The EnergyPQA.com® energy management system transforms traditional energy management by identifying the most energy wasteful facilities and circuits and those with the highest power quality risk. Maximize energy efficiency improvements and increase electrical reliability by using the system’s deep power quality insights to focus on the least efficient and least reliable circuits. Make the biggest improvement in energy usage efficiency and reliability by spending time and resources where they are most needed and where they will have the most impact.

The EnergyPQA.com® energy management system reduces your enterprise energy costs in multiple ways. The system's AI algorithms predict usage trends into the future, so that you can be proactive in reducing demand and saving on energy costs. Power quality email alerts enable quick response to avoid equipment damage and expensive downtime. Predicted peak demand email alerts up to three days in advance support demand mitigation efforts to avoid costly penalties. And focusing on facilities and circuits most in need of repair ensures that money is spent where it will have the most impact on the enterprise's bottom line.

**EnergyPQA.com® System Features:**

- Enterprise-Level Energy Usage Analysis and Facility Comparisons
- Custom Reporting with AI Predictions
- C-Suite Reporting Provides Actionable Insights for Your Facilities
- Identification of Energy Inefficiency from Enterprise to Facility to Circuits
- Automatic Grading of Your Facilities for Risk of Downtime and Equipment Failure
- Analytics for Root Cause Analysis and Quick Recovery Protocols
- Detailed Waveform Analysis and Key Insights
- Alarming for Critical Events, Such as Power Quality or Energy Demand Penalties
- Cyber Secure, Encrypted Data, Dual Factor Authentication, and Security Reports
- Compliance Reporting for EN 50160 and IEEE 519
- Sustainability Reporting for Carbon Footprint and Green Initiatives
- Energy Billing, Cost Allocation, and Executive Summary Usage Reporting
Reduce Electrical Energy Costs Using Enterprise Energy Analysis

The EnergyPQA.com® AI driven energy management system enables energy usage comparisons and predicts energy usage and demand for all your facilities. The system reports on highest energy usage and highest peak demand contributors to pinpoint problem areas. Improve energy efficiency and reduce power consumption by using the system to identify poorly performing buildings and implementing energy conservation.

Energy Dashboards

The system’s dashboards make it easy to view differences in energy usage throughout a facility. View top ten monthly usage and demand, daily usage comparisons, energy usage compared to the previous month, and monthly average power factor. Compare and benchmark different metering points to determine energy waste within a facility.

Normalize Data by Degree Days for Comparisons

EnergyPQA.com® can now normalize your data by degree days, occupancy, and square footage. This enables you to accurately compare your facilities based on location and usage.

Load Disaggregation

Load disaggregation identifies the contributors to the total facility load. Break out discrete energy loads within a facility to locate inefficiencies and proactively predict equipment failure.

Totalized Metering

Create virtual sums of energy for a particular usage, such as lighting, plug load, and HVAC. This enables clear comparisons and compliance reporting.

Energy Accountability

Drive sustainability and energy efficiency programs by billing tenants for their actual usage rather than proportional square footage charges. This direct accountability for their energy use promotes sustained energy conservation behavior and saves up to 15% on total energy costs.

Energy Efficient Buildings Can Consume up to 85% Less Power

Compare Top Ten Monthly Energy and Demand Users to Identify Energy Waste

Load Disaggregation to Locate Inefficiencies

EnergyPQA.com® Provides Usage Versus Temperature and Actionable Predictions
Predictive AI Analytics Help Manage Demand and Usage

Provide More Accurate Energy Predictions by Using Advanced AI Modeling Tools

The EnergyPQA.com® system uses an advanced AI data science model that includes present data, past data, weather patterns, and future forecasts. The system is self-learning, so that it improves the accuracy of its load predictions over time.

Alarm on Future Peak Demand to Reduce Penalties

The EnergyPQA.com® system uses its AI modeling and machine learning to send alarms on a new predicted peak demand three days prior to the event occurring. This lets you enact preemptive demand reduction, reducing demand penalty charges.

