

AI Driven Energy Management for Data Centers

Maximize *Energy Efficiency* and Improve *Electrical Reliability*

Application Guide

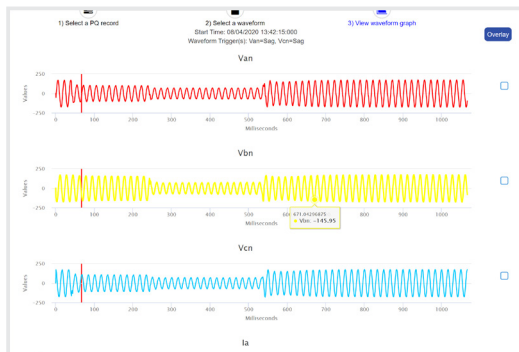


- Identify the Least Reliable Facilities and Circuits to Improve Power Quality
- Respond Proactively to Power Quality Problems Before They Become Critical
- Identify the Most Energy Wasteful Facilities and Circuits to Maximize Energy Efficiency Improvements
- Measure Data Center Power Usage Effectiveness (PUE)
- Protect Data from Tampering with Proven Security and Encryption Technology

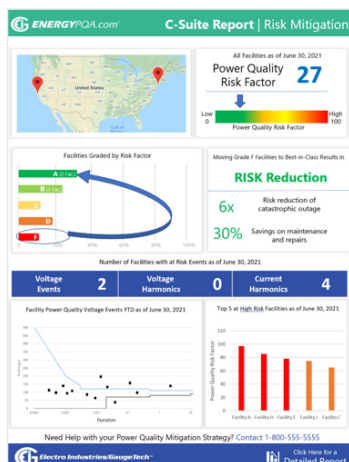
Identify the Least Reliable Facilities and Circuits to Improve Power Quality

Industry studies show that up to 40% of all downtime is power quality related and 80% of these issues originate within the facility. Additionally, 50% of mission critical power outages are due to power quality issues. Just one instance of a power outage can cost a data center up to \$1 million. Downtime results not just in lost revenue, but also possible liability issues. Prevent downtime by identifying the highest risk facilities and circuits with the worst power quality using EIG's AI driven EnergyPQA.com® cloud-based energy management system and power quality meters.

- Gain deep insights into all aspects of the data center's voltage reliability and power quality with extensive dashboards and customizable reporting.
- Automatically grade facilities on best-to-worst power quality risk.
- Identify specific circuits in the worst facilities to provide simple meaningful actions that improve reliability and safety of the power system.



View Waveforms of Power Quality Events



View Power Quality Risk Factors for All Facilities

Respond Proactively to Power Quality Problems Before They Become Critical

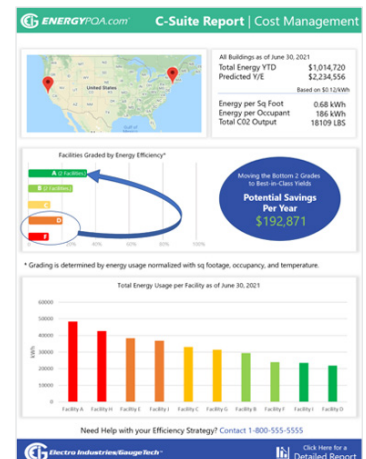
To remain operational and profitable, data centers must respond to power quality events before they escalate. EIG's power quality meters and EnergyPQA.com® energy management system send email alerts for programmed alarm limits and for all power quality events.

- Send email alerts to multiple recipients.
- Emails contain a link to the event details in the EnergyPQA.com® system.
- Take remedial action before problems have escalated to the point of power or equipment failure.

Identify Wasteful Facilities and Circuits to Improve Energy Efficiency

Energy costs are one of a data center's biggest expenses. Manage data center energy resources and lower your energy costs with the EnergyPQA.com® energy management system's smart analytics, which transforms traditional energy management by identifying the most energy wasteful facilities and circuits to maximize energy efficiency improvements.

- Automatically grade facilities for energy efficiency.
- Identify potential savings by improving least efficient facilities and circuits.
- Manage data center energy usage with the EnergyPQA.com® system's AI-driven predicted usage and demand.
- Perform simple meaningful actions to save energy and costs by focusing on the most inefficient circuits.
- Receive predicted peak demand email alerts up to three days in advance to avoid costly peak demand penalties.

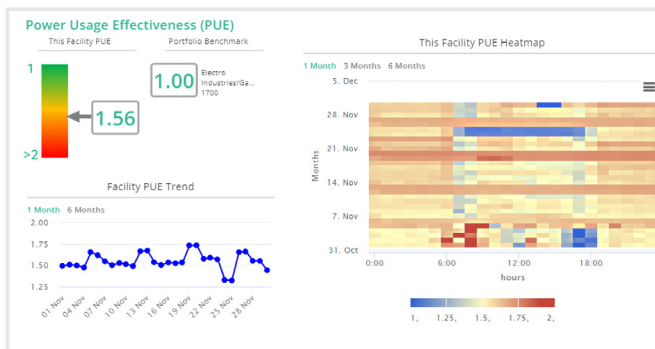


View Facility and Circuit Grading with Potential Cost Savings

Measure Data Center Power Usage Effectiveness

Power Usage Effectiveness (PUE) is an important metric for data centers. PUE is determined by dividing the total energy usage of the data center by the energy used for powering IT equipment. The resultant number indicates how much of a data center's budget is used for income generation (IT equipment) and how much is used for other systems, such as cooling, that do not generate income directly. A PUE of 1 indicates that the data center is using its energy resources efficiently. A PUE greater than 1 indicates that the data center needs to focus on improving its energy usage efficiency.

