE 519 Limit (%)	10	4.5	4	1.5	0.7
Maximum Value	12hmi	124hmi	13<0.90	129hmi	17h<0.44
	3<10.52 @	@ 3:00:01.5	@ 3:04:01.5	23<4.13 @	@ 3:05:01.5
	3:04:20.15	2:18:48 PM	1:47:51 PM	3:04:20.15	2:18:48 PM
	10:40:51 AM		12:17:42 PM		10:40:51 AM
Non-compliant Intervals		559			10
Missing or Invalid Intervals		0			
Total Intervals		475,800			
% Time out of compliance		0.13			0.30
Recommendation		Pass			Pass





# Software Modules

Extend you PME System Capabilities

## Cost Management



### Energy Analysis Module:

- Improve Operational Efficiency, Energy Performance and help achieve ISO50001 compliance

### Energy Billing Module:

- Flexible rate engine and reports for cost allocation, bill verification and tenant billing.

### IT Billing Module

- Flexible rate engine and reports for datacenter applications

### Power Efficiency Module

- Track and analyze PUE, losses and overall system efficiency.

## Network Management



### Power Quality Performance Module:

- Simple, global overview of the impact of power quality on your facility's operations

### Generator Test/EPSS Module:

- Automated generator and ATS testing and reporting for maintenance and regulatory compliance

### Power Capacity Module:

- Monitor the capacity loading of electrical equipment (UPS, Generators, multi-circuits)

### Event Notification Module:

- Receive text or email notifications when power system events occur.

## Asset Management



### UPS Performance Module:

- Global overview UPS status, battery health, auto test report etc.

### Breaker Performance Module:

- Breaker status diagrams and reports including electrical ageing and mechanical wear, for proactive maintenance

### Generator Performance Module:

- Monitor the parameters of your generator



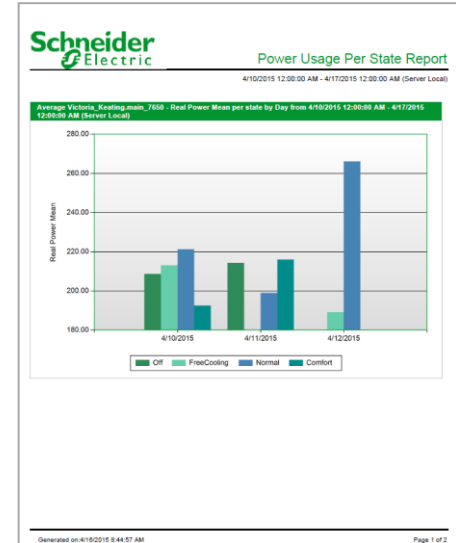
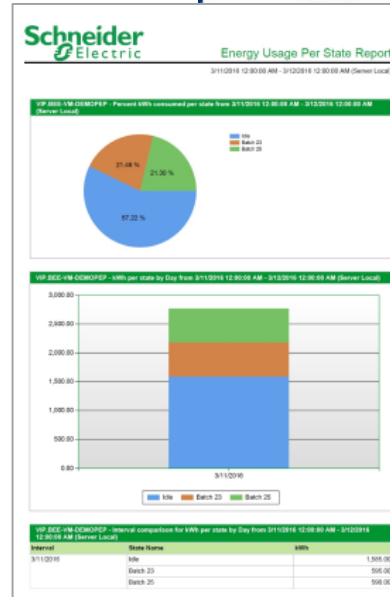
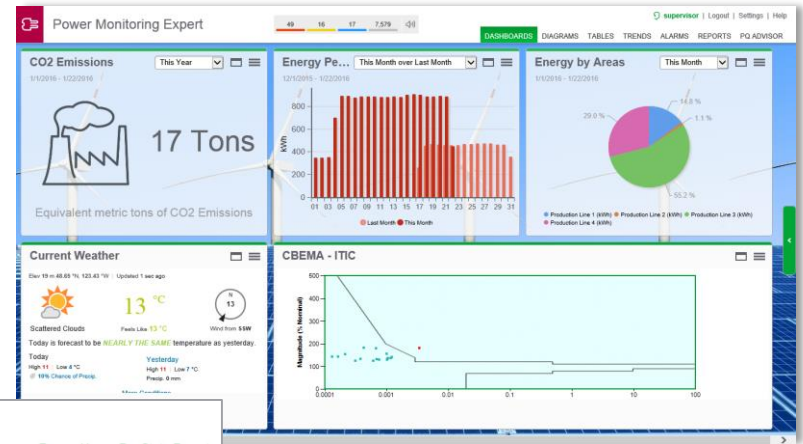
# PME 8.1