Ensure Success for Energy Conservation Initiatives by Viewing Predicted Energy Usage

Use the EnergyPQA.com® system's predictions to assess energy savings opportunities. Then determine the effectiveness of load curtailment initiatives by viewing the changing future predicted usage, ensuring that implemented plans are successful.
Benefits of Predicted Demand Alarms

EnergyPQA.com® predicts when your facility will reach a new peak demand and alarms your team. This allows corrective behavior to mitigate utility penalties and save you money.

- Receive early warning of new peak demand three days in advance.
- Make meaningful decisions to reduce demand penalties before charges are incurred.
- Conduct demand response or adjust electrical usage for the energy system on the predicted day, reducing or eliminating the penalty.

Custom report templates include:

- Titles.
- Simple formulas.
- Complex formulas.
- Summation and averaging.
- Date and time of max reading.
- Bar, line, and pivot charts.
- Real time report preview.
- Standard spreadsheet editing format.

Customizable Report Generator

Use the EnergyPQA.com® system to generate custom reports as needed. Schedule emailed reports for daily, weekly, monthly, or custom distribution.

Standard report templates enable easy and quick setup. Report templates include:

- Total watts.
- Energy in the interval.
- Demand in the interval.
- Voltage and frequency.
Reduce Risk and Improve Uptime Using Power Quality Analysis

Downtime caused by power outages results in billions of dollars lost annually. It is estimated that 50% of mission critical power outages are due to power quality issues and that 80% of these issues originate in facilities. Identify power quality events within your critical facilities and take action before PQ events become catastrophic.

EnergyPQA.com® Unlocks Your Hidden Power Quality Problems

- Facility and circuit level power quality risk grading.
- Compliance to EN 50160 and IEEE 519.
- Transient analysis with CBEMA and SEMI F47.
- Waveform viewer – surge and sags.
- Harmonic magnitudes and THD.
- Phase imbalance and PF analysis.

Record and Share Waveform Insights

Site analysis requires a team approach. EnergyPQA.com® now allows you to annotate events with comments and timing and to save those comments in the database to share with others and to keep a historical perspective.

Recover From Faults with PQ Direction and Power Harmonic Direction

When an event occurs, being able to pinpoint the exact location of the fault ensures speedy recovery and timely mitigation of losses. Using its PQ Direction algorithms, EnergyPQA.com® will identify the location of the fault, either upstream or downstream from the device, so your team can take immediate action. Power Harmonic direction is also available.
Alarm on Events Supports Timely Action and Issue Resolution

Receive email alarms on enterprise-wide power quality events. These alarms include:

- An out of limit condition.
- A new power quality event.
- A new meter-captured waveform graph of a high-speed power quality condition.

Enterprise-Level Reporting Provides Analysis for Your Complete Business

Analyze Energy Usage - Grade Facilities and Identify Potential Savings

Perform analysis of your enterprise energy usage with the EnergyPQA.com® system's enterprise-level reporting. Compare the following for each of your facilities:

- Total energy usage.
- Energy used per square foot.
- Energy used per occupant.

Compare Usage

View predicted energy usage through the end of the month and year and usage change from the prior month and year, for your enterprise and each facility. The enterprise comparison feature also provides the following graphs:

- Total usage for the past five years, for energy, energy per square foot, energy per occupant, and CO2 footprint.
- Top ten facilities for usage and predicted usage through end of the month.
- Enterprise usage comparison between current year and prior year, for each facility.

Determine Sustainability with Carbon Footprint

Analyze your carbon footprint per facility and for the total enterprise to measure your impact on the environment and meet sustainability goals. This is ideal for net zero and carbon neutral initiatives.
Reduce Costs and Mitigate Risk with C-Suite Reporting

C-Suite reports provide detailed analysis of enterprise facilities and their individual circuits. Use these reports to identify the least efficient and highest power quality risk areas of your enterprise. Then take actions to improve the worst facilities and circuits.

- Improve energy efficiency by determining the least efficient circuits in the worst facilities to make the biggest improvement. Reducing energy waste results in cost savings.
- Improve electrical reliability by determining the facilities and circuits with the highest power quality risk. Increase the reliability of the least reliable circuits in the most at risk facilities to improve enterprise power quality, improve safety, and reduce costs for maintenance and repairs.

