



Power Innovations  
INTERNATIONAL, INC.



Application Note 5100

## High Q-LS™ Series Efficiencies Offer More than Cost Savings

### The Challenge

Online uninterruptible power supply (UPS) systems convert AC power into DC power and then DC power back into AC power. This conversion process allows power to be isolated from the utility or other input resources while it is being regulated and filtered, but can increase power usage by twenty to two hundred percent.

### What to Look For

When selecting an online UPS system, it is important to inquire about the overall efficiency of the system. To determine the additional power needed to run any UPS, the efficiency should be subtracted from 100%.

### Benefits of the Q-LS™ Series

Power Innovations developed the Q-LS Series to more efficiently manage AC Power for large power requirements. These large-scale systems range from 10 kVA through 320 kVA.

#### Cost Savings

When using the Q-LS Series, the cost savings can be thousands of dollars per year, often paying for the system itself.

#### Longer Backup Times

Due to the higher efficiencies of Q-LS systems, less energy is spent in the conversion and generation processes. With the same amount of energy as large UPS systems, Q-LS systems provide up to 10% longer run and backup times, using the same amount of battery capacity.

#### Longer Battery Life

All large systems utilize expensive battery banks. Large UPS systems use the batteries as storage and filter networks in the conversion process. Q-LS systems operate continuously without batteries in the normal operating mode, thus extending battery life.

#### Less Heat

Power lost in a UPS system is primarily converted into heat. In computer room installations where temperature regulation is critical, additional heat loads require more HVAC use to cool--with an accompanying increase in operational costs. By producing up to 10% less heat, the Q-LS Series increases HVAC cost savings.

#### Less Noise

The Q-LS Series is a quiet system. Noise generated by cooling fans or the transformer is less than 65 dBA (at 1m).

## Q-LS™ Series Efficiencies

### CHALLENGE

The power conversion process, which regulates and filters the power, can increase power usage by twenty to two hundred percent.

### SOLUTION

The Q-LS™ Series was developed to more efficiently manage AC power for large power requirements.

### ADVANTAGES

- Cost Savings
- Longer Backup Times
- Longer Battery Life
- Less Heat
- Less Noise
- Efficiency

## Efficiency of the Q-LS Series

- Rectifier Efficiency 98%
- Inverter Efficiency 93%
- Static Switch Efficiency 99.5%
- Battery Mode Efficiency 93% to 95%
- Overall System Efficiency 93% to 95%

## Additional Benefits

In addition to providing power quality, Power Innovations also enables remote monitoring and control of critical operations. With the UPQnet-agent II™ – via a network, an IP address, or a dial-up connection – a comprehensive, easy to understand, and secure Web page provides the vital information necessary to manage the Q-LS Series.

## Power: The Critical Need

In the corporate world, as well as in the consumer community, predictable, pure electric power is a necessity. Current utility power is not reliable. Without clean, consistent power, today's technologies cannot function properly, and operations and service are compromised or cease.

Fluctuations in power supply—spikes, dips, brownouts, noise, and frequency variations—can all lead to a crippling loss of data resources. The effects of these problems range from erratic operation to hardware damage to irreversible losses of mission-critical data and operations.

## Competing Technology

In the past the number one issue in dealing with power was the backup of equipment in the event of power failure. The basis of typical UPS machines and generators on the market today is still backup power; however, electrical equipment requires a new level of power generation and management tools that extend and enhance this most critical resource.

Power Innovations' Uninterruptible Power Quality™ (UPQ™) systems address today's number one power issue—power quality. While Q-LS Series systems efficiently handle power backup, they are also designed to accept the power that is available, regardless of quality, and then isolate, filter, and regulate that power to provide pure, clean, reliable power to connected equipment.

## Power Innovations

Launched in 1997, Power Innovations has pioneered a revolutionary set of solutions to generate, store, and manage AC power. Power Innovations' mission is to provide and manage continuous high-quality power in conjunction with, or even independent of, utility services worldwide. Power Innovations is helping forward-thinking companies accomplish this goal through a new class of technology called Uninterruptible Power Quality (UPQ).

Today, Power Innovations' UPQ systems, coupled with its UPQnet-agent II IP management tools, assist organizations of every size in addressing the key issues surrounding power management. On its own, this is an area of tremendous need and opportunity that has Power Innovations poised for long-term success.

Power management is just one arm of Power Innovations' long-term strategy. The company is involved in the development of a spectrum of solutions for power storage. Ultimately, Power Innovations will premier revolutionary solutions for the generation of new power. Together, these three areas are the foundation of Power Innovations' long-term strategy.

## Powering Life

Powering Miracles  
Powering Peace of Mind  
Powering Life's Connections  
Powering the Human Spirit  
Powering Freedom  
Powering Innovation



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