User Experience/Workflow Focus (2016)

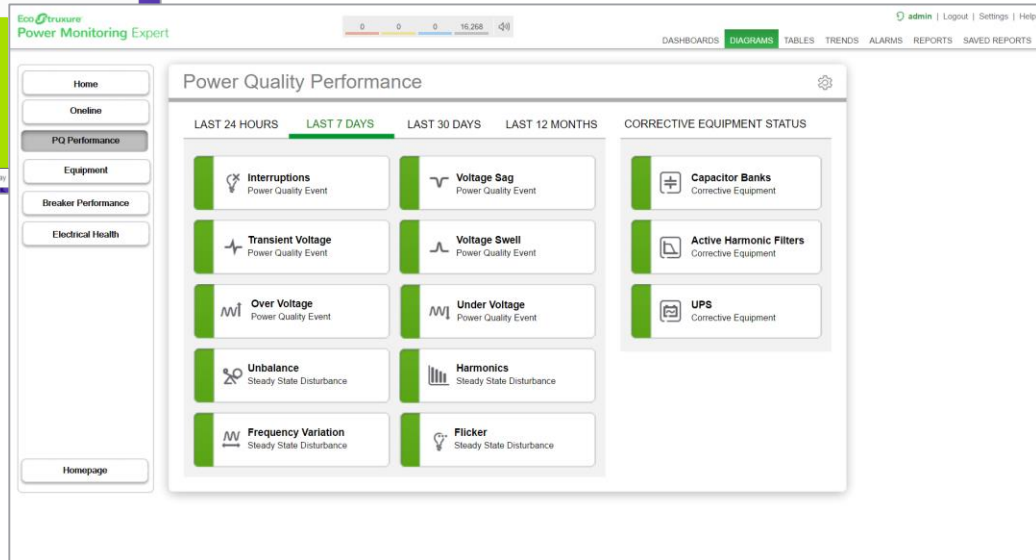
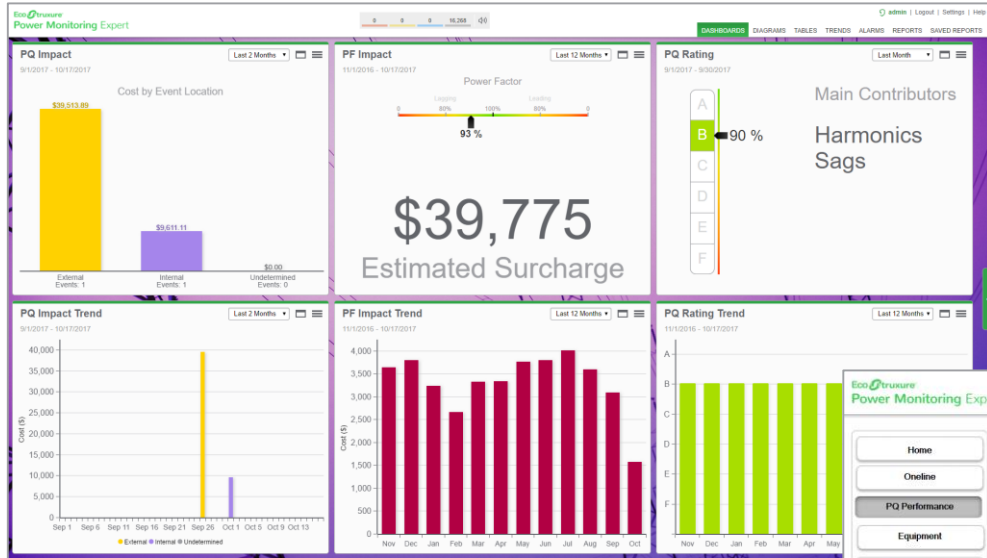
# Power Monitoring Expert 8.1

## User Experience/Workflow Focus (2016)

- New Web Client look and feel (HTML5)
- New and improved Dashboards and Gadgets
- New Energy Management Reports
- Energy Performance reporting
- ETL improvements
- Power Quality Simplified



# Power Quality Performance Module



A man in a dark jacket and glasses is standing in a server room, looking at a laptop. The room is filled with rows of server racks. The lighting is dim, with a blue glow from the laptop screen and some lights on the server racks. The man is positioned in the center-right of the frame, facing left. The server racks are on both sides of the aisle.