C-Suite Reports Perform Analysis and Recommend Action

The EnergyPQA.com® energy management system uses enterprise wide metering data and advanced AI algorithms to produce two types of C-Suite reports – cost management and risk mitigation. These reports reduce engineering analysis time by up to 98% by identifying the specific circuits that will have the most impact on cost savings and power quality risk reduction. A typical use case is shown in the diagram below.

The Cost Management and Risk Mitigation C-Suite reports have three versions each:

- C-Suite Summary to highlight critical enterprise issues in 30 seconds.
- Enterprise Benchmark to compare facilities and uncover hidden issues.
- Single Facility Performance for a detailed view of one facility and its circuits, to identify corrective actions.

The reports can be viewed in an Internet browser, downloaded, printed, or can be scheduled for automatic emailing to multiple addresses.

Cost Management C-Suite Reports

Use the Cost Management reports to analyze facility and circuits' energy efficiency and pinpoint improvements that will reduce energy costs.

The single page Cost Management C-Suite summary report provides:

- Enterprise facilities graded for energy efficiency.
- Potential cost savings from moving facilities with grade F to grade A.
- Total energy cost per facility for the month.
- Total enterprise energy costs year-to-date and predicted to year's end.
- Total enterprise energy costs year-to-date per square footage and per occupant.
- Total enterprise year-to-date CO2 output (carbon footprint).

Use EnergyPQA’s AI to Analyze Least Efficient and Most Unreliable Circuits and Reduce Analysis Time By Up to 98%!

2,000 Circuits

20 Most Improvable Circuits For Energy Waste and Reliability

Reduce Energy Analysis Time with C-Suite Reports

Instead of spending engineering time and resources analyzing data manually, generate C-Suite reports that provide the information needed in a matter of minutes. The EnergyPQA.com® system analyzes all your enterprise facilities and their multiple circuits to identify the worst circuits in the worst buildings. This provides a focused path to substantially improve energy efficiency and reliability for the enterprise.

Example of Cost Management Summary Report
The detailed Cost Management enterprise benchmark report provides explanatory material and multiple tables, including:

- Executive summary overview showing results of the enterprise energy efficiency analysis, with projected cost savings.
- Enterprise facilities graded for energy efficiency, with square footage and occupancy information.
- Enterprise facilities ranked by their energy efficiency, with an explanation of the ranking process.
- Year-to-date energy costs per facility compared to previous year.
- Top ten facilities with greatest energy usage year-to-date and normalized by:
  - Square footage.
  - Occupancy.
  - Degree day.

A page from the Cost Management enterprise benchmark report is shown below:

The Cost Management facility performance report provides detailed energy usage information for all circuits in one facility. Use this report to further analyze the cause of energy inefficiency in the worst enterprise facilities. The report analyzes all facility circuits and grades them, highlighting the circuits most in need of improvement. By taking steps to increase the energy efficiency of the worst circuits, energy usage costs for the entire enterprise are reduced.

The Cost Management facility performance report contains:

- The facility’s grading information.
- Ranking details.
- Details of the facility circuits’ energy usage and costs.
- The top ten year-to-date circuits for energy usage versus the previous year.
- Facility circuits’ energy usage by degree days.
- Increase/decrease in energy usage for facility circuits year-to-date.
- Detailed usage, cost, and demand information for each facility circuit.

A page from the Cost Management facility performance report is shown below.

Year-to-Date Energy Use Normalized by Occupancy

Per Circuit Energy Usage and Demand Details
Risk Mitigation C-Suite Reports

Use the Risk Mitigation reports to analyze facility and circuits' power reliability to pinpoint improvements that will increase power quality, improve safety, and reduce the cost of maintenance and repairs.

The single page Risk Mitigation C-Suite summary report provides:

- Enterprise facilities graded for power quality risk.
- Potential power quality risk reduction and cost savings from moving facilities with grade F to grade A.
- Worst at risk buildings for the current year-to-date.
- Total of voltage events year-to-date.
- Total of voltage harmonics year-to-date.
- Total of current harmonics year-to-date.
- Top 5 at-risk facilities for the current month.

