PME 2022 What's New

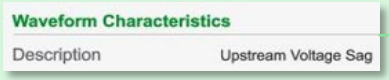
Kevin Huang
PME Global Product Owner
Canada PLUG 2022

What's New in PME 2022

July 1, 2022

Connecting to all electrical devices, PME is a secured and interoperable edge control software to monitor and analyze an Electrical Distribution Network to protect people and assets, optimize business continuity and maximize lifecycle efficiency

Enabling end users



Understand probable cause of PQ events

Integrate energy and power management with corporate systems and platforms

Forecast consumption based on energy models

IEC61000-2-4 compliance

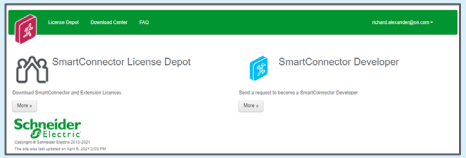
Secure data communication with ION devices *

* Available in Q4 with PME 2022 CU1

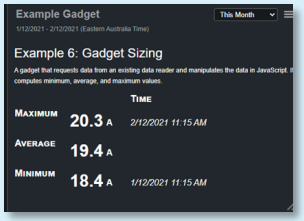
Monitor ED network with EV, Drive and Li-ION battery systems in single pane of glass

Enabling EcoXperts

Create Smart Connector extensions to integrate data into other systems and platforms



Develop custom gadgets to deliver rich data visualization



Identify cause of PQ disturbance

Waveform Analysis Information

Source Name	cluster_pso AP.MV.Intake_A_PM
Probable Cause	Downstream Three-Phase Fault
Load Loss	12.25%
Max Voltage	1.0267 pu
Min Voltage	0.7952 pu
Max Current	3,615.24 A
Min Current	318.46 A
Load Change	-1,001.26 KW
Load Change	-12.25%
RMS Duration	15.18 cyc

Waveform Analysis Information

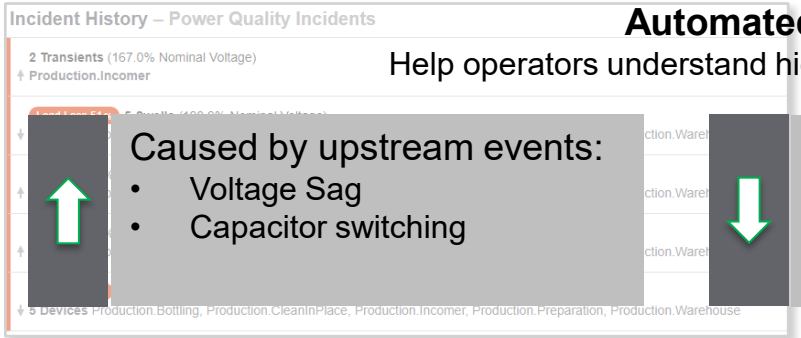
Source Name	cluster_pso AP.HV.Utility_B_PM
Probable Cause	Downstream Load Start
Load Gain	9.12%
Max Voltage	1.0093 pu
Min Voltage	0.8528 pu
Max Current	24.19 A
Min Current	12.14 A
Load Change	626.58 KW
Load Change	19.12%
RMS Duration	3.94 cyc

Waveform Analysis Information

Source Name	cluster_pso AP.MV.Intake_B_PM
Probable Cause	Upstream Voltage Sag
Load Gain	4.26%
Max Voltage	1.0113 pu
Min Voltage	0.8499 pu
Max Current	199.21 A
Min Current	118.80 A
Load Change	169.42 KW
Load Change	4.26%
RMS Duration	2.37 cyc

Analyze and Identify

New!



Automated waveform analytics

Help operators understand high probable cause of Power Quality events

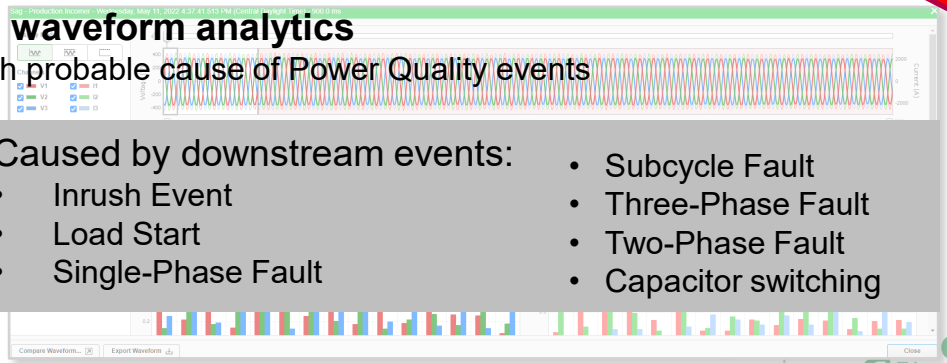
Caused by upstream events:

- Voltage Sag
- Capacitor switching

Caused by downstream events:

- Inrush Event
- Load Start
- Single-Phase Fault

- Subcycle Fault
- Three-Phase Fault
- Two-Phase Fault
- Capacitor switching



Secure communication with ION devices

Coming in PME 2022 CU1
Jan 2023

- No action needed on the PME side with existing ION devices
- PME continues to support ION devices with older firmware that does not have Secure ION capability
- Existing ION devices may upgrade their firmware to the latest version to enable Secure ION

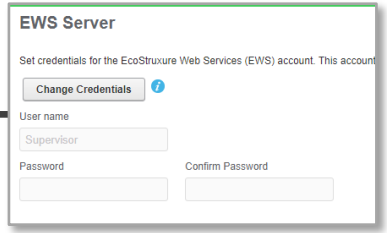
- **Secure Communication**
  - Data is encrypted with TLS 1.2 between PME and ION devices to ensure data transfer is secured
- **Communication Performance**
  - Use OpenSSL to secure communication with no performance impact
- **Seamless Integration**
  - Add a device normally in PME, enable TLS in PME for the device, and PME will communicate with the device securely

* Secure ION support on ION devices requires firmware upgrade

Connecting with other systems and platforms

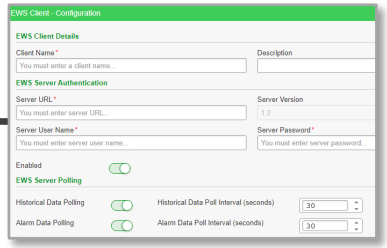
PME 2022 equipped with EWS Server and Client to exchange data with other systems

Configure PME as EWS Server for EWS clients to access PME's data



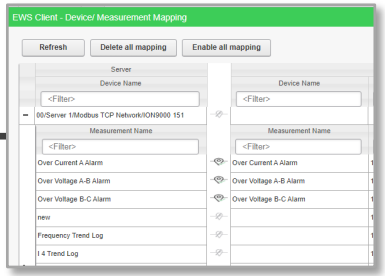
New!

Configure PME as a EWS Client to connect to a EWS Server and obtain data



New!

Configure device measurement mappings to store data received by EWS Client to PME



EWS Server and Client

EBO

Exchange real time and historical data and alarms with EBO using EWS without ETL

New!

Smart Connector

Other Systems

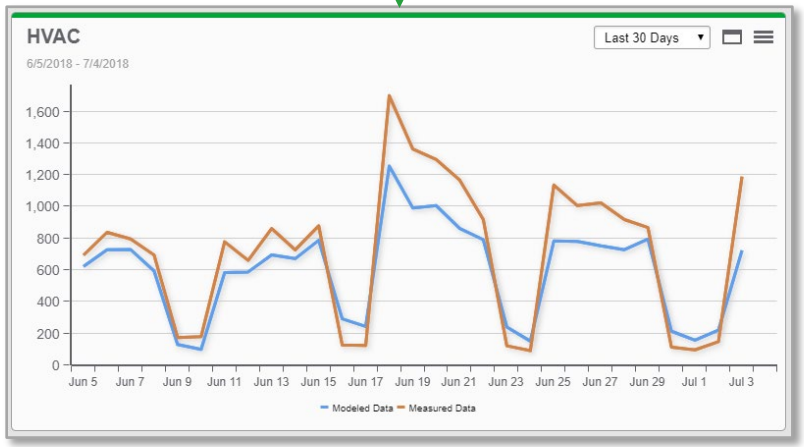
Smart Connector and its extensions can be used to bring historical data from PME to other systems and vice versa

Forecast consumption with energy model

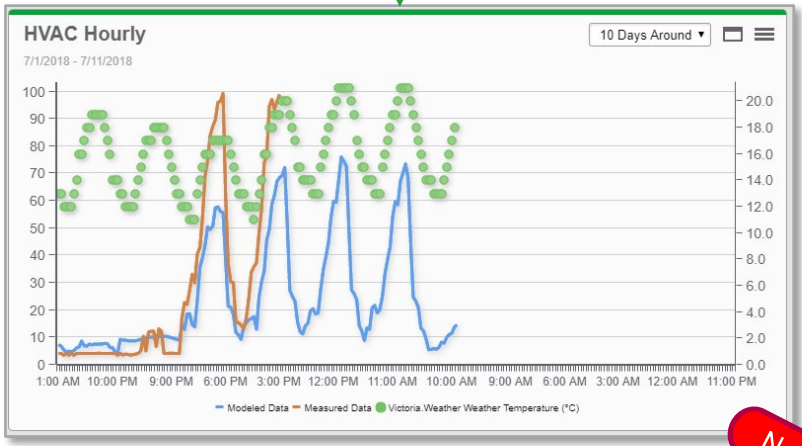
Energy Analysis Reports Module

Modelling Engine

Influencing variables → Energy model ← Forecast of Influencing variables



Monitor and analyze modeled data vs actual metered data to understand model accuracy and adjust model if needed



New!

