



Power Monitoring Expert

Offer Overview

Presented by: **Presenter Name Here**

Offer Details

Applications, Features and Benefits

Reminder! Energy and Power Management

What we do

- Ongoing measurement of an electrical power distribution system via intelligent, communicating energy and power devices connected to software for data collection, visualization, analysis and reporting
- Just like any other process in your facility your electrical distribution network needs to be monitored and/or managed.

'I can monitor my
facility's power
availability in real time'.

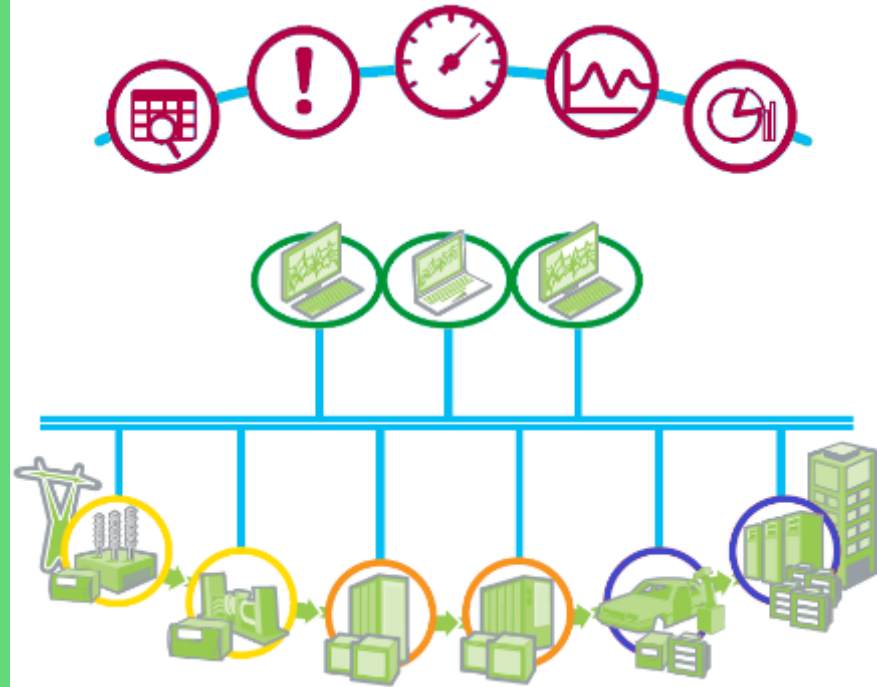
- Factory Manager



Complete System

Power Monitoring Expert

*“**Complete, interoperable, and scalable** purpose built software dedicated to power management that enables you to Improve operational efficiency and **reduce energy-related costs** , **ensure electrical network reliability** and **optimize equipment utilization** and the cost of operations”*

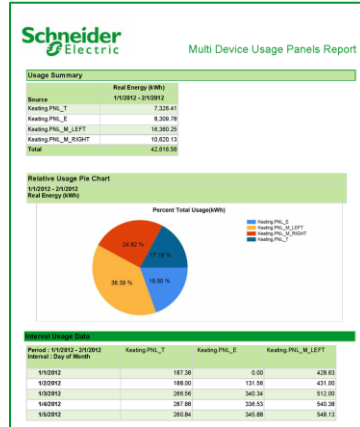
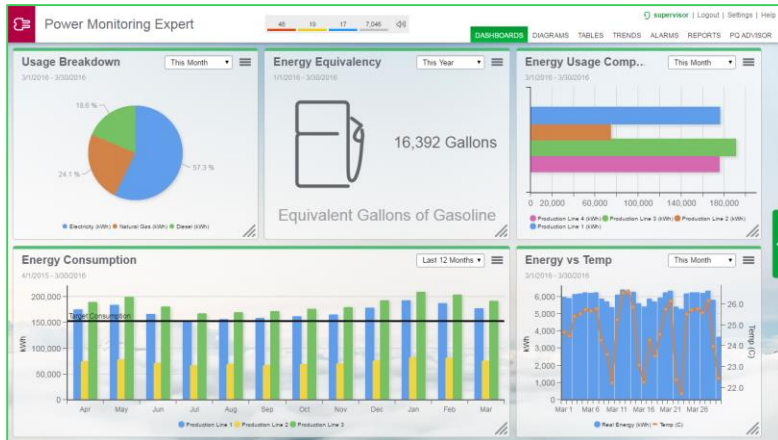
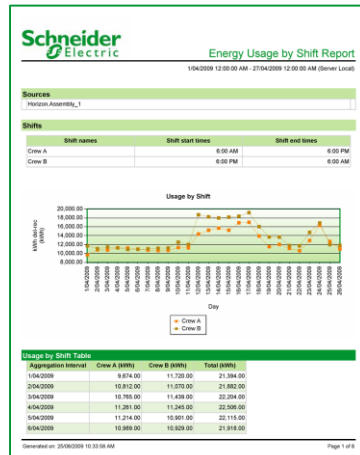
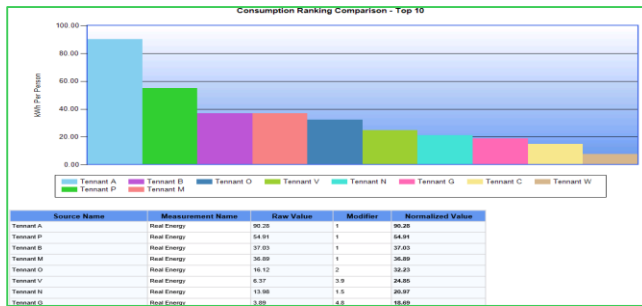