A page from the Risk Mitigation enterprise benchmark report is shown below.

The detailed Risk Mitigation enterprise benchmark report provides explanatory material and multiple tables, including:

- Executive summary overview of results of the enterprise power quality risk analysis, with projected risk reduction and cost savings on maintenance and repairs.
- Enterprise facilities graded for energy efficiency, with square footage and occupancy information.
- Enterprise facilities ranked by their risk factor, with an explanation of the ranking process.
- Top ten facilities with greatest risk factors year-to-date.
- At risk facilities by voltage surge, listing high, medium, and low risk facilities.
- At risk facilities by voltage harmonics for all voltage phases.
- At risk facilities by current harmonics for all current phases.

Example of Risk Mitigation Summary Report

At-Risk Facilities Based on Voltage and Current Harmonics
The Risk Mitigation facility performance report provides detailed reliability information for all circuits in one facility. Use this report to further analyze the cause of unreliability and power quality risk in the worst enterprise facilities. The report analyzes all facility circuits and grades them, highlighting the circuits most in need of improvement. By taking steps to increase the reliability of the worst circuits, the power quality risks for the entire enterprise are reduced.

The Risk Mitigation facility performance report contains:

- The facility’s grading information.
- Ranking details.
- Details and analysis of the facility circuits’ voltage events.
- The top ten year-to-date circuits with the highest power quality risk versus the previous year.
- The top five facility circuits at risk for voltage events, voltage harmonics, and current harmonics.
- Detailed power quality risk analysis (voltage events, voltage and current harmonics, and THD) for each facility circuit.

A page from the Risk Mitigation facility performance report is shown below.

**Enterprise Billing Module Provides Cost Allocation and Tenant Billing**

**Up to 15% Savings are Realized through Submetering and Energy Awareness Alone**

- Control costs by providing tenant ownership of energy consumption.
- Determine inefficiencies and reduce energy demand.
- View consumption of all usage commodities, including water, air, gas, and steam.
- Meter virtually unlimited amounts of energy points.
- Create customized rate structures.
- Perform Time of Use billing.
- Create customized invoices and bills.
- Generate hundreds of automated bills or energy reports.
- Automatically email bills and invoices.
- Provide feedback of successful transmission for accounting purposes.
- Provide automated reporting to detail savings opportunities.
- View monthly cost summaries and comparisons.
- Eliminate any need for costly third party billing providers.
Reduce System Commissioning and Eliminate Integration Problems

The EnergyPQA.com® system’s meter data management is handled at the facility by the MeterManagerPQA® software module. This module automatically finds and collects data from installed facility meters, reducing commissioning and eliminating the need for internal IT and Engineering resources.

**MeterManagerPQA® software provides the following:**

- Auto discovers meters, groups them, and automatically collects historical usage, power quality, and alarm data.
- Securely pushes metering data, including all logs, alarms, waveform, and PQ information, to the EnergyPQA.com® cloud system on an interval basis.
- Stores data locally - if network issues occur, the system provides a fail-safe since all data will be pushed to the cloud once the network is restored.
- Reports on meters’ communication issues and provides statistical data on communication reliability.
- Determines installation and wiring mistakes.
- Automates most tasks, reducing the need for IT technicians.

Cyber Secured Access

The EnergyPQA.com® system protects your data from hacking or tampering. Its encryption technology and secured access meet corporate IT security requirements. The system has role-based authorization, encrypted passwords, and API keys, as well as network security SSL encryption and intrusion detection. EnergyPQA.com® monitors your metering devices and system software to ensure they are up-to-date with the latest cyber secure protocols.

EnergyPQA.com® utilizes cloud computing architecture. Data integrity is protected with redundant storage at the customer site and in the cloud. Data is further protected with firewalls.