Model can run with forecast data of influencing variables to calculate consumption forecast, which helps customers to plan their operation and consumption accordingly

Connected device supports in PME 2022

Native device support

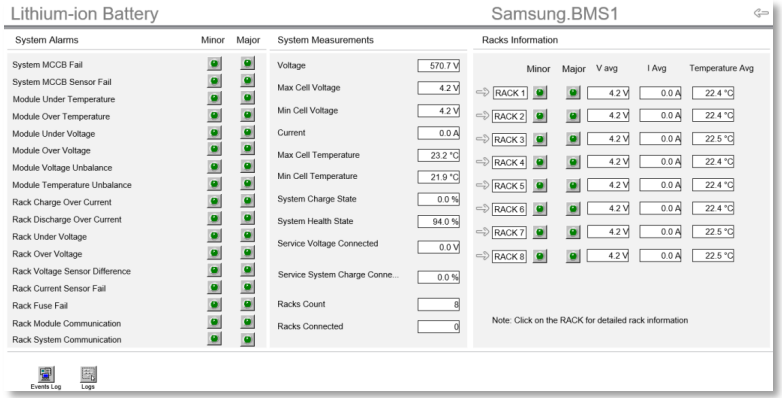
- HeatTag
- Samsung Li-ION BMS
- Altivar Process
- Easergy P5 Wave 4
- TransferPact
- SMD LV NEMA
- iEM2455
- DM6220H

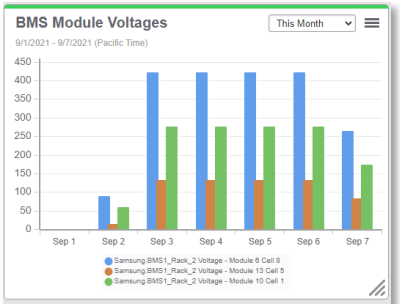
Upcoming standard device driver

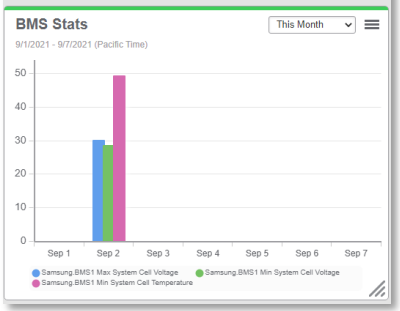
- EVLink Pro AC
- Bender devices
  - IG6 (12 channels)
  - EDS (12 channels)
  - ATICS
- EvoPact

Monitor Galaxy Li-ION battery monitoring system

Monitor Galaxy Lithium-ion battery cabinets to ensure normal operations and analyze historical data to identify potential issues







Features

- Dynamic device diagrams based on number of racks, modules and cells
- Stats and summaries at rack, module and cell levels
- Conditional base data logging based on battery state
- Change of value logging to capture exact time stamp of battery state changes
- Battery events and alarms integrated with Power Event Analysis

Device Support

- Galaxy Lithium-ION Battery Monitoring System (BMS) natively supported in PME 2022
- Galaxy Lithium-ION Battery Monitoring System (BMS) driver installer for PME 9.0/2020/2021

Monitoring Variable Speed Drives

Buildings

40% of energy consumed by motors

Commercial
(hotels , offices, malls, hospitals)

Industrial
(semiconductors, life science)

infrastructure
(Airports, railways stations)

As well : Data centers , critical building

Industrial Process

70% of energy consumed by motors

WWW
(Desalination, treatments, network distribution)

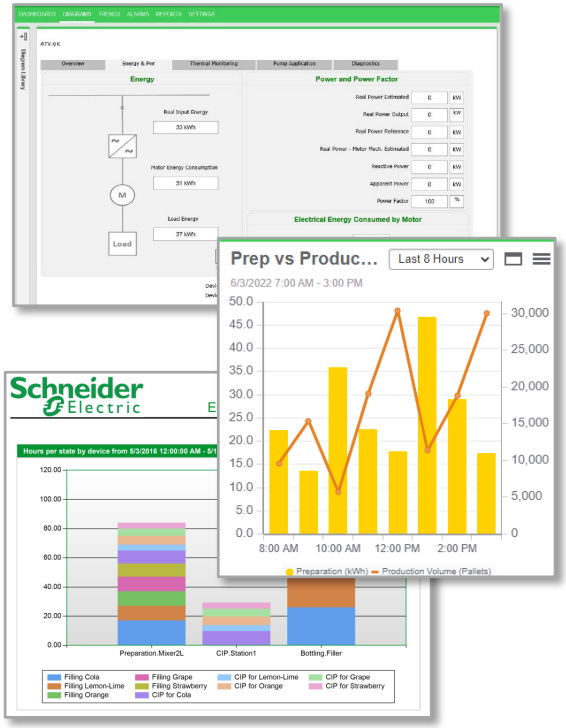
MMM
(Mining, Steel , alumina)

O&G
(Extractions, pipeline, rafineries & Chemical)

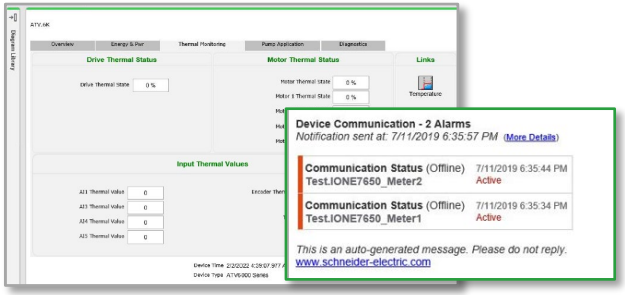
As well : F&B (dairy, drinks, food transformation),

Monitoring Variable Speed Drives

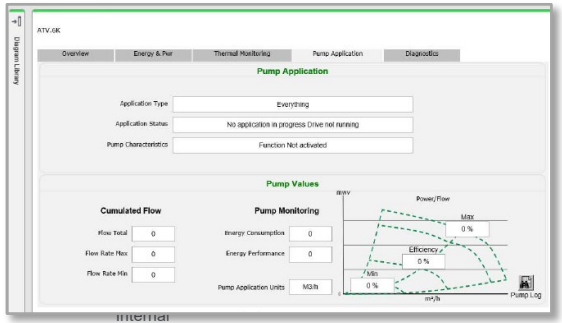
Monitor and analyze motor and load energy consumption



Monitor and alarm drives thermal status to take action to prevent potential failure



Analyze pumping curve & optimize energy consumption on pumping application



Altivar Process Devices


ATV6000


ATV6xx


APM

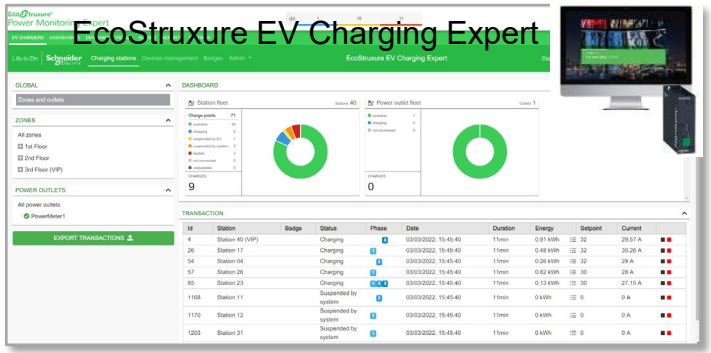

ATV9xx


ATV340

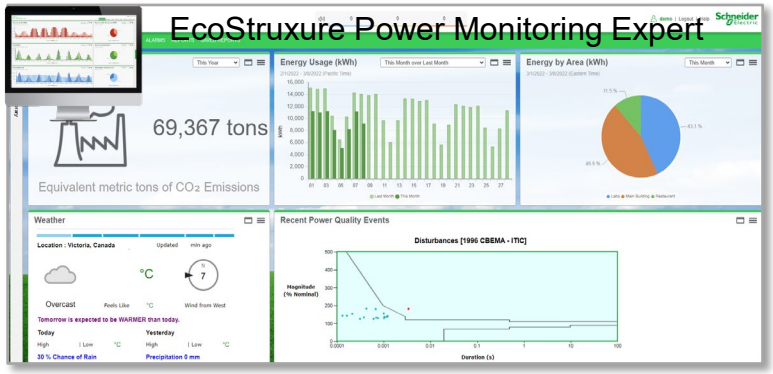

ATV212

Life Is On Schneider Electric

Single pane of glass to monitor EV systems in the ED Network



Web HMI Embedding



Monitor

- Monitor demand and consumption from ED network and EV charging stations in real time
- Get alerted when unexpected happened in the ED network and EV charging infrastructure
- View EV charging status and EV charger status