Reduce Energy Related Costs

Energy Monitoring and Cost Allocation

Allocate costs to departments or processes:

- Collect, calculate and report costs for buildings, departments, processes, shifts, lines, or equipment
- Reduce expenses, enable best practices and validate all your conservation initiatives
- Track non-electrical utilities, Water, Gas, etc (WAGES)

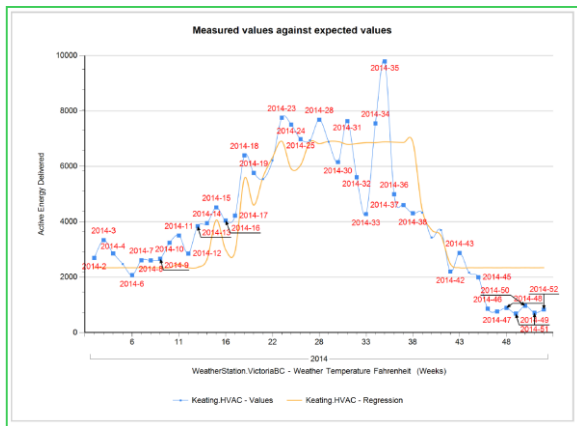
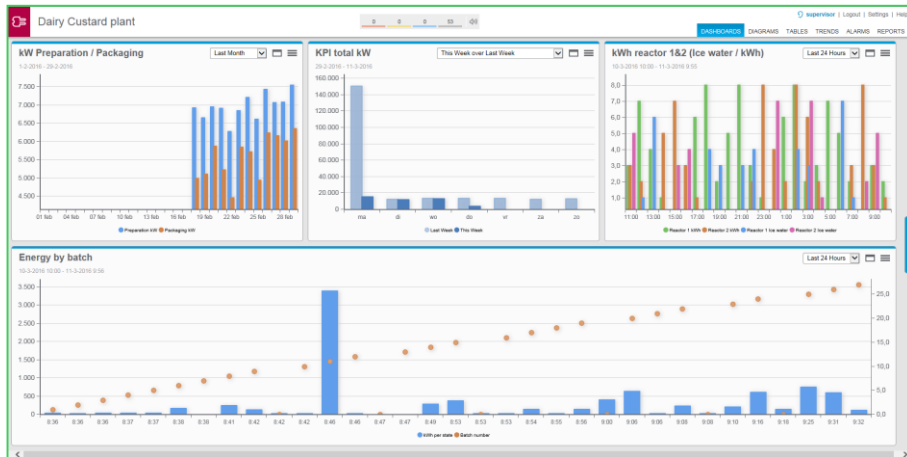


Reduce Energy Related Costs

Active Energy Management

Measure efficiency, reveal opportunities and verify savings

- Measure and compare consumption against departments, processes and industry KPIs to identify places for improvement or adjustment
- Confirm ROI for system improvements with advanced reporting and analysis

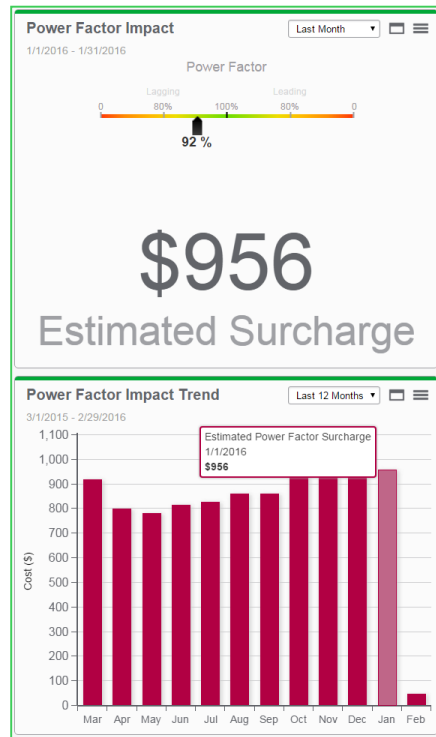
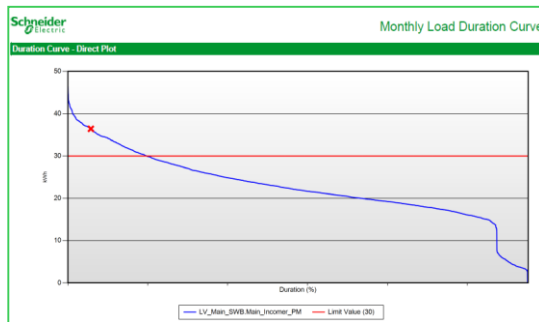


Reduce Energy Related Costs

Demand and Power Factor Management

Reduce peak demand, power factor penalties

- Alert on demand levels, analyze trends to identify demand reduction and load shifting opportunities
- Identify locations of poor power factor
- Justify power factor improvement
- Monitor capacitor banks



Reduce Energy Related Costs

Bill Verification and Demand Response

Identify billing discrepancies

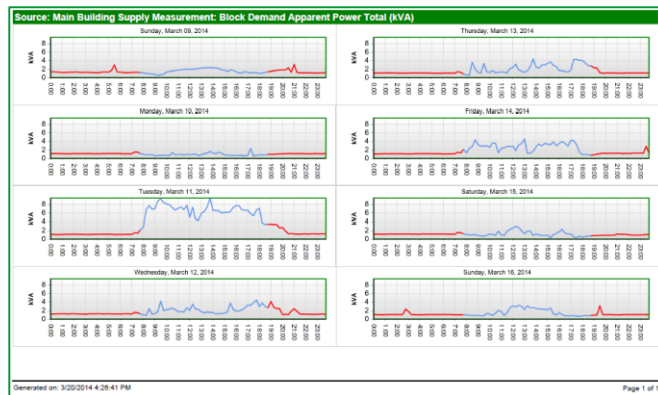
- Validate utility bills, document errors and assess contract compliance
- Identify false penalty charges and authenticate benefits of on-site generation

