



EcoStruxure™ Power

Energy Cost Performance eGuide



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EcoStruxure Power digitizes electrical distribution

EcoStruxure Power helps facility operations achieve greater operational and cost efficiency

For many large buildings and critical facilities, energy can represent a significant portion of variable costs. Operations and maintenance teams are often unaware of the financial impact of the operational energy usage. Conversely, financial teams are not aware of how energy is consumed.

Save money by reducing energy spend

EcoStruxure Power leverages digitization to provide insights into how energy is used and helps identify opportunities for quick-win energy cost savings through Utility Bill Verification and Power Factor Correction.

[Read the white paper](#)



Digitizing Electrical Distribution

Challenges and Opportunities

Application Overview

Digital Architecture



A photograph of an industrial facility, likely a refinery or chemical plant, at dusk. The sky is a deep blue, and the facility's lights are glowing, illuminating various structures, pipes, and towers. In the foreground, there is a dark, grassy field.

Challenges and Opportunities

Digitizing Electrical
Distribution

Challenges and
Opportunities



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Challenges facing many energy-intensive facilities

There is a disconnect between energy users and those that account for that energy.



“We run the facility and focus on operations. We never see how much our company pays for energy.”



“We pay the utility bills every month... it's just the cost of doing business.”

Electrical energy has special billing considerations

Unlike water or natural gas, electricity has special considerations:

- Power factor penalties
- Time of use energy usage charges
- Peak kW demand charges

B. Large General Service Time-of-Use Billing Periods

Winter On-Peak: October 1 - May 31	Weekdays between 12:00 noon and 10:00 p.m.
Summer On-Peak: June 1 - September 30	Weekdays between 12:00 noon and 2:00 p.m. and between 8:00 p.m. and 10:00 p.m.
Summer Super-Peak: June 1 - September 30	Weekdays between 2:00 p.m. and 8:00 p.m.
Off-Peak	All other hours

C. Power Factor Adjustment or Waiver

1. Adjustment (charge per month meter)
 Adjustment is a demand rate subject to a power factor (PF) adjustment charge. When a customer's monthly power factor falls below 97 percent leading or lagging, the following billing adjustment will apply:

Electricity Usage: $E = (kWh \div \text{Power Factor}) \times 100$ **Power Factor Adjustment Rate**

Electricity Charge: the usual monthly kWh for the account

Power Factor: the lower of the customer's monthly power factor or 95 percent

Power Factor adjustment limit: \$10,000

Time-of-Use Billing Periods

Usage Level	Secondary	Primary	Subtransmission
Water Service - October 1 through May 31	007.1	007.1	007.1
System Interconnection Hook Charge - per month per meter	\$10.00	\$10.00	\$10.00
Site Interconnection Charge (See 11.000 for additional details)	\$175	\$145	\$245
Electricity Usage Charge			
On-Peak kWh	\$0.101	\$0.089	\$0.095
Off-Peak kWh	\$0.081	\$0.072	\$0.078

Energy vs Production

- 9/11/2018



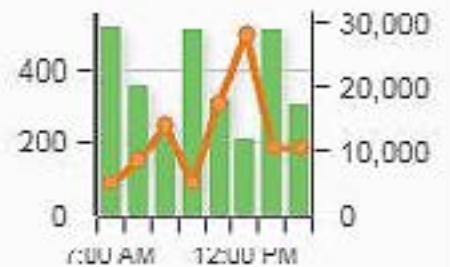
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Utility billing discrepancies can happen

Mistakes happen. Ensure you check your bills.

Check for discrepancies and verify your bills are correct. Some common utility billing errors include:

- Invoice billing period overlaps with a previous bill
- Balance Brought Forward (BBF) applied to wrong account
- Error in invoice calculation
- Supplier contract period overlap
- Exception deviation compared to previous periods
- Invoice sent for closed account
- Wrong rates applied on a bill
- Account credits not adjusted on new invoice
- Incorrect meter reading
- Duplicate line-item charges