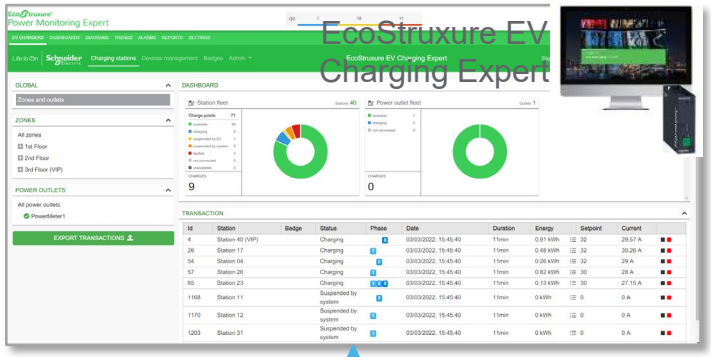
Operate

- Control EV chargers
- Perform load management on EV chargers
- Restore system quickly after an electrical power disturbance event

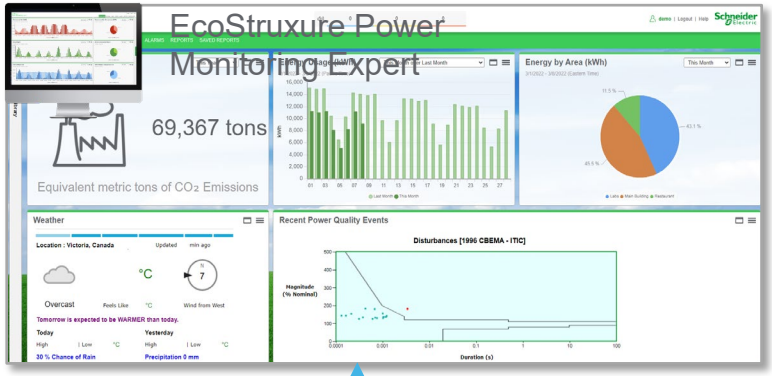
Improve

- Assess ED network capacity before expanding EV charging infrastructure
- Create proactive breaker maintenance plan based on breaker aging
- Understand if electrical assets including EV chargers may be affected by low Power Quality
- Analyze and optimize energy efficiency throughout the ED network

Single pane of glass to monitor EV systems in the ED Network



Web HMI Embedding



OCPP

Network Switch

EVLink Pro AC

Modbus TCP or ION

Power Meters

Protection Relays

Breakers, Trip Units, Gateways

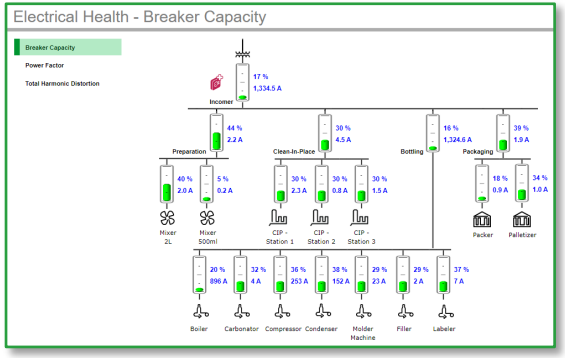
UPSs

PQ Correction Equipment

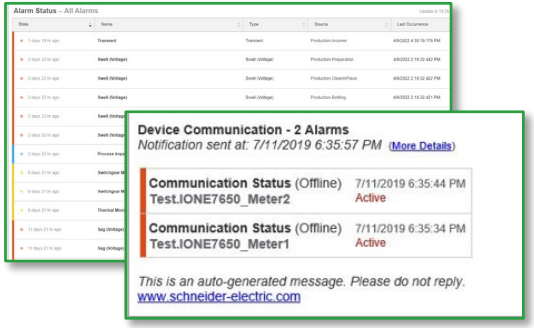
Other Electrical Devices and Meters

Monitor EV systems in ED Network

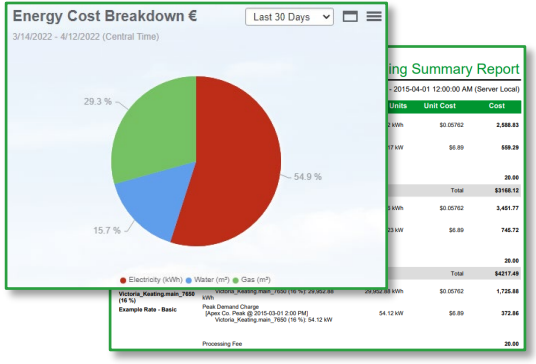
Overview of each circuit loads to understand plan EV infrastructure expansion



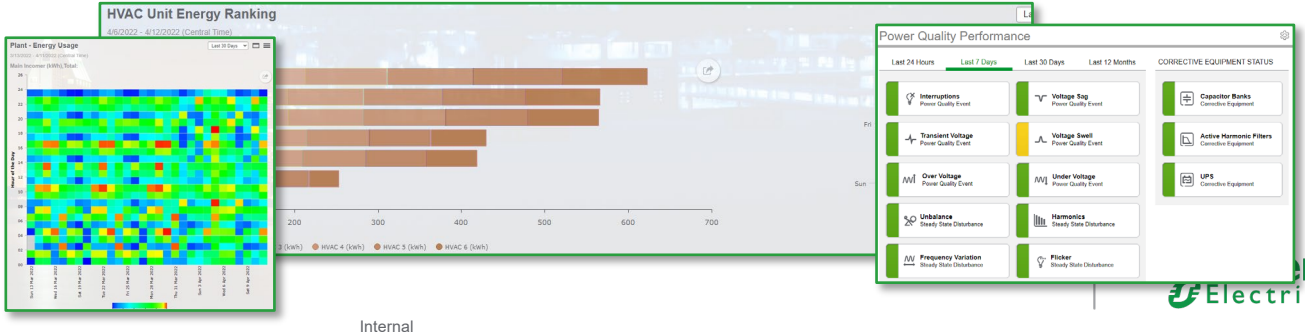
Get notified when unexpected happened to EV systems to restore EV systems quickly



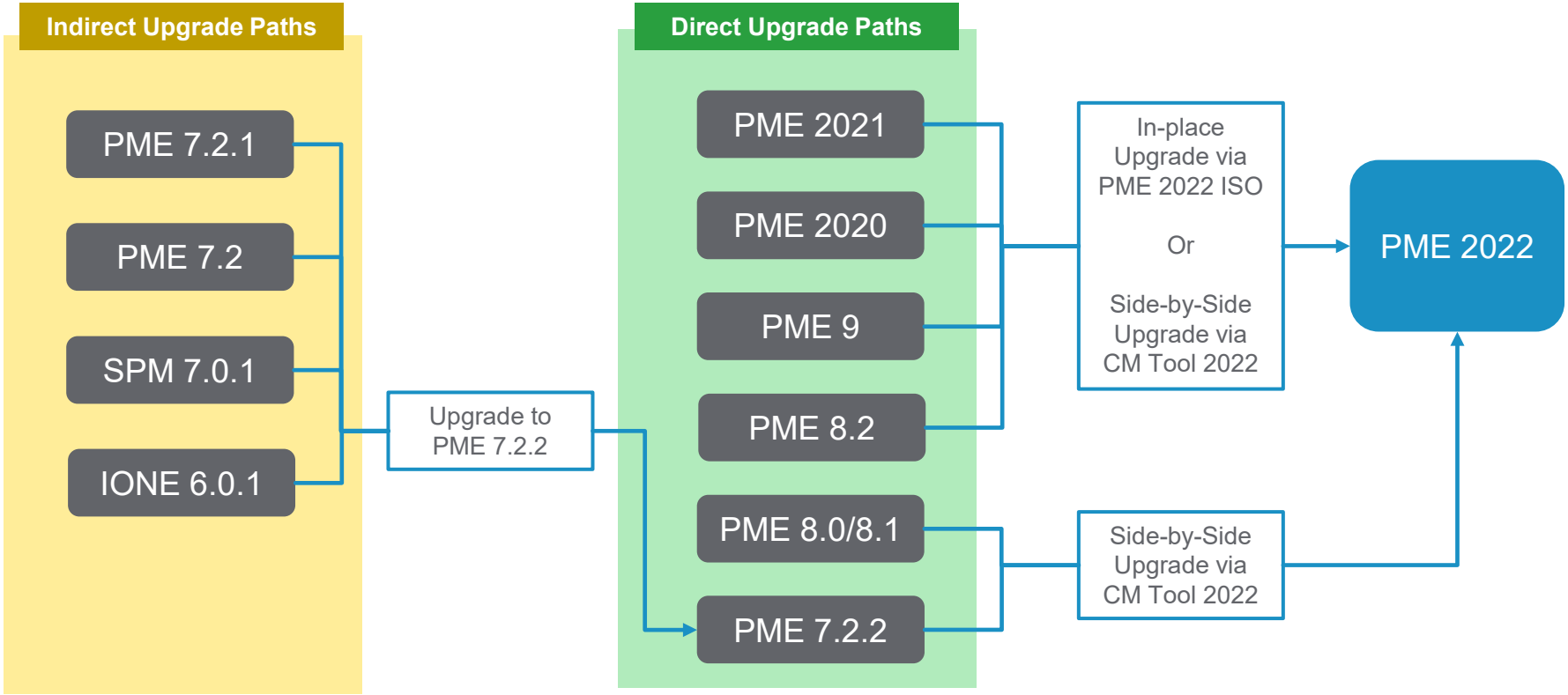
Make energy consumed on operating and maintaining EV infrastructure accountable