Account Number: 11-223345-9012		Page 2 of 4			
Best World Hotel		Summary of charges as of Ja			
Accounting					
1111 Park Place					
Seattle, WA 98000-000					
Service Address: 1111 Park Place					
Electric Service for 12/12/2007 - 01/10/2008					
Detailed Billing Information					
Meter #	Season	Service Category	Peak	KWh Usage	
213313	WINTER	Power Factor Rate			
		KVARH General		312688	
		Large General Service - Network			
		KW ON PK		1034	
		OFF PK		0	
		Maximum Demand for Billing Period		1034	
		KWH ON PK		334970	
		OFF PK		250103	
		Total KWH Consumption		585073	
Total Electric Charges					
Gas Service for 12/12/2007 - 01/10/2008					
Detailed Billing Information					
Meter #	Season	Customer Charge		Therms Used	
12345	WINTER	Current Gas Charges			
Total Gas Charges					40,000.00

Department	Crusher 1		
Location	North-East Conveyor Yard		
Contact	Chief Facility Engineer		
Devices	Main-38kV-Bus Panel-A-sub-34		
Rate	PGandE E20		
	Number of Units	Unit Cost	Cost (\$)
Energy Consumption Readings			
Main-38kV-Bus Panel-A-sub-34			
Start: 900,418.94 kWh @ 03/01/2013 00:00			
End: 1,122,872.38 kWh @ 04/01/2013 00:00			
Energy Consumption - Off Peak Winter	104,578.50 kWh	\$0.05134	5,369.06
Energy Consumption - Partial Peak Winter	87,874.94 kWh	\$0.06590	5,793.59
KW Demand - Partial Peak Winter			
Demand Peak Time @ 03/11/2013 12:45	346.14 kW	\$0.25	86.53
KW Demand - Maximum Winter			
Demand Peak Time @ 03/11/2013 12:45	346.14 kW	\$5.43	1,879.52
Reactive Energy Readings			
Main-38kV-Bus Panel-A-sub-34			
Start: 391,470.13 kVARh @ 03/01/2013 00:00			
End: 473,059.13 kVARh @ 04/01/2013 00:00			
Reactive Energy	81,589.00 kVARh	\$0.00000	0.00
Power Factor Adjustments:			
Power Factor greater than 85% provides a bill reduction			
Power Factor less than 85% provides a bill increase			
Power Factor is 92.00%	-1,347,174.06	\$0.00005	-47.36
Total kWh consumption is 192,453.44 kWh			
Power Factor Adjustment Percentage is 7.00%			
Power Factor Adjustment value is:			
192,453.44 kWh x 7.00 = -1,347,174.06			
Customer Charge	31.0 Days	\$49.2813/day	1,527.72
Total (\$)			14,589.08

Participate in demand response programs

- Review historical patterns to build a curtailment plan to enable participation in utility programs
- Negotiate reduced electricity rates for being able to shed load quickly upon request from the utility
- Automate, aggregate load management to verify curtailment, coordinate backup systems, and ensure contract compliance





Optimize Equipment Utilization


Electrical Equipment Monitoring

Keep track of the key electrical parameters in your equipment and prolong the life of key assets

- Real-time and historical data reveals relationships between equipment and conditions affecting system stability.
- Monitor mechanical and environmental parameters to support proactive maintenance and prolong asset life.



Transformers			
	Summary Alarm ●		Summary Alarm ●
MV Transformer A	Primary	Secondary	
	1,050.5 kVA	946.0 kVA	
	996.5 kW	897.4 kW	
	23,976.2 Vll	410.4 Vll	
	24.0 A	1,258.9 A	
MV Transformer B	Primary	Secondary	
	1,050.5 kVA	946.0 kVA	
	996.5 kW	897.4 kW	
	23,976.2 Vll	410.4 Vll	
	24.0 A	1,258.9 A	