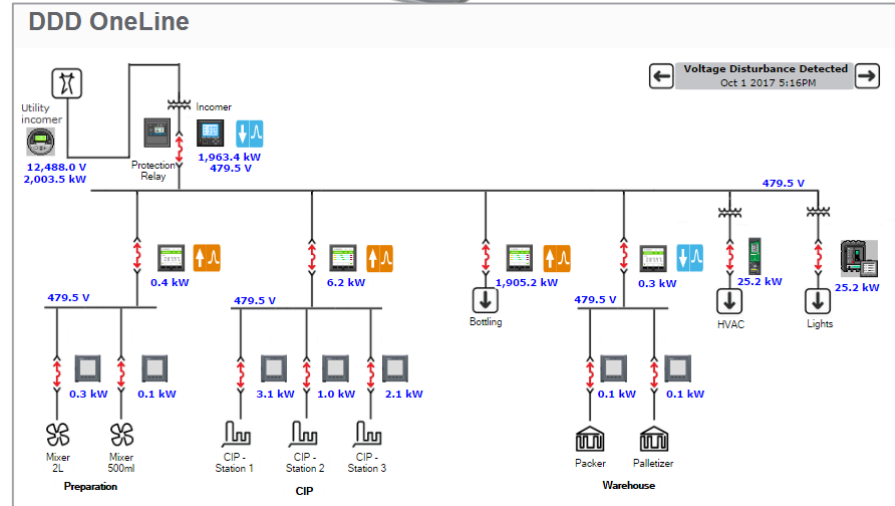
# PME 8.2

Cyber Security focus (2017)

# Power Monitoring Expert 8.2

Cybersecurity Focus (2017)

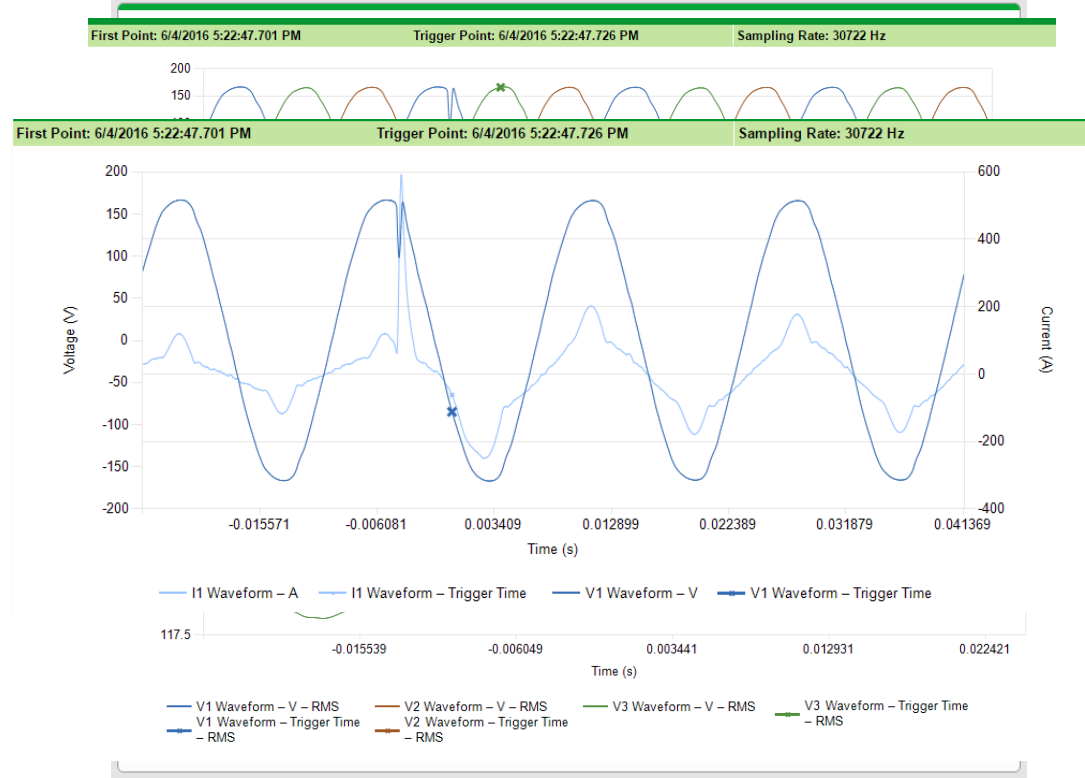
- Cyber Security hardening
- Improved IT Compliance
- Improved Power Quality Report
- More customizable Web interface
- COMTRADE export
- Expanded technology Ecosystem