Analyze energy consumption and power quality of EV infrastructure to ensure system uptime and improve efficiency



More Direct Upgrade Path to PME 2022

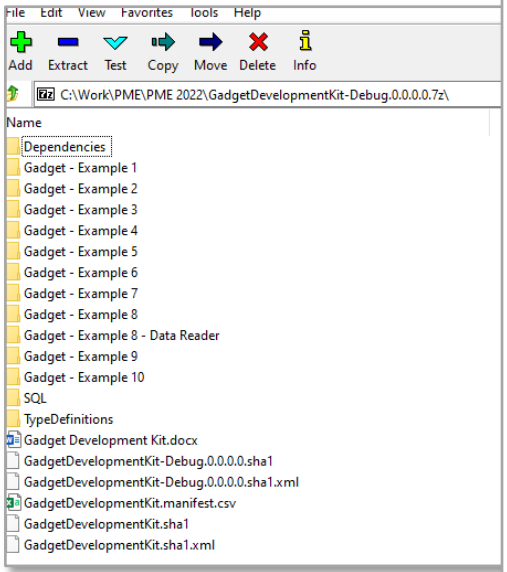


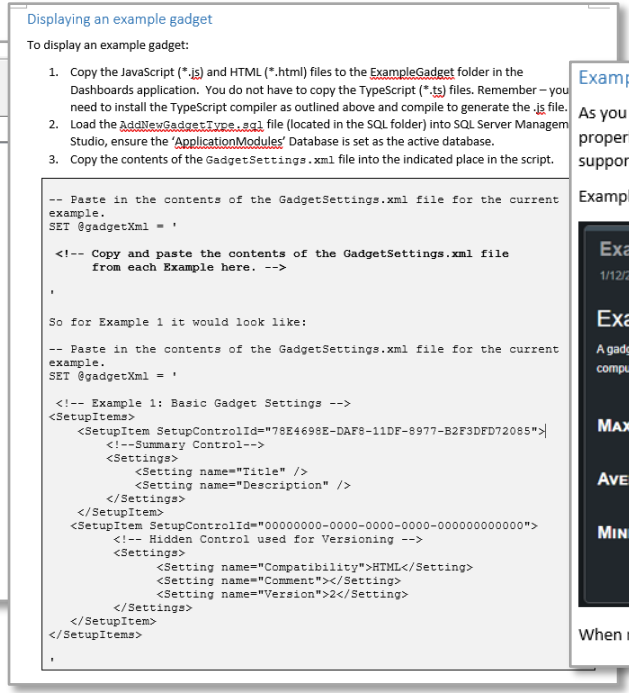
Always check if existing Windows OS and SQL versions are supported by PME 2022 before upgrading.

Create custom gadgets with Gadget SDK

EcoXperts can learn about creating new and custom gadgets from Gadget SDK which comes with documentation, 10 sample gadgets and code snippets

Gadget Development Toolkit





Displaying an example gadget

To display an example gadget:

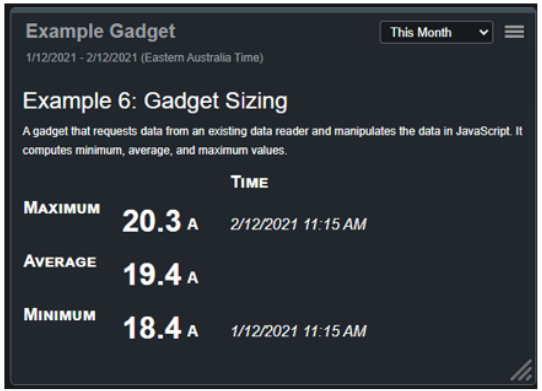
1. Copy the JavaScript (*.js) and HTML (*.html) files to the ExampleGadget folder in the Dashboards application. You do not have to copy the TypeScript (*.ts) files. Remember – you need to install the TypeScript compiler as outlined above and compile to generate the .js file.
2. Load the AddNewGadgetType.sql file (located in the SQL folder) into SQL Server Management Studio, ensure the 'ApplicationModules' Database is set as the active database.
3. Copy the contents of the GadgetSettings.xml file into the indicated place in the script.

```
-- Paste in the contents of the GadgetSettings.xml file for the current
example.
SET @gadgetXml = '

 <!-- Copy and paste the contents of the GadgetSettings.xml file
      from each Example here. -->

'

So for Example 1 it would look like:

-- Paste in the contents of the GadgetSettings.xml file for the current
example.
SET @gadgetXml = '

 <!-- Example 1: Basic Gadget Settings -->
<SetupItems>
    <SetupItem SetupControlId="78E4698E-DAF8-11DF-8977-B2F3DFD72085">
        <!--Summary Control-->
        <Settings>
            <Setting name="Title" />
            <Setting name="Description" />
        </Settings>
    </SetupItem>
   <SetupItem SetupControlId="00000000-0000-0000-0000-000000000000">
         <!-- Hidden Control used for Versioning -->
         <Settings>
               <Setting name="Compatibility">HTML</Setting>
               <Setting name="Comment"></Setting>
               <Setting name="Version">2</Setting>
         </Settings>
   </SetupItem>
</SetupItems>

'
```

Example 6: Handling Different Gadget Sizes

As you explore the previous examples, you might notice that the gadget does not always display properly when it is resized; especially when the size becomes smaller. The gadget framework includes support to handle different sizes.

Example 6 resembles the following when it is re-sized smaller than the default size:



When re-sized larger than the default size the gadget resembles the following:

Smart Connector Quotation and Ordering

How to quote and order

For those who do not have software development capabilities and wishing to have a Smart Connector extension developed, contact the **Digital Energy Center of Excellence** to quote potential projects.

SE organizations should contact **Jesper Hansen** jesper.hansen@se.com

EcoXperts should contact their channel managers who will interface with Jesper Hansen.

For EcoXperts wishing to **develop Smart Connector extensions** and then resell on the Exchange Marketplace, you will need to order and resell the following commercial reference available via Digital Buildings.

Part Number	Product Name	Description
SXWSWSCDL100001	SW-SMART-CONNECT	Smart Connector Deployment License (required for each deployment of Smart Connector Framework)

Help Customers Comply with Energy Codes

The Energy Code Compliance application analyzes energy data for your building loads to help the facility manager or energy manager to comply with building energy codes and standards

Sample aggregated loads for a three-floor building

NEC 220.12	ASHRAE 90.1	CA Title 24	IECC	LEED
• Total Lighting	• Exterior Lighting • Interior Lighting • HVAC • Plug Loads • Site1	• Total Lighting • HVAC • Plug Loads • Site1 • Floor 1 • Floor 2 • Floor 3	• Exterior Lighting • Interior Lighting • HVAC • Plug Loads • Site1	• Total Lighting • Plug Loads

PME Standard Scope of Work (SSOW) on ESXP Applications

Standard Scope of Work to help you propose to customers and effectively deploy application

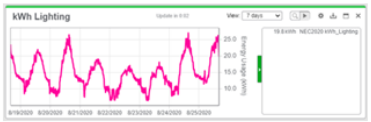
Technical Proposal

Helps customer to understand

- What the application is
- What deployment options are
- How we verify deployment with customer
- How we orientate user, and
- Application examples for customer to see what the deployment may look like