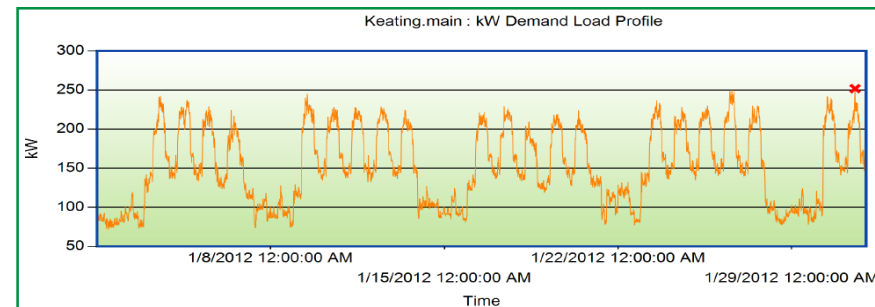
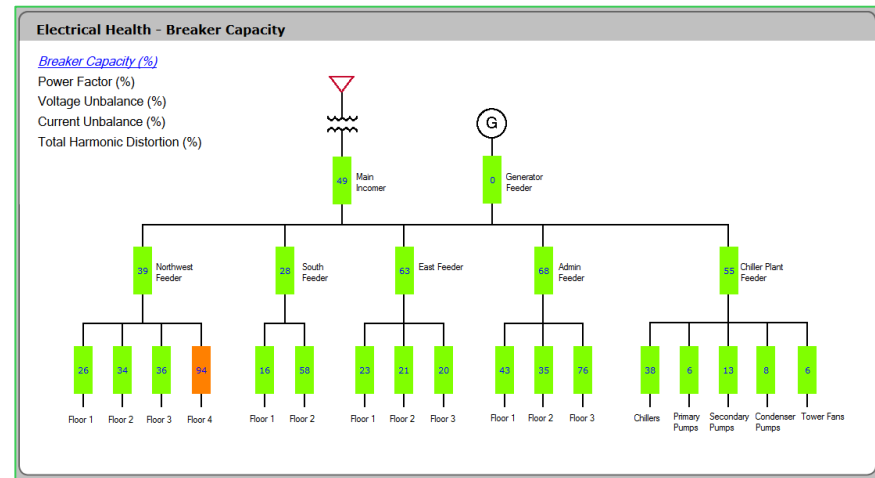
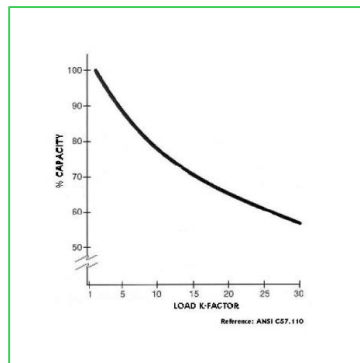
Equipment Detail - Network A - IT UPS				Summary Alarm:
	Power Readings:			Battery Information: UPS Status: UPS On Line Power Temperature: 38.7 C Capacity: 100 % Run Time on Battery: 120 Minutes
	Power:	Input	Output	
	kW Total	543.9 kW	500.2 kW	
	kVAR Total	177.1 kVAR	159.9 kVAR	
	kVA Total	571.8 kVA	525.1 kVA	
	PF Total	95.1	95.3	
	Frequency	60.0 Hz	60.0 Hz	
	Voltage:			
	Vll AB	411.3 V	411.4 V	
	Vll BC	410.9 V	411.3 V	
	Vll CA	410.1 V	410.8 V	
	Current:			
	I A	762.7 A	701.2 A	
	I B	763.4 A	701.4 A	
	I C	764.9 A	702.1 A	
APC Symmetra MW - 1400 kW				

Optimize Equipment Utilization

Capacity Management

Monitor the power consumed by equipment and profile their electrical performance

- Load profiles and historical demand analysis help you plan the capacity of your electrical installation
- Monitor in real time and historically critical de-rating factors for electrical equipment like unbalance and k-factor
- Keep track of power losses in transformers and UPS due to non-linear loads

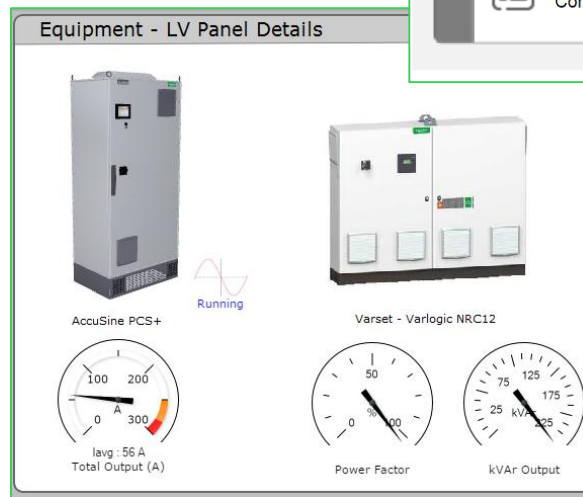


Optimize Equipment Utilization

Mitigation Equipment Monitoring

Monitor the key operating parameters of your power quality correction equipment

- Natively supported:
 - Active Harmonic filters (AccuSine range)
 - Capacitor bank controllers
 - UPSs
- Get notification on critical alarms indicating equipment malfunction
- Schedule proactive maintenance based on system information
- Verify power factor and harmonics correction over time