# Power Quality Report Enhancements

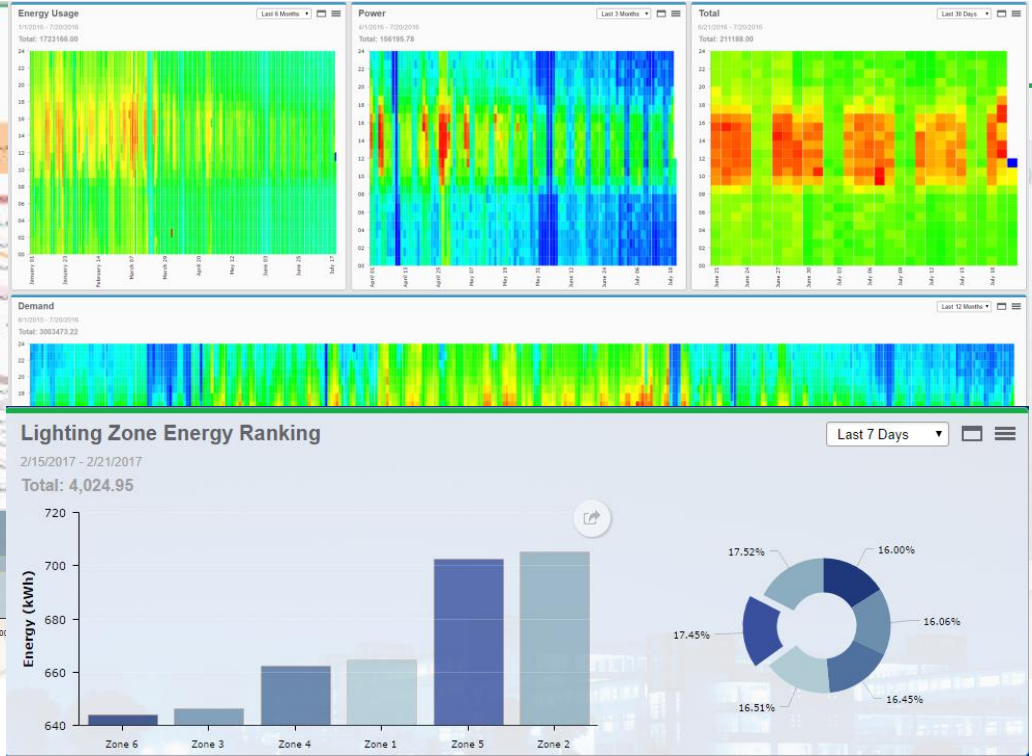
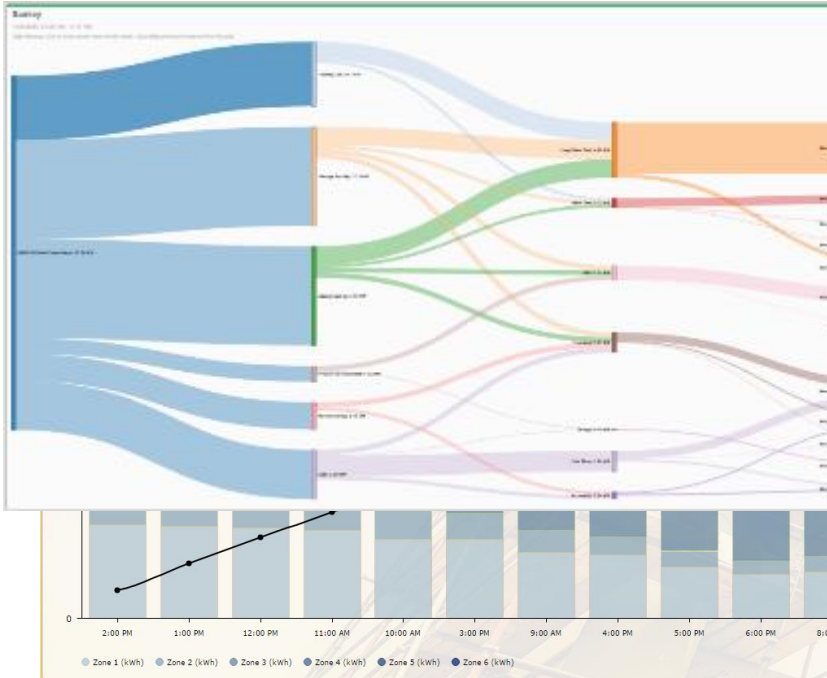
## More customization Options:

- Additional date ranges
- “Subscription mode” add sub-reports to the PDF output for subscriptions
- Waveforms sorted by time for same event
- Additional PQ Curves to overlay
- RMS charts
- Secondary Y-Axis for current waveform



# PME Extensions by AZZO

Powerful, Innovative, and Intuitive add-ons



Life Is On

Schneider Electric





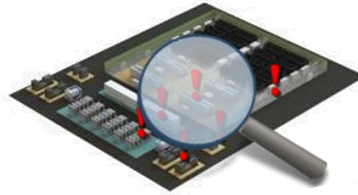
# PME 9.0

Coming in 2018

# PME 9.0 Major Development Themes



Improved IT  
compliance



Power Events  
Analysis



Multi-Site  
software solution



# IT Compliance

Respond to needs of corporate IT departments

# Windows Authentication – what is it?

Windows Authentication will allow users to log into PME using their Windows credentials.



