



A NEW STANDARD FOR A NEW DECADE

# Power Innovations

*Uninterruptible Power Quality™*

# Empowering People through Innovation & Technology

Uninterruptible Power Quality™ (UPQ™) is an unprecedented new standard that began with traditional UPS technologies and moved



forward to address critical modern power issues. Traditional UPS systems focus on backup power; UPQ technology focuses primarily on the critical issues of power quality and management, while still providing backup when power outages occur.

“The existing grid does not possess the capability to mitigate the occurrences of blackouts and their adverse consequences...or improve environmental impacts through the utilization of more renewable resources. These inadequacies place in peril our national, economic, and environmental security and are unsuited to meet the long-term demands of the digital age.”

*-Kenneth Nahigian, Reform Institute Senior Advisor*

## UNINTERRUPTIBLE POWER QUALITY™ (UPQ™) A NEW STANDARD FOR A NEW DECADE

### Always Online

UPQ systems are always online and feature superior isolation and conversion, creating a new standard for power quality and exceptional reliability. In comparison, standby and line-interactive UPS systems merely filter input utility power, and online UPS systems have double conversion (two stages) technology.

### Five Stages of Isolation and Conversion

UPQ technology provides multiple levels of isolation and conversion, five (5) stages. In comparison, traditional UPS online systems provide only double conversion, two (2) stages.

### Eliminate Need to Balance Loads

UPQ technology handles 100% load imbalance in its three-phase systems and eliminates the need to balance loads. Facility and equipment loads do not stay balanced. Traditional UPS systems are sensitive to load imbalance and will fail if out of tolerance.

### Superior Level of Output Power Quality

UPQ systems deliver the highest quality of regulated clean, pure, filtered power, regardless of the quality of the input power, utilizing multi-stage conversion technology and advanced isolation.

### Accept a Wider Range of Input Power

UPQ systems accept a wider range of input power variation (up to double that of traditional UPS systems) before utilizing batteries.

### Extend Battery Life and Performance

UPQ technology:

- Overcomes the biggest expense and reliability issues of traditional UPS systems...the batteries.
- Focuses on controlled charging and load exercising to avoid battery deterioration and sulfation.
- Manages charging cycles and does not allow overcharging. Most UPS charging systems

overcharge and destroy batteries.

- DC conversion processes prioritize battery management, extending battery life and performance up to three times that of traditional UPS technologies

### Quality Power With or Without Batteries

UPQ systems operate whether or not batteries are connected. Without batteries, UPQ systems become isolation, regulation, conditioning, filtering, and conversion units that continue to manage and regulate a wide range of input power deviation.

### Adapt to Alternative Energy Sources

UPQ systems have the flexibility to accept various input energy sources (i.e. utility, generator, wind, and solar). Batteries are also treated as independent energy sources.

### No Adverse Effect on Surrounding Equipment

- UPQ systems minimize induced input harmonics and upstream power problems to



## Powering Life Today...

equipment not connected to the UPQ system (low input distortion). Traditional UPS systems inject high levels of harmonics onto the utility feed lines and increase power quality problems to equipment not isolated or connected to the UPS output.

- Through the use of inrush current management technology, UPQ systems eliminate inrush current, reduce stress on upstream circuits and equipment, as well as eliminate the need for oversized systems or generators.

### Eliminate Step-up / Step-down Transformers

UPQ technology:

- Offers multiple voltage options. Input voltages can be different from output voltages.
- Eliminates the need for independent input / output step-down or step-up transformers.
- *Input:* Provides international compatibility for global applications.
- *Output:* Allows for multiple and simultaneous output voltages.

### Advanced Management and Control

UPQ systems can be controlled from within a network operations center, via an Internet connection, and from handheld wireless devices, such as PDAs and cell phones. Simple Network Management Protocol (SNMP) enables Internet access to real-time power status and history reports. Flexible interface, environmental monitoring, and security management capabilities are available.