CORRECTIVE EQUIPMENT STATUS



Capacitor Banks
Corrective Equipment



Active Harmonic Filters
Corrective Equipment



UPS
Corrective Equipment

Life Is On

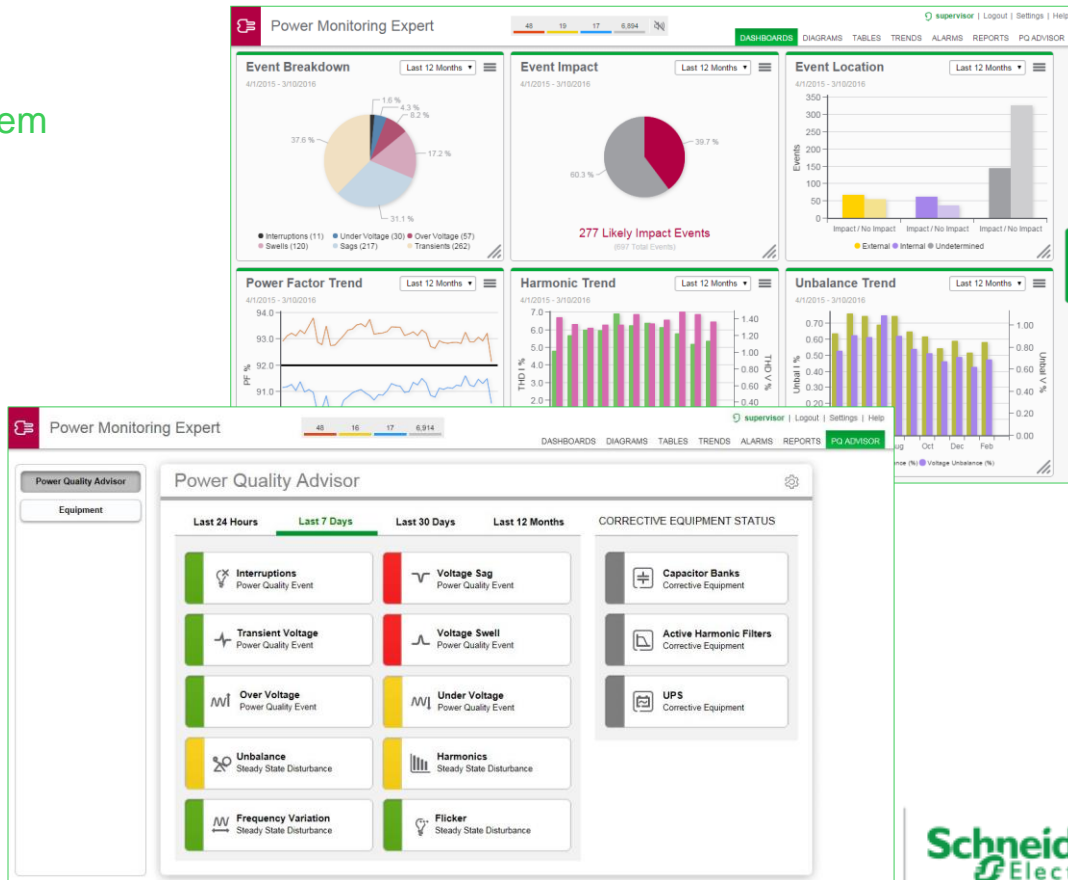
Schneider
Electric

Ensure Electrical Network Reliability

Power Quality Awareness

Simplified details of power distribution system are provided for facility people to ensure electrical network health

- Mean, max and min values of fundamental electrical parameters
- Voltage regulation, voltage balance and disturbances
- Current levels and Power flow
- Power Factor (kVAR)
- Neutral currents and Harmonics
- Short duration events



Ensure Electrical Network Reliability

Alarming and Notification

Verify the reliable operation of power equipment

- Ensure and indicate that operations are normal and parameters within range
- Get notifications via screen indicators, email, SMS and automated reports of abnormal parameters or events.
- Monitor transformers, breakers, PDU, ATS, UPS, generators and capacitor banks for operation status

▼ 2 attachments
logo.png Power Quality Report.pdf

Alert! Number of Voltage Sags Greater This Month vs Last: 36.00 to date

Did you know.....

The number of voltage sags detected this month already exceeds last month's total when checked at

Why you may care
Sags are known to be among the most costly power quality phenomena in industry.

Possible Impacts on Facility

1. Motor shutdown
2. Machine damage
3. Production quality reduction
4. Facility outage

Mitigation
Click [here](#) for a link to the Schneider Electric TVD document "How Can I improve power quality in my facility?"

Messages +91 99-80-757635

SHIFT 3
Generation=1377.63KWH
Export Power=0.00KWH
Import Power=89.22KWH In House=1377.63KWH

Today 10:07 am

Test.Export_Power Tripped at 11/17/2014 10:06:54.982 AM

Test.TG_2 Tripped at 11/17/2014 10:06:57.058 AM

Test.TG_1 Tripped at 11/17/2014 10:07:05.798 AM

Today 1:00 pm

SHIFT 1
Generation=1893.80KWH
Export Power=628149.06KWH
Import Power=80.88KWH In House=626255.26KWH