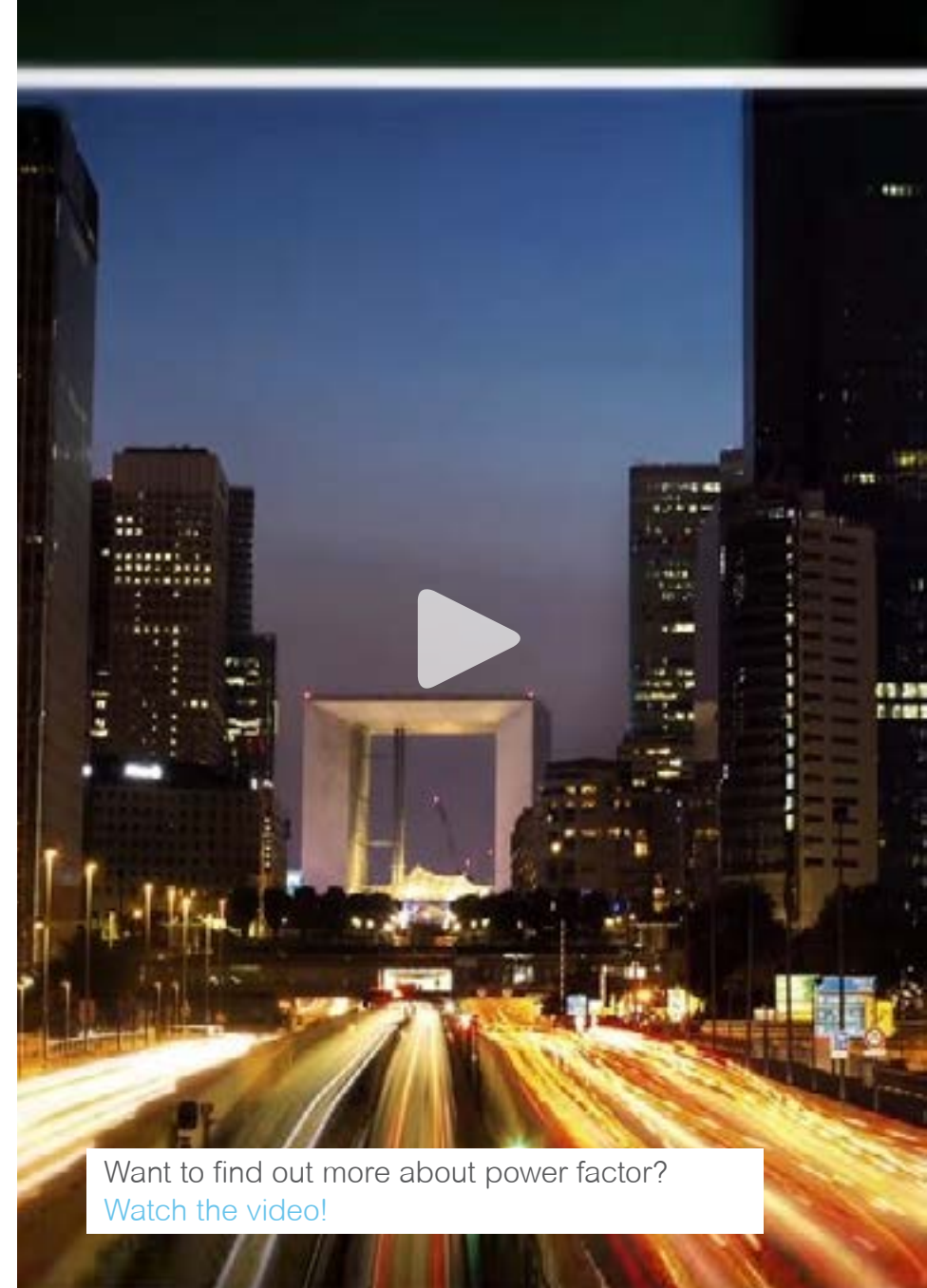


Other impacts on energy costs

Leading/Lagging Power Factor

Electrical loads common in large commercial and industrial applications can also cause leading and lagging power factor (e.g. induction motors).

Many utilities often charge significant penalties on the utility bill for reactive power. With the installation of power factor compensation equipment, you can turn these penalties into easy ROI.



Want to find out more about power factor?
[Watch the video!](#)

IoT enabled applications for energy cost performance

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Utility Bill Verification

How can you reduce energy spend?

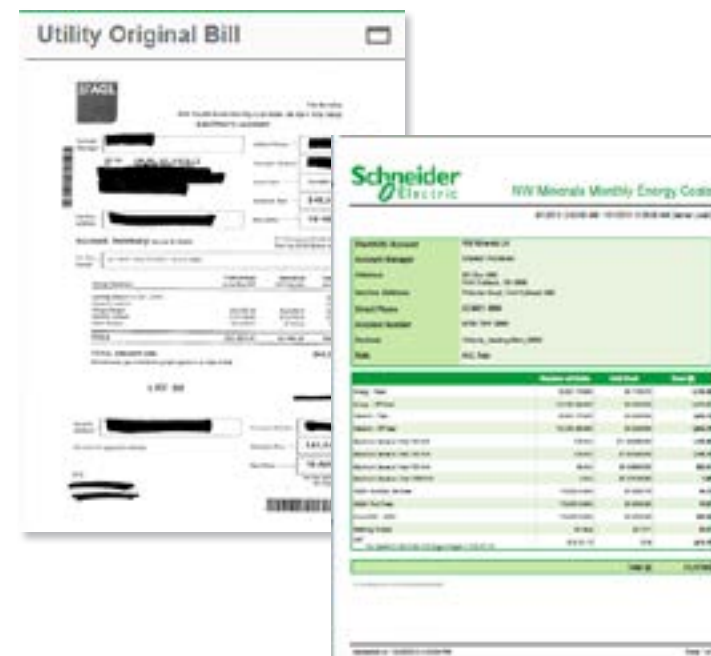
Utility Bill Verification

Power Factor Correction

“I want to verify that my utility bill is accurate, both from a metering and bill calculation perspective.”