### Distinct Cost Savings

UPQ systems provide long-term direct and indirect cost savings. UPQ systems:

- Supply perfect quality power and prevent damage to connected equipment, which extends the life of the equipment being protected
- Have longer battery life, which decreases battery replacement costs and equates to substantial savings over time, especially on larger systems
- Have longer system life with a "mean time between failure" (MTBF) of over 175,000 hours, meaning that UPQ systems last substantially longer than ordinary UPS systems before service and / or replacement is necessary
- Provide higher operating efficiencies that require less utility power
- Generate less heat, which reduces air conditioning costs

### Ease of Maintenance

UPQ systems provide advanced features that make them easier to maintain and service.

UPQ systems:

- Are self-diagnosing and incorporate status LEDs and screens that clearly indicate when and where a problem exists
- Are fully modular and have plug-and-play components that can be easily replaced if necessary
- Have modular "hot-swappable" (or slide-tray) battery packs that make battery service easy and convenient
- Require less time to repair – typically less than 30 minutes "mean time to repair" (MTTR)
- Feature slide-tray battery modules (standard in small systems, available in large systems)

### Operational Benefits

- Load imbalance protection. The larger UPQ systems accommodate uneven load distribution across phases.
- User error protection. UPQ systems have built-in features to protect the user and identify problems so that systems will not operate unless properly installed and / or configured.
- Unique "whisper-quiet" operation. UPQ systems generate less noise, and are unobtrusive in the work environment.
- Convenient power feed locations. Larger UPQ systems are adaptable to the needs of the user with power feed locations on both sides, the top, and the bottom.
- Compact Size. UPQ systems are 30 – 70% smaller than other systems on the market and are designed for small footprint and cubic space requirements.

### Models Available for Specific Applications

- Rugged applications requiring 30Gs of gravitational force in X,Y, and Z planes, with temperature ratings to -86°F (-30°C) and above 140°F (60°C)
- Compliant as components in ATEX Zone 2 applications for operation in potentially explosive environments
- Certified and customized for critical medical applications and neonatal equipment
- Customized for multiple environmental conditions (NEMA and IP ratings)

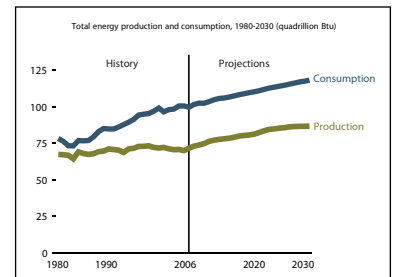
### Options

- Custom input and output voltages and frequencies
- Custom power distribution units (PDU's)
- Twelve-pulse rectifier available in 10 – 60kVA (standard in larger systems)
- Parallel and serial emergency power OFF (EPO) connectivity
- Rack front loadable
- Casters for mobility



## ...and Tomorrow

Figure A



With the increasing dependence on electricity, supply simply cannot meet the demand. During the past decade, actual demand for power increased 33%, whereas capacity increased only 8%.

Source: U.S. Energy Information Administration, Annual Energy Outlook 2008

Power Innovations will **customize** for your specific application.

500 VA to 500 kVA  
**POWER INNOVATIONS**  
INTERNATIONAL, INC.

# *UPQ™: A New Standard for a New Decade*

Uninterruptible Power Quality™ (UPQ™) is an unprecedented new standard that began with traditional UPS technologies and moved forward to address critical modern power issues.

*A must for all electrical and  
electronic equipment!*

## *Powering Life*

*Powering Miracles*

*Powering Peace of Mind*

*Powering Life's Connections*

*Powering the Human Spirit*

*Powering Freedom*

*Powering Innovation*



Power Innovations International, Inc.

333 South 520 West

Lindon, UT 84042

Phone: (801) 785-4123

Fax: (801) 785-6999

[www.power-innovations.com](http://www.power-innovations.com)