Text Message Send

Alarms Events

View: All Unacknowledged Alarms

Alarms Displayed: 9 Unacknowledged Alarms: 9

Drag a column here to group by that column

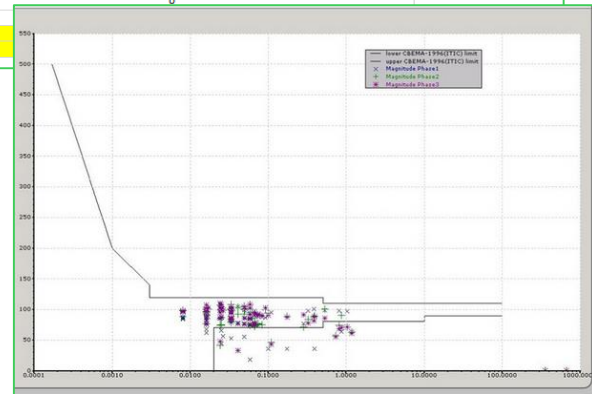
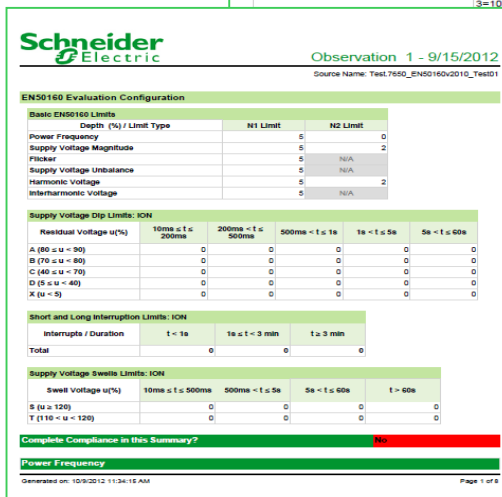
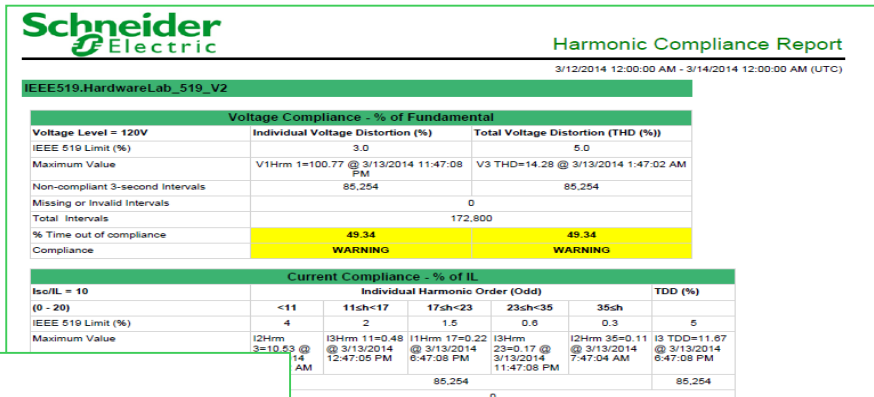
Active	Start Time	Device	Type	Value	Acknowledgement	Condition
	2/27/2012 9:49:56.884 AM	Keating>Main	Tran V3 Max	Transient Detected	Acknowledge	126
	2/27/2012 8:57:16.000 AM	Keating>Main	UNDER VOLTAGE	430.56	Acknowledge	METER ALARM
	2/27/2012 8:57:16.000 AM	Keating>Main	OVER CURRENT	604.34	Acknowledge	METER ALARM
	2/27/2012 8:56:45.000 AM	Keating,PHL4	FC_CB-4 TRIP	TRIPPED	Acknowledge	CB ALARM
	2/27/2012 8:47:01.000 AM	Keating,PHL4	HS OVER CURRENT	603.97	Acknowledge	METER ALARM
	2/27/2012 8:46:47.000 AM	Keating,PHL4	MOTOR-M4	NORMAL	Acknowledge	ON - STARTED
	2/26/2012 8:08:41.701 PM	Keating>Main	Voltage Disturbance	Disturbance Start	Acknowledge	Disturbance
	2/25/2012 6:05:15.000 PM	Keating>Main	POWER FACTOR	-87.668	Acknowledge	METER ALARM
	2/23/2012 3:05:14.000 PM	Keating>Main	KW DEMAND	270.78	Acknowledge	METER ALARM

Ensure Electrical Network Reliability

Power Quality Compliance

Validate that power quality complies with industry standards

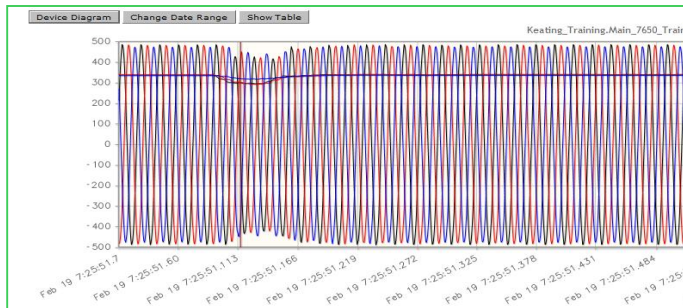
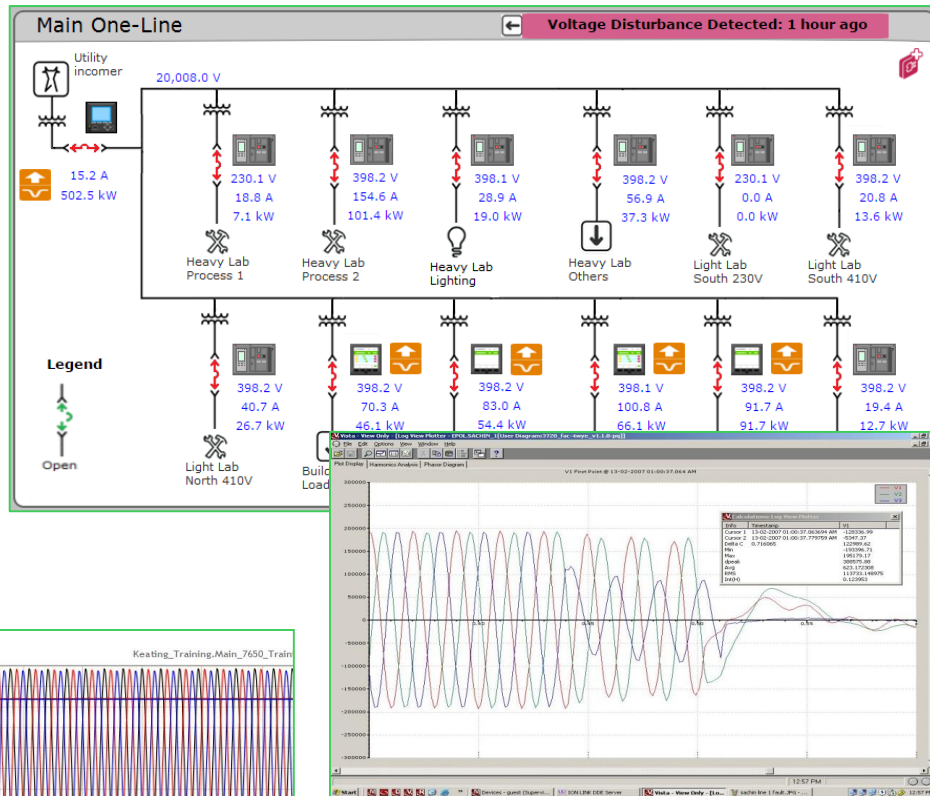
- Accurate verification of compliance with agreed-upon levels of quality inside your facility or from your service provider
- EN50160 ed. 4 standard
- IEC61000-4-30
- Harmonics compliance IEEE519
- CBEMA/ITIC