- Windows user credentials can be managed by Active Directory (AD) or the local Windows machine.
- Many large companies use AD to maintain user credentials on their network, and enforce IT policies such as password complexity.
- **This feature will provide Active Directory support in PME, allowing us to comply with this common IT requirement.**

# Windows Authentication - Benefits



Meet common requirement of IT departments



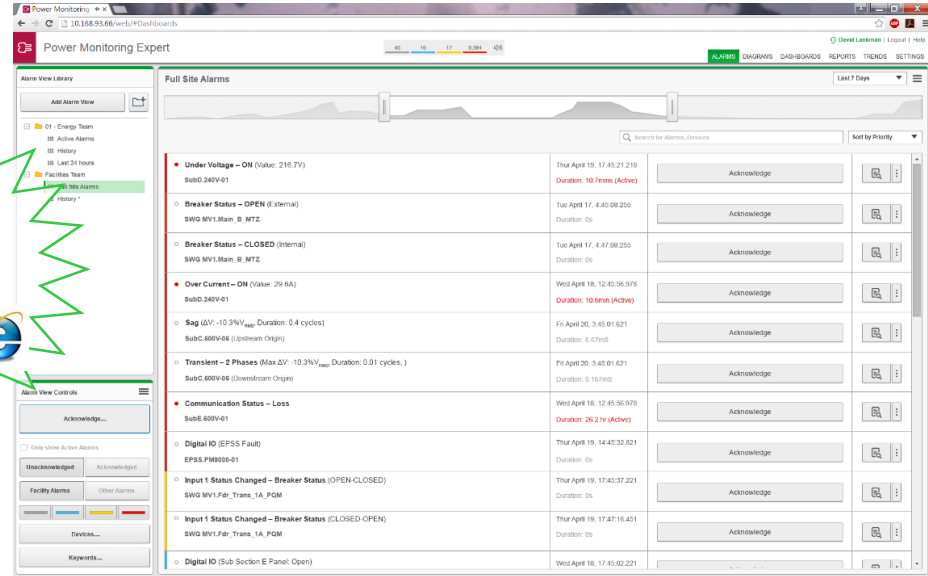
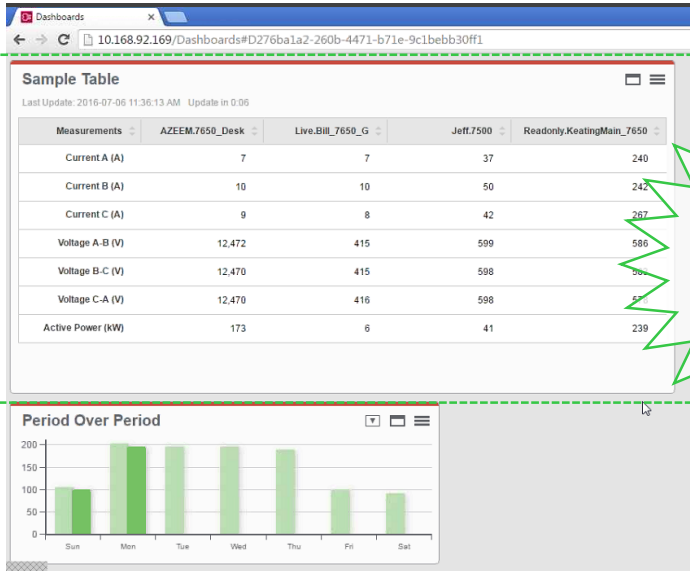
Increased security through ability to use Active Directory to enforce IT policies



Streamline end user experience through single-sign on

# Multi-Browser Web Client

Silverlight will be completely removed in PME 9.0



- Tables tab replaced with HTML5 dashboard gadget
- View side-by-side cockpit views with other gadgets
- Show hierarchy roll-ups in real-time

- Alarms tab replaced with HTML5 alarm viewer tab
- Improved handling of alarm and event data
- Easy to use filters, personalized views

# Multi-Browser Web Client - Benefits



Better end-user experience – choose any browser



Able to comply to IT policies that deny browser plug-ins such as Silverlight



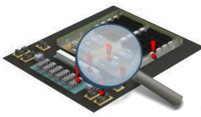
Able to view all web client applications on mobile devices



# Power Events Analysis

Get things back to normal faster than ever before





# Next Gen Alarm Management – why are we doing it

The current alarm viewer produces too many alarms to understand what is going on.