(ASHRAE 90.1, CA Title 24, IECC, LEED) Example

The following image shows an example trend for a kWh



Estimate

Helps tendering teams to quote application deployment

- System requirements
  - Devices
  - Software
- Checklist and time estimates

	Step	Summary	Estimate (hours)
☐	Plan aggregated loads and measurements	Plan your aggregated loads and measurements based the detailed requirements of the codes and standards you are configuring.	2.00
☐	Add a new VIP	Add a new custom VIP for energy code and standard compliance.	0.25
☐	Configure energy compliance framework	Use the provided *PMEEnergyCompliance.fwn* file as a template to calculate aggregated loads in Designer.	1.00
☐	Add logical device type and devices	Add a new logical device type for energy compliance. Add logical devices for each of your aggregated loads.	0.50
☐	Configure web applications	(NEC 220.12) Configure alarms and notifications. (ASHRAE 90.1, CA Title 24, IECC, LEED) Configure trends. (CA Title 24) Configure Load Profile report. (CA Title 24) Configure Energy Cost report.	1.50
☐	Verify configuration	Verify the software configuration.	1.00
☐	Review with end user	Review the application with the end user.	1.00
			Total: 7.25

Deployment Guide

Helps Application Engineers to plan and deploy the application

- Prerequisites
- Deployment steps

(PME option) Configure software

Complete the following software configuration ste

1. Add a new VIP
2. Configure energy compliance framework
3. Add logical device type and devices
4. Configure web applications

- Verification steps

(PME option) Verify software configuration

1. (NEC 220.12) Verify that notifications for lighting l SMS notifications are configured, confirm that the
2. (ASHRAE 90.1, CA Title 24, IECC, LEED) Verify and standards.
3. (CA Title 24) Verify that you can read the peak der
4. (CA Title 24) Verify that you can read the Energy p report.
5. (IECC) Verify that you can read the building Powe

PME Standard Scope of Work (SSOW) on ESXP Applications

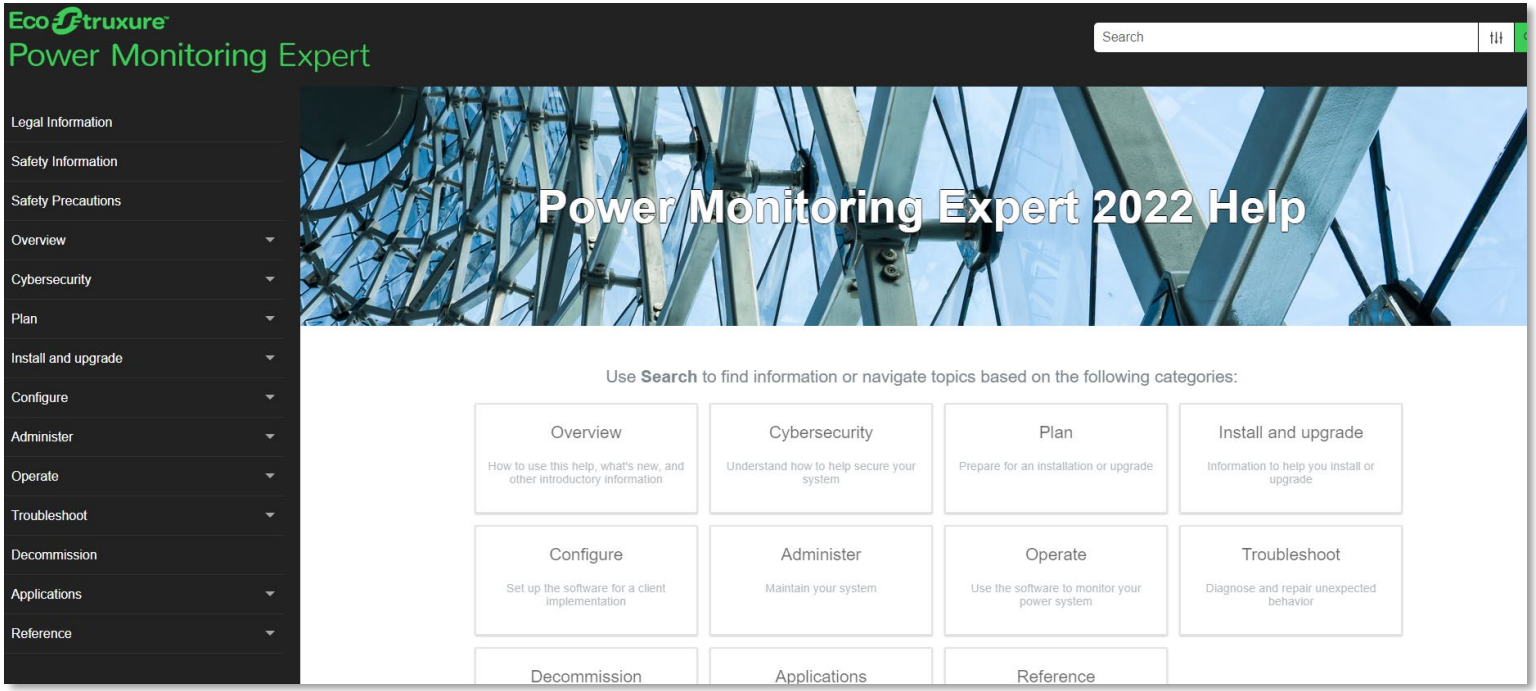
Standard Scope of Work to help you propose to customers and effectively deploy application

Available SSOWs

- Utility Bill Verification
- Thermal Monitoring for MV Substation
- Thermal Monitoring for LV Busway
- Power Quality Monitoring
- Power Quality Compliance
- Energy Modeling & Verification
- Arc Flash Protection
- Energy Code Compliance

Online PME System Guide

https://digital-energy-help.se.com/pme/content/home.htm



New supported environment and software

Operating Systems

- Windows 10 Professional/Enterprise
- Windows 11 Professional/Enterprise New!
- Windows Server 2012 Standard
- Windows Server 2012 R2 Standard/Enterprise
- Windows Server 2016 Standard
- Windows Server 2019 Standard
- Windows Server 2022 Standard New!
- Windows IoT Enterprise New!

Web Browser

Desktop Web Brower:

- Google Chrome version 42 and later
- Mozilla Firefox version 35 and later
- Apple Safari versions 7 or 8 and later
- Microsoft Edge

Mobile Web Browser:

- Safari on iOS8.3+ operating systems
- Chrome on Android systems

Database Systems

- SQL Server 2012 Express
- SQL Server 2014 Express
- SQL Server 2016 Express
- SQL Server 2017 Express
- SQL Server 2019 Express
  - Shipped in PME 2022 ISO
- SQL Server 2012 Standard/Enterprise/Business Intelligence
- SQL Server 2014 Standard/Enterprise/Business Intelligence
- SQL Server 2016 Standard/Enterprise/Business Intelligence
- SQL Server 2017 Standard/Enterprise/Business Intelligence
- SQL Server 2019 Standard/Enterprise/Business Intelligence

Virtual Environments

- VMWare Workstation 10
- VMWare ESX1 6.0
- Oracle Virtual Box 5.0.4
- Microsoft Hyper-V from Windows 8.1, Windows Server 2012
- Citrix XenServer 6.2
- Parallels Desktop 10
- QEMU-KVM