**Key security features include:**

- Secured cloud computing architecture.
- Data stored redundantly.
- Network security: SSL encryption.
- Role-based authorization.
- Dual factor authentication.
- Encrypted passwords and API keys.
- Data security: firewalls, intrusion detection, and encryption.
- One-way data push prevents breach of the network.
CommunicatorPQA® Application: Basic Support for All Installed EIG Metering

Meter Settings Configuration:

Configure your meters to meet the needs of your energy monitoring goals, using the CommunicatorPQA® application. The application’s structure is intuitive and easy to use. Meter settings are organized into related groups and an online manual with detailed instructions is embedded in the application.

- Set up meter communication, including Com port address and Baud rate, IP address for Ethernet ports, protocols, mode of operation (e.g., Modbus RTU Client), etc.
- Configure the meter’s time synchronization method and DST programming.
- Set up revenue features, such as Transformer/Line Loss compensation, CT/PT compensation, and Time of Use.
- Set up advanced options, for example, synchrophasor PMU settings, IEC 61850 settings, port control for Ethernet cards, and more.
- Perform meter testing.
- Configure and designate roles for meter security.

Log Viewer:

EIG’s Log Viewer is the charting and graphing application that comes standard with CommunicatorPQA® software. This application is database driven. It normalizes data from any EIG meter, so that it is displayed in a concise, easy-to-understand presentation. This feature is useful for local meter integration. All log data is also available in the cloud.

Depending on the meter, the available logs are:

- Historical Trends.
- Limits/Alarms.
- Event-triggered Waveforms.
- Power Quality.
- Input Status Change.
- Relay Outputs.
- System Events.
- Flicker.
- Transients.
- EN 50160.
Benefits of the EnergyPQA.com® Solution

The EnergyPQA.com® AI driven energy management solution yields benefits to all enterprise levels.

Enterprise CEO, CFO and CIO (C-SUITE) Concerns:

Reducing energy costs and improving reliability of their electrical power. With C-Suite reporting, in 30 seconds they can take action to reduce costs and mitigate risk to their facilities.

How will they use the EnergyPQA.com® System?

• Analyze enterprise level energy metrics.
• Determine and reduce total carbon footprint.
• View custom reports on usage and max demand.
• Compare energy efficiency between facilities.
• Evaluate past performance vs. future predictions.
• Improve power system reliability.

Facilities VP and Director Concerns:

Reducing energy costs and improving reliability of their electrical power.

How will they use the EnergyPQA.com® System?

• Identify the least efficient buildings and potential savings to improve them.
• Access energy usage enterprise wide using online dashboards.
• Report on current usage and demand with future predictions.
• Identify overall risk factor for power quality.
• Receive alarm emails of poor power reliability.

Engineer/Technician Concerns:

Keeping the power system up and running.

How will they use the EnergyPQA.com® System?

• For maintenance and power quality diagnostic purposes.
• Identify highest risk circuits that need infrastructure remediation.
• Determine overall risk factor for power quality
• Receive email alarms on out-of-limit and power quality events.
Enterprise-wide Benefits

- Up to 15% savings of your electrical energy budget year after year through submetering and energy awareness alone.
- Immediate and significant cost savings by implementing even modest demand reduction.
- Reduce costly demand charges that can be as high as 50% of a facility’s actual consumption.
- Prevent downtime, improve efficiency, and reduce liability. 30-40% of all commercial downtime is power quality related.
- Grade facilities and circuits for efficiency to take meaningful action to improve enterprise energy efficiency.
- Identify facilities and circuits with the highest power factor risk to focus power quality improvements where they will have the most impact.
- Monitor sustainability and green initiatives with enterprise-wide carbon footprint analysis.
- Ease of deployment, to have the system up in days versus years.
- Quickly troubleshoot faults with automated dashboards, reporting, and diagnostic data downloadable to csv files.