## PME 8.x alarm viewer

Alarms Displayed: 193      Unacknowledged Alarms: 193      Acknowledge      Select Columns

View: Alarm History      10 Seconds

Drag a column here to group by that column

Active	Start Time	End Time	Duration	Device	Priority	Type	Condition
	10/8/2016 2:37:32.213 PM		n/a	Utility.Main	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.213 PM	10/8/2016 2:37:34.674 PM	00:00:02.4610000	Utility.Main	✗	Voltage Disturbance State	Normal
	10/8/2016 2:37:32.213 PM		n/a	Production.Utility	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.213 PM	10/8/2016 2:37:34.674 PM	00:00:02.4610000	Production.Utility	✗	Voltage Disturbance State	Normal
	10/8/2016 2:37:32.153 PM		n/a	LV.Transformer16b	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.153 PM	10/8/2016 2:37:34.604 PM	00:00:02.4510000	LV.Transformer16b	✗	Voltage Disturbance State	Normal
	10/8/2016 2:37:32.153 PM		n/a	Production.Bottling	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.153 PM	10/8/2016 2:37:34.604 PM	00:00:02.4510000	Production.Bottling	✗	Voltage Disturbance State	Normal
	10/8/2016 2:37:32.144 PM		n/a	LV.Transformer15b	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.144 PM	10/8/2016 2:37:34.596 PM	00:00:02.4520000	LV.Transformer15b	✗	Voltage Disturbance State	Normal
	10/8/2016 2:37:32.144 PM		n/a	Production.CleanInPlace	?	Dist Direction Detection 1	Disturbance
	10/8/2016 2:37:32.144 PM	10/8/2016 2:37:34.596 PM	00:00:02.4520000	Production.CleanInPlace	✗	Voltage Disturbance State	Normal
	9/29/2016 4:38:19.176 PM		n/a	Utility.Revenue	?	Dist Direction Detection 1	Disturbance
	9/29/2016 4:38:19.176 PM		n/a	Utility.Revenue	✗	Tran V3 Max	167
	9/29/2016 4:38:19.176 PM		n/a	Utility.Revenue	✗	Tran V2 Max	167
	9/29/2016 4:38:19.176 PM		n/a	Utility.Revenue	✗	Tran V1 Max	167
	4/4/2016 12:05:00.000 PM		n/a	VIP.WIN-9EC6FLR0TSQ	!	Caustic Soda	Could not que
	4/4/2016 12:00:00.000 PM		n/a	VIP.WIN-9EC6FLR0TSQ	!	Nitric Acid	Could not que
	4/4/2016 12:00:00.000 PM		n/a	VIP.WIN-9EC6FLR0TSQ	!	Caustic Soda	Could not que
	10/8/2016 2:37:32.123 PM	10/8/2016 2:37:34.577 PM	00:00:02.4540000	Production.Warehouse	✗	Voltage Disturbance State	Normal

### Problems today

Lots of noise created by rows of extra alarm data.

Alarms are too granular, such as individual per-phase alarms.

No way to filter between “Facility” alarms and “software” alarms.

# Next Generation Alarm Viewer



The screenshot displays the 'Power Monitoring Expert' web interface. The main area shows a list of 'Full Site Alarms' with columns for alarm details, duration, and actions. A search bar and 'Sort by Priority' dropdown are visible above the list. A 'mockup' watermark is overlaid on the central part of the interface.

Alarm Description	Time	Duration	Status	Action
Under Voltage – ON (Value: 216.7V) SubD.240V-01	Thur April 19, 17:45:21.218	10.7mins	Active	Acknowledge
Breaker Status – OPEN (External) SWG MV1.Main_B_MTZ	Tue April 17, 4:45:08.255	0s		Acknowledge
Breaker Status – CLOSED (Internal) SWG MV1.Main_B_MTZ	Tue April 17, 4:47:08.255	0s		Acknowledge
Transient – 2 Phases (Max ΔV: -10.3%V <sub>RMS</sub> , Duration: 0.01 cycles, ) SubC.600V-06 (Downstream Origin)	Wed April 18, 12:45:56.978	10.6min	Active	Acknowledge
Communication Status – Loss SubE.600V-01	Fri April 20, 3:45:01.621	6.67ms		Acknowledge
Digital IO (EPSS Fault) EPSS.PM8000-01	Fri April 20, 3:45:01.621	0.167ms		Acknowledge
Input 1 Status Changed – Breaker Status (OPEN-CLOSED) SWG MV1.Fdr_Trans_1A_PGM	Wed April 18, 12:45:56.978	26.2 hr	Active	Acknowledge
Input 1 Status Changed – Breaker Status (CLOSED-OPEN) SWG MV1.Fdr_Trans_1A_PGM	Thur April 19, 14:45:32.821	0s		Acknowledge
Digital IO (Sub Section E Panel: Open)	Thur April 19, 17:45:37.221	0s		Acknowledge
	Thur April 19, 17:47:16.451	0s		Acknowledge
	Wed April 18, 17:45:02.221			Acknowledge