Microsoft Excel

- Microsoft Excel 2013, 2016, 365

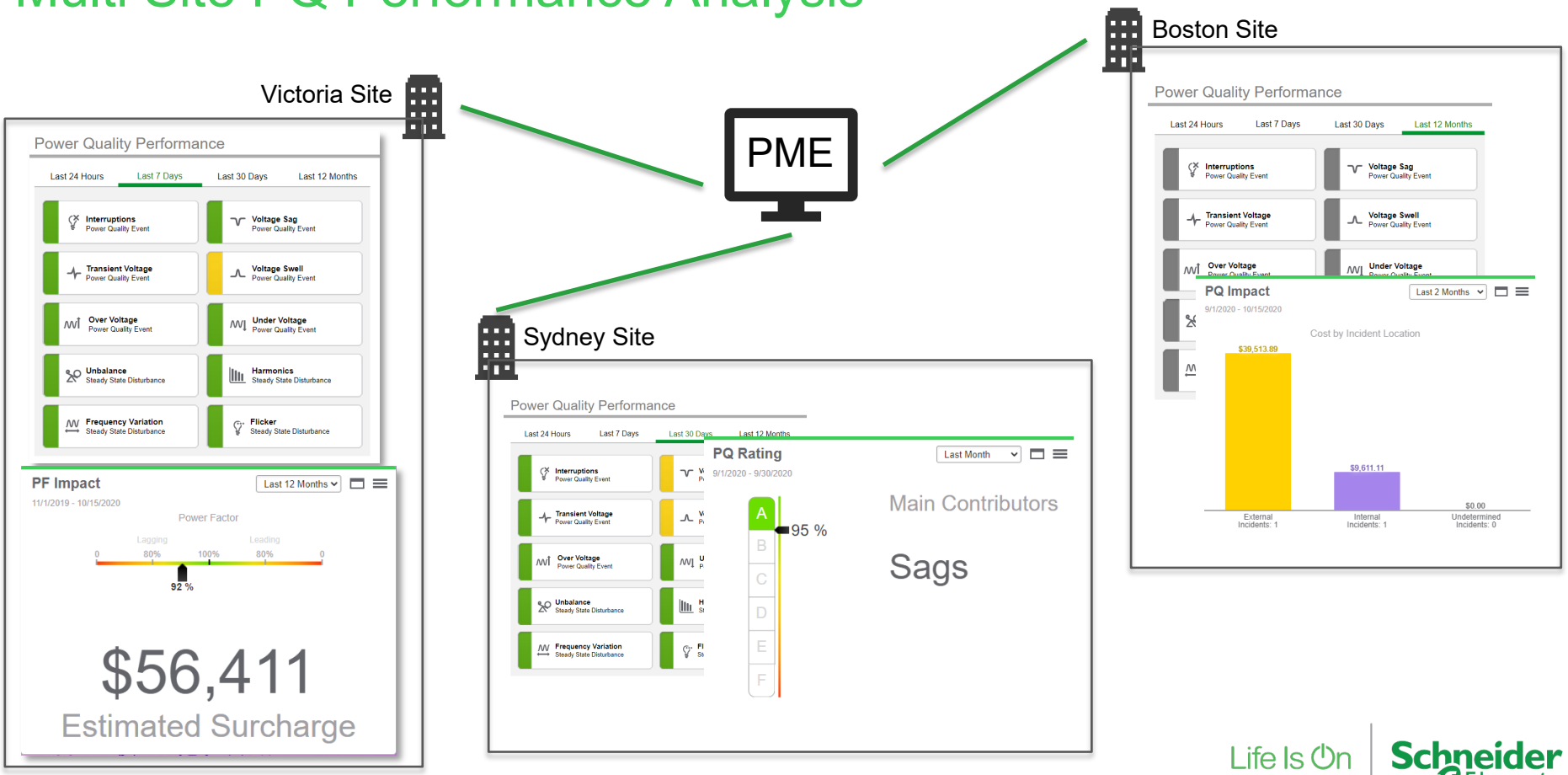
.Net Framework

- .NET 4.8 or higher

PME 2021 Key Highlights

PME 2021 Release – July 2021

Multi Site PQ Performance Analysis



Understand Voltage Variations with SARFI Index

A customer and a utility may agree upon a contract of how many voltage sags and what level of voltage sags is acceptable. SARFI Report helps both the customer and utility to understand the count of the voltage variations and fulfill the contract

Utility customers may run SARFI index at each of their customers to monitor and benchmark voltage variations, such as voltage sag, among their customers

Schneider Electric

SARFI Report

1/1/2019 12.00.00 AM - 1/1/2020 12.00.00 AM (Server Local)

Source	SARFI 10	50	70	80	90	110	120	140	ITIC	SEMI
Keating.Main_7650	1	2	4	14	72	0	0	0	4	
Keating.Panel_B	1	1	4	14	86	0	0	0	5	
Keating.Panel_E	1	1	4	14	86	0	0	0		
Keating.Panel_M	1	1	4	14	86	0	0	0		
Keating.Panel_M_Left	0	1	3	28	63	0	0	0		
Keating.Panel_M_Right	0	0	4	23	61	0	0	0		
Keating.Panel_R	1	1	4	14	86	0	0	0	5	
Keating.RTU_5	1	1	4	14	86	0	0	0	5	1
Keating.Server_Room_IT_Load	1	1	1	10	38	0	0	0	2	2

SARFI-X

SARFI-Curve

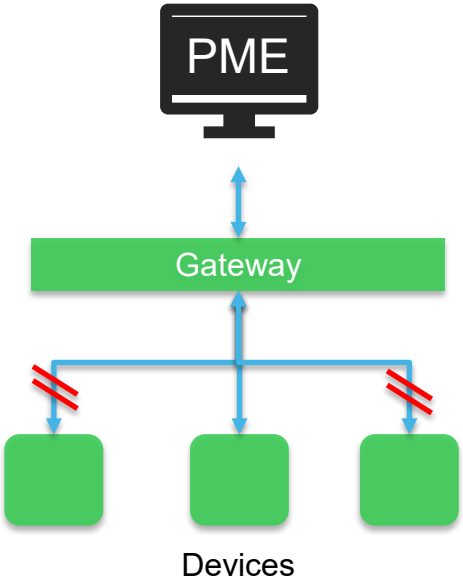
Generated on: 7/14/2020 2:46:17 PM

Page 1 of 1

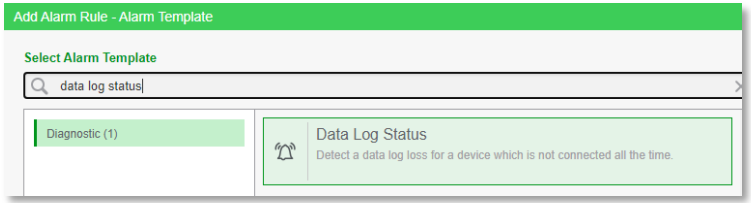
In order to know the number of voltage variations, such as voltage sag, from their utility, demand customers may compute SARFI index at each of their plants at the service entrance

Alarm When Data not Being Logged

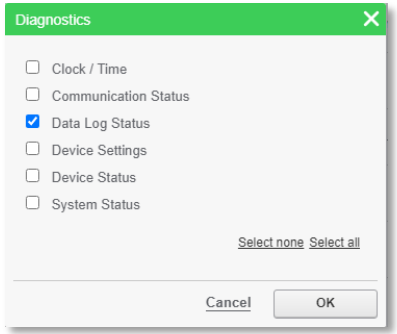
When devices are connected to PME via a gateway, there may be loss of communication between the gateway and downstream devices that PME cannot detect and therefore cannot log the data from devices



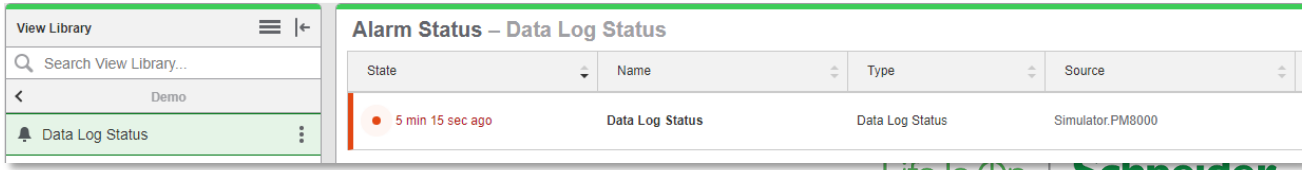
1 Set up a data log status for devices via gateway



2 Set up an alarm view



3 A dedicated alarm view on data log status that you can configure notification



Understand Voltage Variations with SARFI Index

A customer and a utility may agree upon a contract of how many voltage sags and what level of voltage sags is acceptable. SARFI Report helps both the customer and utility to understand the count of the voltage variations and fulfill the contract

Utility customers may run SARFI index at each of their customers to monitor and benchmark voltage variations, such as voltage sag, among their customers

Schneider Electric

SARFI Report

1/1/2019 12.00.00 AM - 1/1/2020 12.00.00 AM (Server Local)

Source	SARFI 10	50	70	80	90	110	120	140	ITIC	SEMI
Keating.Main_7650	1	2	4	14	72	0	0	0	4	
Keating.Panel_B	1	1	4	14	86	0	0	0	5	
Keating.Panel_E	1	1	4	14	86	0	0	0		
Keating.Panel_M	1	1	4	14	86	0	0	0		
Keating.Panel_M_Left	0	1	3	28	63	0	0	0		
Keating.Panel_M_Right	0	0	4	23	61	0	0	0		
Keating.Panel_R	1	1	4	14	86	0	0	0	5	
Keating.RTU_5	1	1	4	14	86	0	0	0	5	1
Keating.Server_Room_IT_Load	1	1	1	10	38	0	0	0	2	2