The EnergyPQA.com® AI driven energy management system automatically calculates current PUE, PUE for the past month and past six months, and PUE heatmap for the data center. With this information, data center management can keep track of their PUE and then take steps to improve it if necessary.

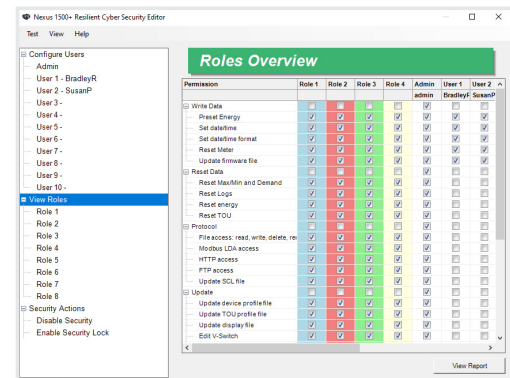


Power Usage Effectiveness (PUE)

Protect Data from Tampering with Proven Security and Encryption Technology

A single hacking incident can cause immeasurable damage to your data and reputation. The EnergyPQA.com® energy management system has role-based authorization, SSL encryption, firewalls, and intrusion detection to protect your system's data. It uses an encrypted one-way push of data to the cloud to ensure secure access from anywhere outside the network and it stores data redundantly, at the customer site and in the cloud.

EIG's Nexus® and Shark® power and energy meters offer advanced cyber security features, including Resilient Cyber Security™, which adds digitally-signed firmware and customizable encryption keys for additional data protection.



Resilient Cyber Security™ Role-Based Authorization

Making Data Center Energy Usage Reliable, More Efficient, and Cost-effective



Typical Data Center Layout

Typical Bill of Materials

Cloud-Based Energy Management Solution

EnergyPQA.com® - AI Driven Energy Management System, providing energy analytics and predictions, reducing costs, and improving power system reliability

Ordering Part #: **ENERGYPQA-1Y**

Learn More: <https://www.electroind.com/products/energypqa-com-energy-management-system/>



Critical Load Point

Nexus® 1500+ - Advanced Power Quality Meter

Example Installation: Utility Entry Points, Critical Loads, High Power Sensitivity Points

Ordering Part #: **Nexus1500+-D2-60-20-V3-X-X-X-X**

Learn More:

<https://www.electroind.com/products/nexus-1500-power-quality-meter-with-phasor-measurement-unit/>



Large Loads (400 A or more)

Shark® 250 - Cyber Secure Power and Energy Meter

Example Installation: Typical Building Loads, Substations, Control Panels

Ordering Part #: **Shark250-60-10-V2-D2-INP100S-X-X**

Learn More: <https://www.electroind.com/products/shark-250-power-meter/>



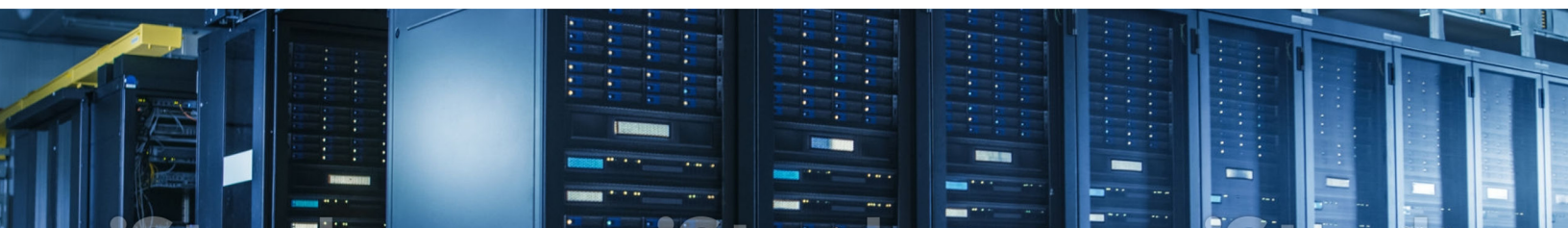
Smaller Loads (200 A or more)

MP200™ Multipoint Metering System - 8 Three Phase Input Meters

Example Installation: Smaller Panel Boards, High-density Circuits

Ordering Part #: **MP200-Y-60-10-V2-WIFI-MDSN**

Learn More: <https://www.electroind.com/products/shark-mp200-multi-point-energy-meter/>



Engineering Services

Contact EIG's highly experienced engineers, with a variety of skills in the fields of electrical engineering, software engineering, and meter engineering, to assist in the design, commissioning, start-up verification, and certification of installations. Our team will help you get your project up and running, and ensure its success.



Contact EIG at:

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Application page link:

www.electroind.com/energy-management-for-data-centers/