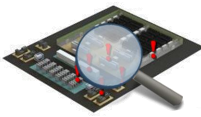
On the left, the 'Alarm View Library' shows a tree view with 'Full Site Alarms' selected. Below it, 'Alarm View Controls' includes buttons for 'Acknowledge...', 'Unacknowledged', 'Acknowledged', 'Facility Alarms', 'Other Alarms', 'Devices...', and 'Keywords...'. A 'Full Site Alarms' chart is visible at the top of the main content area.

New filtering capabilities: keywords, timeline, alarm categories

Incident views – smart rollup of simultaneous alarms from multiple devices

- Event relevant, clustered alarm “cards”.
- High level, key information.
- Drill down to see more details.

# Next Gen Alarm Management - Benefits



A new “Incident” view speeds alarm analysis by intelligently grouping related alarms together.



Important alarm context is available at a glance, with more detailed information only clicks away.

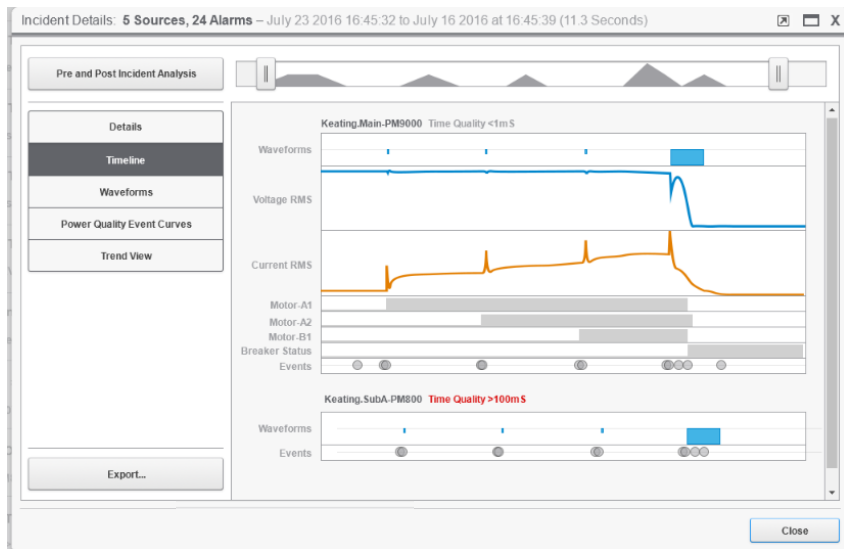


Improved filtering, searching, and categorization helps ensure important information is not lost in a flood of data.