SARFI-X

SARFI-Curve

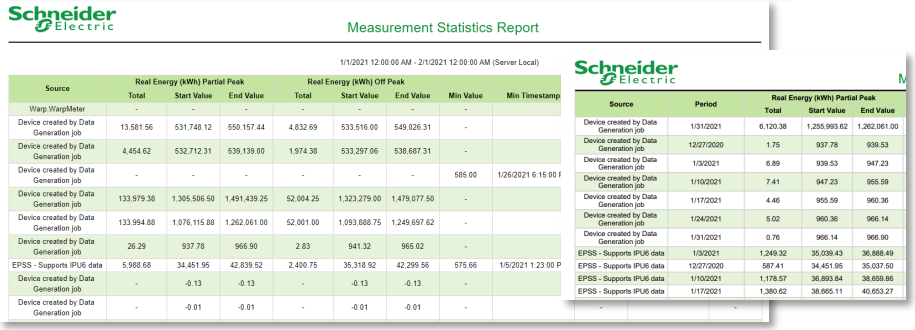
Generated on: 7/14/2020 2:46:17 PM

Page 1 of 1

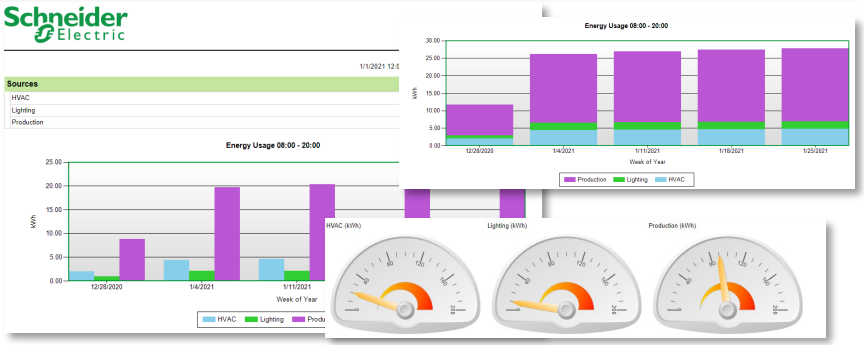
In order to know the number of voltage variations, such as voltage sag, from their utility, demand customers may compute SARFI index at each of their plants at the service entrance

More Reports for Energy Analysis

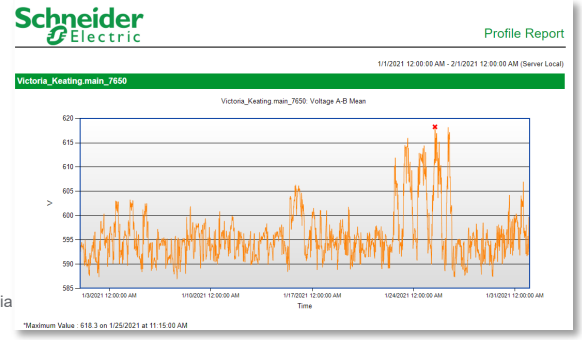
Measurement Statistics Report provides a statistic summary of measurements that you can choose different aggregation intervals and show statistics respective to TOU



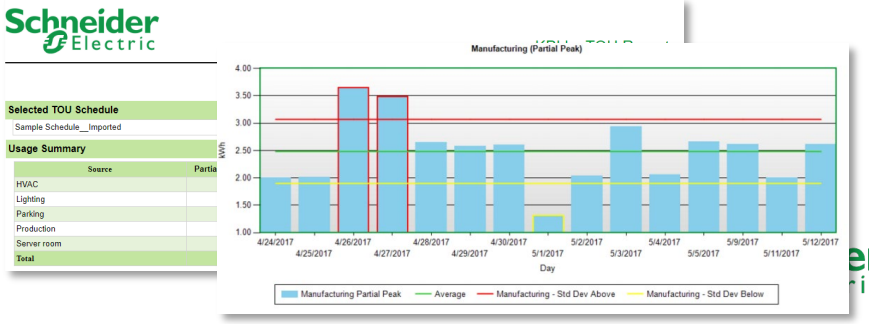
Scaled Energy Usage Report can normalize measurements pairs before it applies a scale factor from another measurement, and supports different aggregation periods



Profile Report allows you to profile any measurement and support hierarchy sources, cumulative and non-cumulative measurements.



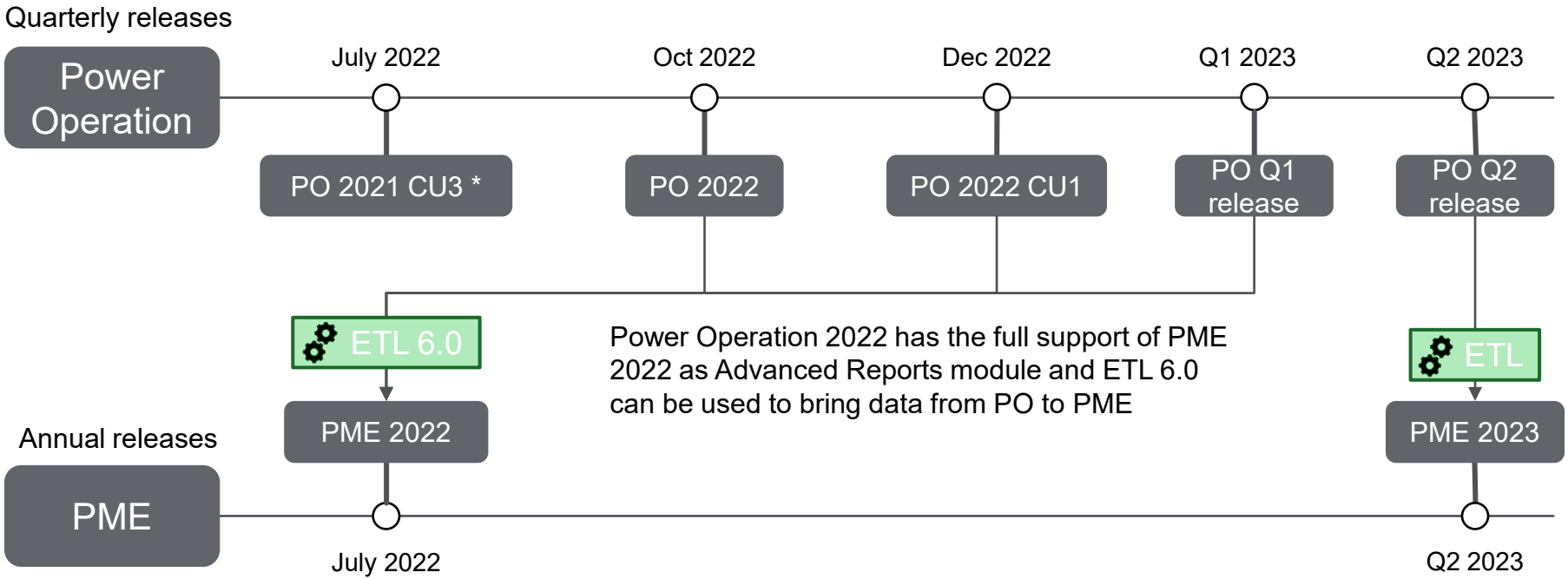
KPI by TOU Report Energy Usage Report supports different rollup periods and TOU, and can email notification when values not meeting the target



Life Is On | Schneider Electric

Integrate PME with Power Operation

PME continues integrating with Power Operation as Advanced Reports module



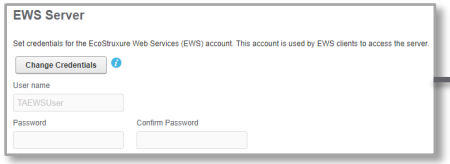
* PO 2021 CU3 may use PME 2022 as Advanced Reports. If needed, contact Rich Alexander for more information

Integrate PME with EBO without ETL

PME

EBO

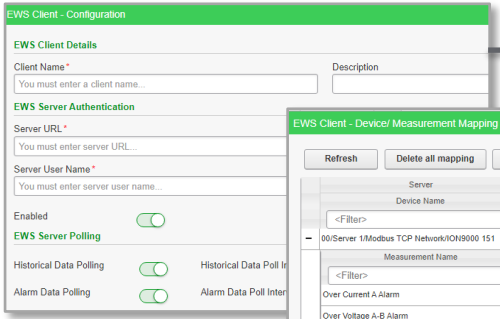
EWS Server → Real time/historical data and alarms from PME to EBO → EWS Client



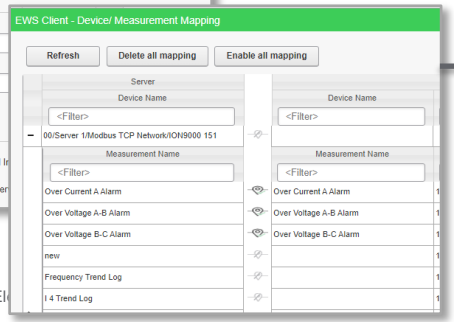
PME is set up as a EWS Server which EBO (EWS Client) pulls data and alarm from

New!