Continuous Power Quality Monitoring

Be informed 24/7 about the quality of power in your electrical network, not just during a PQ audit

- Sags, swells & transients.
- Detect, capture, analyze, and understand waveforms from PQ events
- Prevent power quality issues by establishing patterns based on historical information
- Fault location, disturbance direction detection (TVD)

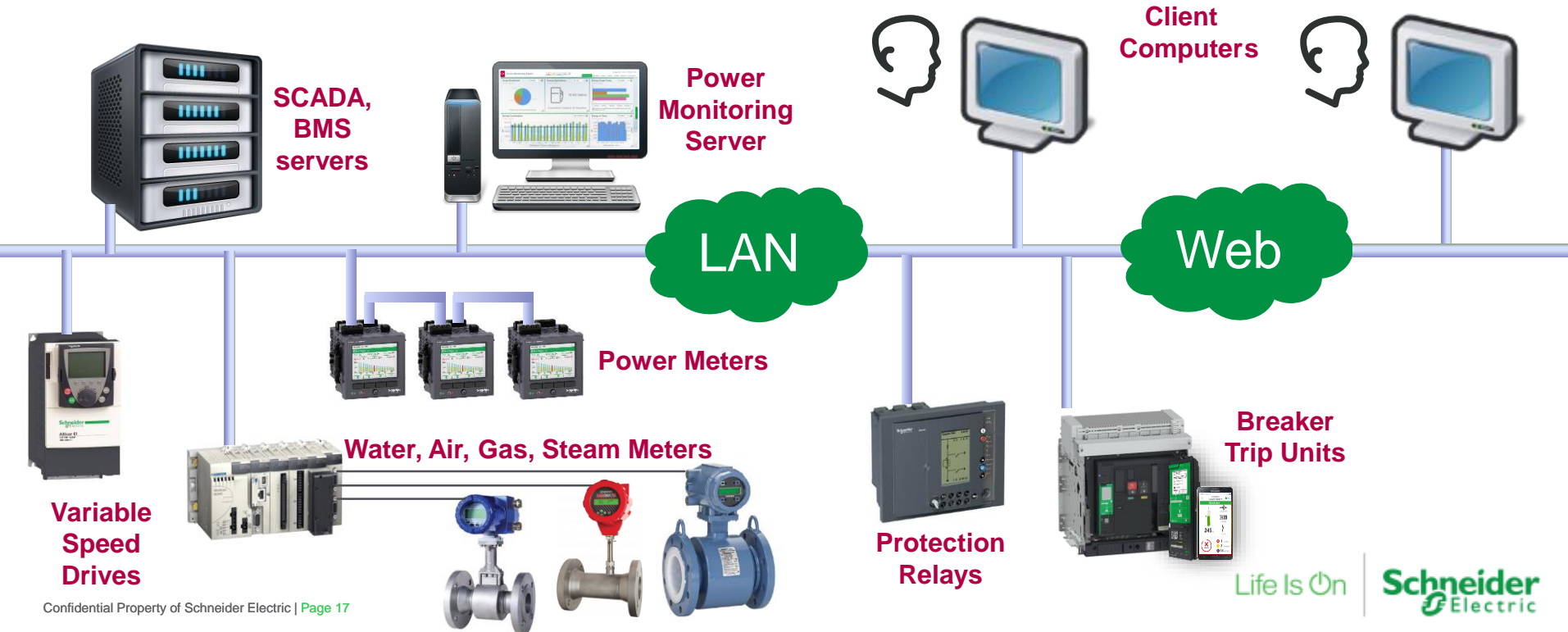


System Architecture

Software, devices and integration to other systems

Simple System Architecture

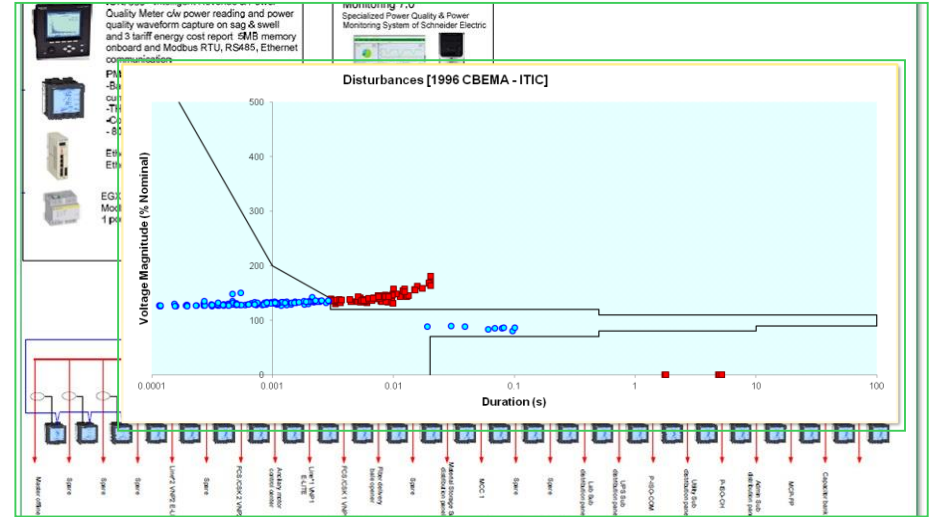
Power Monitoring Expert has a **simple architecture**