Integrates Directly with All EIG Metering Solutions

<table>
<thead>
<tr>
<th>Power Quality Metering</th>
<th>Nexus® 1500+ Meter</th>
<th>Nexus® 1450 Meter</th>
<th>Nexus® 1272 Meter</th>
<th>Nexus® 1252 Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Metering/ Sub-metering</td>
<td>Shark® 270 Meter</td>
<td>MP200™ Metering System</td>
<td>Shark® 100S/200S Meter</td>
<td>Shark® ST40 Meter</td>
</tr>
<tr>
<td>Substation Metering</td>
<td>Shark® 250 Meter</td>
<td>Shark® 200 Meter</td>
<td>Shark® 100 Meter</td>
<td>Shark® 50 Meter</td>
</tr>
</tbody>
</table>
EIG’s Industry Leading Engineering Services Team

EIG’s Engineering Services team consists of highly skilled and talented engineers with a variety of expertise in the fields of electrical engineering, software engineering, and meter engineering.

What Can We Do for You?

The Engineering Services team is available to work directly with you, offering world-wide support and a work schedule tailored to meet your needs. The team offers on-site commissioning and consulting services, providing system integration solutions for your specific application. They also provide flexible customer-focused training that covers all EIG solutions, and which is available through webinar or in-person, on-site, or off-site classes. The training staff are certified RCEP instructors.

- Maximize your energy monitoring investments.
- Optimize and improve uptime of your new software or hardware.
- Evaluate and mitigate power quality issues.
- Create a condition-based maintenance schedule.
- Meter recalibration and recertification.
- On-site and remote support.
- Receive hardware and software updates.
- Site supervision and certification of installations.
- Receive site staff (Engineers and Electricians) training.

Commissioning Services

When you use the Engineering Services team to commission your meters, they will verify meter installation and wiring and proper system integration. They will work with third parties to ensure cross compatibility and advise you on best practices for optimal implementation. In addition, the team can assist with troubleshooting and correcting pre-installed systems, which can include equipment not manufactured by EIG.

Consulting Services

EIG’s Engineering Services team is available for remote or on-site services, master service agreements, and training. Training classes are now offered both virtually and in person:

- EIG offers free two-day training classes around the US, every year.
- If you and your team are not able to attend the free class, Engineering Services can create a custom class that meets your exact requirements and covers the EIG products you will be using. The team will provide either on-site or webinar-based training to ensure that your staff is knowledgeable about all aspects of the products.
- Instructors are RCEP (Registered Continuing Education Program) certified and all training can be certified for continuing education credits.
### Ordering Information

<table>
<thead>
<tr>
<th>Software Module</th>
<th>Description</th>
<th>Model Number</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnergyPQA.com® System</td>
<td>Cloud-based energy management solution (ten meter minimum)</td>
<td>EnergyPQA</td>
<td>Enterprise-wide cloud energy management; includes other listed software modules</td>
</tr>
<tr>
<td>CommunicatorPQA® 5.0 Pro Application with MeterManagerPQA®</td>
<td>Basic Professional license seat, one user; includes MeterManagerPQA® software and Report Exporter</td>
<td>COMPQA5P</td>
<td>Add automation, system comparisons, meter diagnostics, and enterprise meter management</td>
</tr>
<tr>
<td>EnergyReporterPQA™ 5.0</td>
<td>Billing and usage reporting software</td>
<td>ERPQA5</td>
<td>Energy dashboard, reporting, and billing add-on for EIG meters</td>
</tr>
</tbody>
</table>

**Commissioning**
- The EIG Engineering services team sets up EIG meters and/or software to work with your system.

**Meter Training**
- Training by RCEP instructors on all EIG solutions, available through webinar, on-site, or off-site.

**Note** – You must have installed the CommunicatorPQA® Professional application with MeterManagerPQA® software to successfully run the EnergyReporterPQA™ application. If you purchase licenses for the EnergyPQA.com® system, you receive the CommunicatorPQA®, MeterManagerPQA®, and EnergyReporterPQA™ software as a bundled offering.

### Meet the EIG Team

Electro Industries/GaugeTech (EIG) strives every day to be the best and most reliable provider for power and energy metering, power quality, and energy management. EIG ensures success with our dependable metering technology, our advanced cloud software, and our world-wide field engineering support. We have a long history of innovation, including hardware, software, artificial intelligence, IOT, and advanced reporting. Contact our sales engineering team at sales@electroind.com or 516-334-0870 for help with building a solution for your specific application.

### Trademarks

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