EWS Client ← Historical data from EBO to PME ← EWS Server



PME is set up as a EWS Client to pull data from EBO (EWS Server)



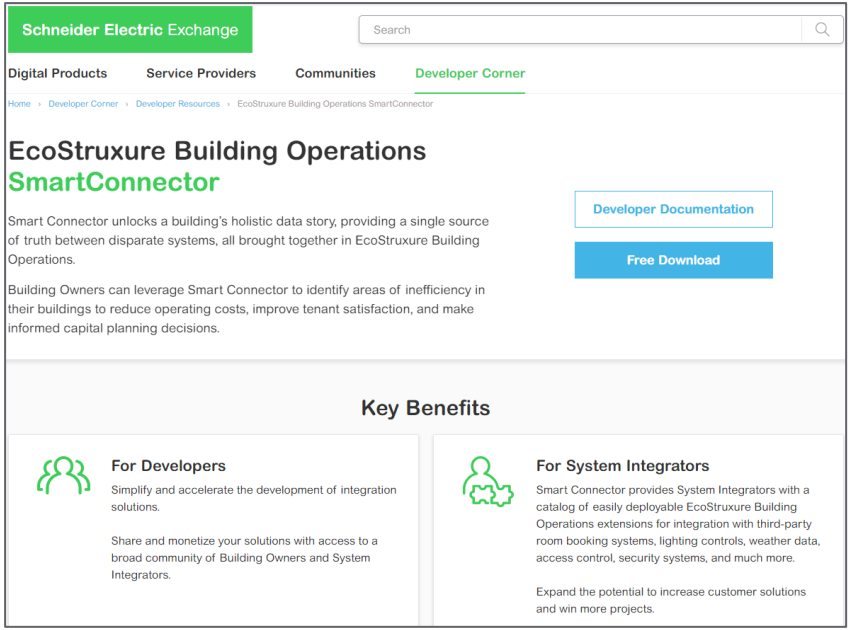
Historical data from EBO has to be mapped to PME's source and measurement data structure so that PME can store the data in the database for reporting. This was done in ETL before but now is natively supported in PME. In PME 2022, transferring historical data from EBO to PME does not require ETL

PME, ETL and Smart Connector

	ETL	Smart Connector
	Free	Paid
PME 2021 and older version	ETL is used to bring data from other systems such as Wonderware Historian, Power Operation, EGX300, Com'X 510 and 3rd party systems to PME, and export data from PME to other systems	Smart Connector doesn't support PME 2021 or older versions
PME 2022	ETL is maintained and tested so that it continues to be a free tool to bring data to PME and export data from PME	Smart Connector is able to pull data from PME 2022 and PME 2022 is able to pull data from Smart Connector. Some existing Smart Connector extensions may work with PME 2022. Smart Connector RESTful extension is being tested with PME 2022
PME future versions	While Smart Connector is believed to have better performance and have better extendibility with custom extension developments, more assessment, testing and validation required to determine if Smart Connector can be a replacement option for ETL and what the migration path will look like for existing ETL customers. In the meantime, ETL will be maintained and supported.	

Smart Connector Additional Resources

For more information on Smart Connector (1/4)



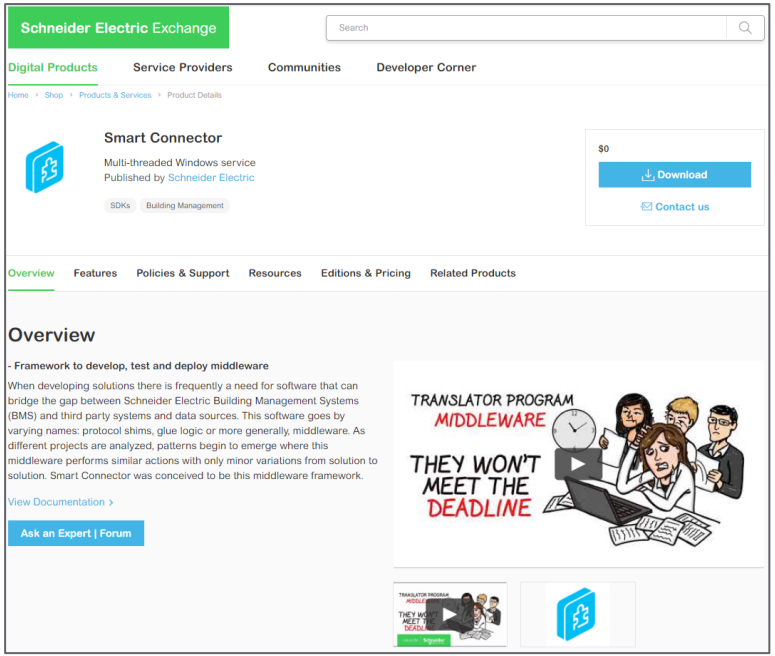
Smart Connector Developers Landing Page

Starting point for learning about Smart Connector.

https://exchange.se.com/develop/developer-resources/ecostruxure-building-operations-smartconnector

Smart Connector Additional Resources

For more information on Smart Connector (2/4)



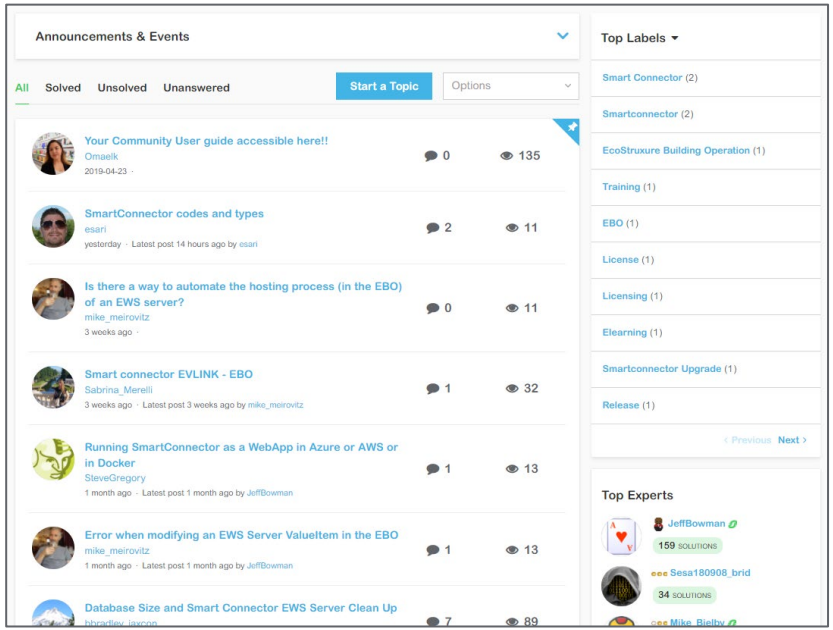
Introduction to Smart Connector

Gain better understanding of Smart Connector, visit the Exchange Smart Connector site

https://shop.exchange.se.com/en-US/apps/40647/smart-connector

Smart Connector Additional Resources

For more information on Smart Connector (3/4)



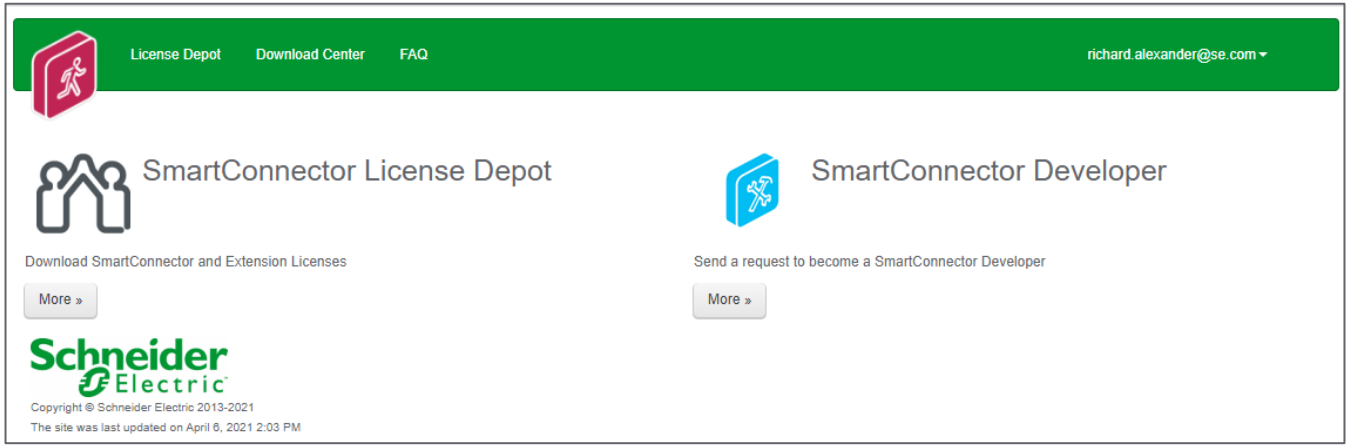
Smart Connector Developers Forum

Discussion forum for Smart Connector extension software developers

https://community.exchange.se.com/t5/SmartConnector-Forum/bd-p/smart-connector-developer

Smart Connector Additional Resources

For more information on Smart Connector (4/4)



Smart Connector Download Site for software & licenses

Download Smart Connector core software, Smart Connector extensions and licenses

https://www.smartconnectorserver.com/

Life Is On Schneider Electric