Typical Applications

Case Studies

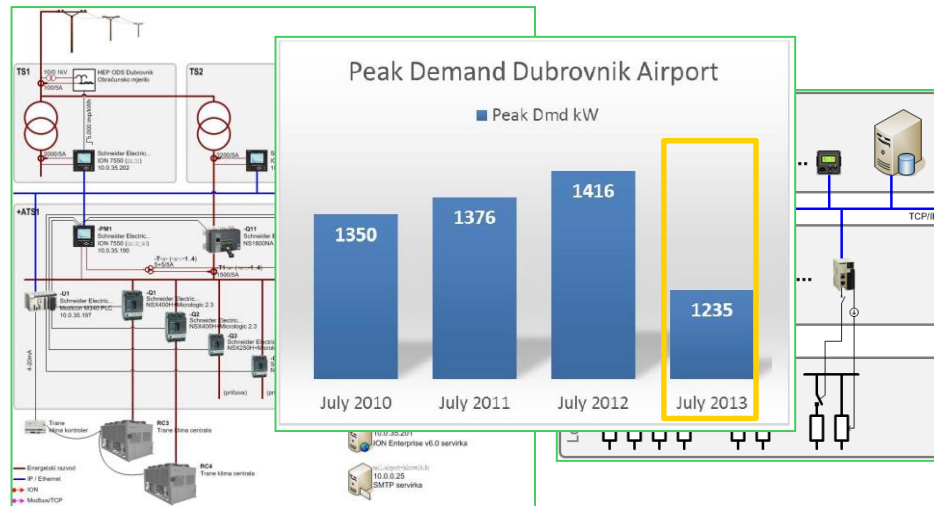
- **Problem:** Unplanned outages, 3.5 to 4 hours to restart production, USD\$20000/outage. No good results with temporary PQ audits.
- **System:** PME, 1xION7650, 25xPM820s, 1xEGX100, 5 Days of engineering services, Project margin 40%.
- **Solution:** Using the power quality features of the ION7650 installed in the main incomer and the reporting capabilities of PME, a clear pattern in the events was identified plus the event direction detection indicated with high confidence that the events were coming from upstream, meaning from outside the facility. A neighbor company in the same industrial park was identified as the offender and the utility and business park owner changed the grid configuration to isolate the two facilities.



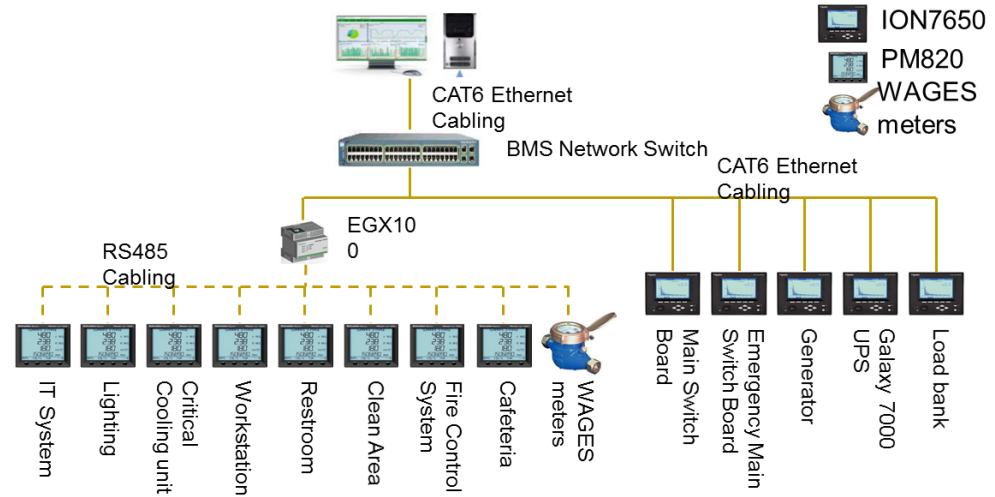
The system is now being used to establish an energy consumption baseline and report on production vs energy consumption KPIs. The system is a reference and will be replicated in all P&G plants in Vietnam

Airport in Europe

- **Problem:** High peak demand during summer months (HVAC system) and the need to guarantee the comfort of passengers and safe operation of the terminal
- **System:** PME, ION7550s, ION7330s, PLCs M340, Compact NSX, NS1600 motorized circuit breakers.
- **Solution:** Using ION technology our partner was able to build a predictive demand calculation algorithm inside the meters and using a distributed control architecture (PME, Meters, PLC) send analog signals from the PLC to adjust the output of the Chiller . The signals came from the calculation inside the meters and the software allows the user to override these values by manual assignment of the set points. Savings in energy consumption of up to 10% were achieved in the first summer of the system operating.



- **Problem:** Obtain and maintain the BCA green mark certification which provides value to the brand and corporate image, has fiscal benefits and increases the value of the building.
- **System:** PME, 31xION7550, 162xPM820, 17xwater meters, 8xBTU meters and 22xEGX100
- **Solution:** Custom build PME screen and dashboard to monitor and display building KPIs (PUE, and other power density metrics, HVAC efficiency kW/RT) as required per the certification body. Green Mark Gold Plus certification was achieved.



“....We are very pleased with the Green Dashboard (PME). It provides indication of the Green Mark KPI like building efficiency index (kW/m2/year), efficiency index of the cooling system (kW/RT), Floor PUE and load distribution (IT system, lighting, workstation & others).....”

Life Is On