Compare utility bills with internally generated shadow bills

- Regular system health checks (for missing or incorrect data, devices missing in the hierarchy, stagnant or misreported values, devices reaching the end of their supported life)
- Recommend ways to improve data quality and system performance to ensure system reliability and meet ISO5001 standards
- Enable good decision making and improved operations by providing the right data
- Provide expert support throughout the lifecycle of your system to keep it current



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Power Factor Correction

How can you reduce energy spend?

Utility Bill Verification

Power Factor correction

“I want to lower my utility bill by eliminating any power factor penalties.”

Find out more!

Avoid power factor penalties

- Many utilities penalize lagging power factor or reactive power consumption
- Leverage power metering on inductive loads and system monitoring software to measure leading and lagging power factor
- Correct power factor with capacitor banks or individual capacitors installed in gear to avoid paying penalties
- Conduct simple diagnostics and alarming to ensure proper capacitor operation and facilitate maintenance



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Architectures

Architecture 1

Architecture 2

Utility bill verification

Starting with a power meter on the main utility service entrance with accuracy that of or better than the utility meter, a 'shadow' utility bill can be automatically generated and shared with accounting to compare with the actual energy bill.



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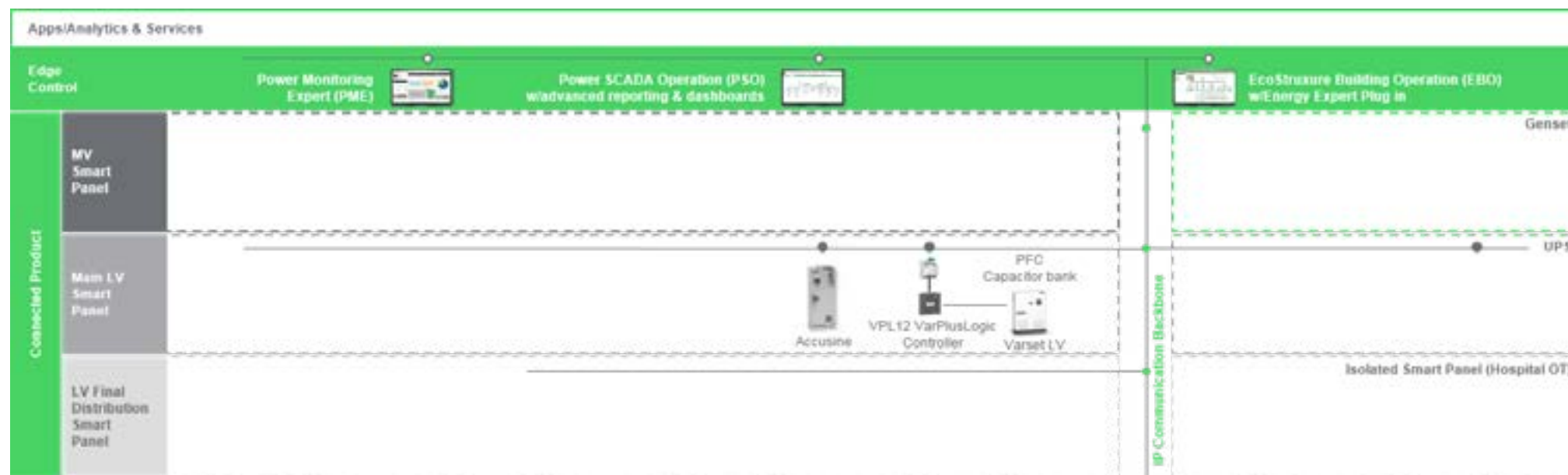
Architectures

Architecture 1

Architecture 2

Power factor correction

Power factor correction can be a fast way to save on energy cost through installation of capacitor banks, or via active harmonic correction, in order to eliminate any power factor penalties charged by many utilities.



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Learn more



White paper: Power Management for a Changing World.



Blog: What Can You Learn About Power from a Pint of Beer?



White paper: Mitigating Risk Using Power Management Systems



Contact us to start your journey.

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