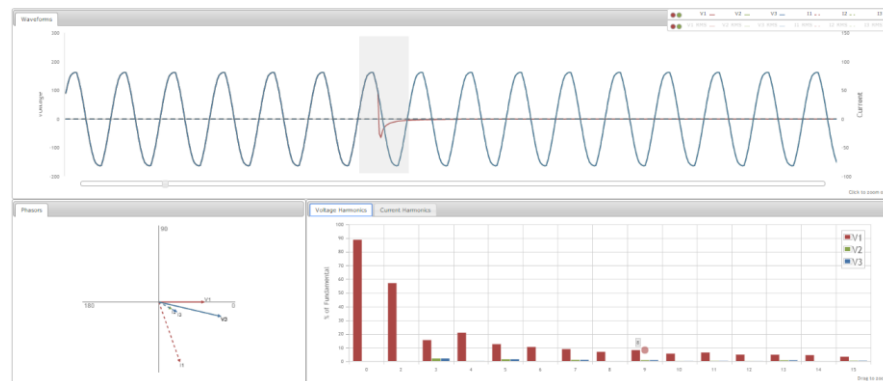
# Pre/Post Event Analysis



## New timeline based event analysis tool



## New web-based waveform viewer



# Pre/Post Event Analysis



## New timeline based event analysis tool

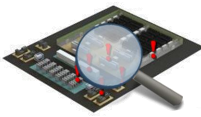
The screenshot displays the 'Power Monitoring Expert' interface. The main window is titled 'Power Failure - June 7 2017'. It features a search bar, a 'Back' button, and a 'Time Range' section with 'Start' and 'End' date pickers. Below this are 'Adjust' buttons ('Reduce...', 'Expand...') and 'Sources' (a dropdown menu). The main content area is divided into two sections: 'High Speed Incident Data' and 'Alarm and Event Sequence'. The 'High Speed Incident Data' section shows two waveforms: 'Voltage Line-Neutral' (blue) and 'Current Line-Neutral' (orange). Annotations include: '[Bob Erickson] Small dips in voltage are sags due to inrush current' and '[Bob Erickson] Large Inrush Currents correspond to motor starts'. The 'Alarm and Event Sequence' table lists various events with corresponding markers on the timeline. Annotations include: '[Bob Erickson] Sequence of motor events and voltage sags picked up by meter. Voltage sags are within typical values seen - they are not suspect as the root cause. Root cause appears to be peak inrush current spike.' and '[Bob Erickson] Multiple equipment failures resulting from shutdown.' A 'mockup' watermark is visible across the center of the interface.

See the bigger picture of what happened before and after an Incident.

Smart event correlation to bring in the right information at the right time.

Include information from across multiple devices.

# Pre/Post Event Analysis - Benefits



Increase facility reliability by reducing the time to identify and diagnose critical incidents.



Understand causes of critical incidents, and implement preventative measures to avoid downtime.



Capture notes and easily export data to increase operational efficiency in creation of management reports and searching for past resolutions.



# Multi-Site Systems

Enable monitoring of multiple sites from a single server

# Multi-Site PME : Customer feedback and market trends



- Monitoring of multiple sites
- Virtualized IT environments
- Centralization of Expertise
- Particularly in industrial segments

New features in PME 9.0 to support these trends



1 User Groups

2 Multi-Timezone





# User Groups



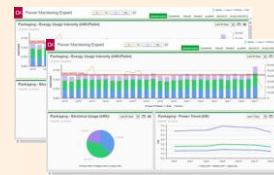
## UK Facilities Team



Users



Devices



Content views

## Brazil Facilities Team



Users



Devices



Content views

## International Facilities Team



Users



Devices



Content views

# PME User Groups - Benefits



Enables restriction of users to authorized sources and content based on their Group.

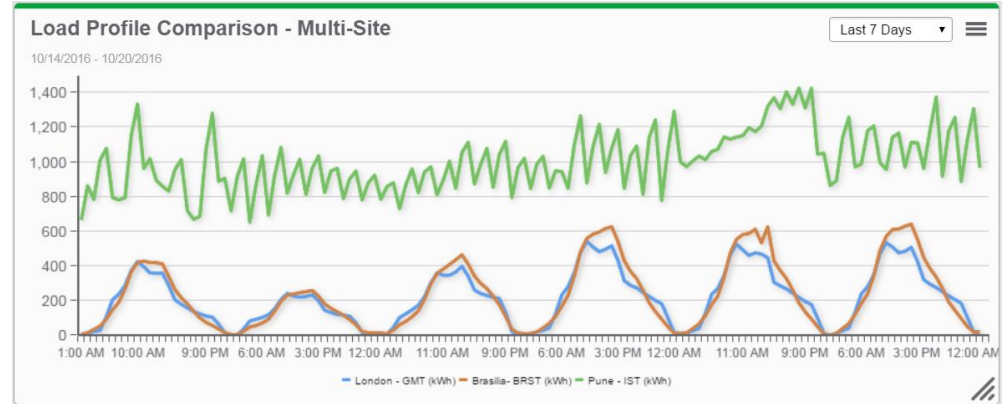


Provides a simpler user experience by filtering what users see based on their Group.



Easy setup and administration, without adding work for customers who do not use Groups.

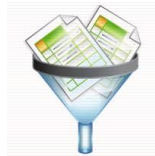
# Multi-Timezone



# Multi-Timezone - Benefits



Easier to use by displaying data in the local timezone of the meter, regardless of where the server is located.



Enables intuitive cross-site reporting.



Easy setup and administration, without adding work for customers who do not use multi-timezones.

# Additional Features

- Device Type Editor (replaces MDI)
- **Trends** now support **hierarchies!**
- **Dashboard Report!**
- Manual Data Editor
- New device drivers:
  - **ION9000**
  - PowerTag
  - Smartlink IPZ
  - UPS Galaxy VM/VS
  - Compact NSXm / Powerpact B
- SQL 2016 Express included
- SQL 2017 Support
- Designer:
  - Fast Framework Download
  - Test Ext pulse/bool/num from designer

Life Is On

**Schneider**  
Electric