THE HIDDEN COST OF UPS

Uninterruptible Power Supplies (UPS) and are the ultimate form of power conditioning. These devices, when properly designed and applied, can provide comprehensive power conditioning for all power quality problems up to and including a complete power outage.

With these benefits, it is no wonder that UPS systems are a rapidly growing power conditioning segment. There are many applications where a UPS is a requirement, due to the need for continuous, high quality power.

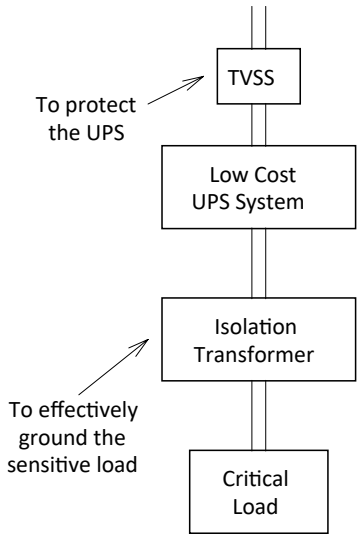
However, in many applications, a UPS system is not mandated simply by equipment or application requirements. In these situations, a cost vs. benefit analysis must be made to determine if the higher costs of a UPS system are justified by the benefits that such a device provides.

This application note demonstrates the costs of ownership of a UPS system. Some of these costs are obvious; others are less clear. All of these, however, must be considered in order to make an informed cost vs. benefit analysis when deciding whether to purchase a UPS system or other power conditioning device.

Some power conditioners are really just UPS systems without the batteries. These UPS-"lite" units share many of the same ownership costs as fully featured UPS systems.

Purchase Costs

As can be expected, a UPS system is the most expensive form of power conditioning, with the highest cost per installed kVA. It is also important to analyze the features and cost of individual UPS systems. Low cost UPS systems may not include TVSS protection or a Separately Derived output. With this type of UPS, additional power conditioning may be required to protect the critical load, or the UPS itself. It's not well publicized, but a large number of TVSS systems are sold to protect UPS Systems from damage due to voltage transients.



Beware!

Low Cost UPS Systems may not provide comprehensive power conditioning!

Most UPS systems are supplied with a limited battery capacity, typically capable of supplying 10-15 minutes of emergency power. If longer hold-up time is required, remember to factor in the costs of additional batteries.

Installation Costs

Small, plug-in UPS systems can be installed simply. However, larger units may require extensive installations that add to the initial costs. Some of these installation costs of a medium to large UPS system include:

1. Higher capacity branch circuit to accommodate UPS inefficiency and battery charging loads.
2. Security and barriers to prevent unauthorized persons from accessing the UPS.
3. Special cooling and venting for the UPS to remove heat and battery gasses.

Cost of Operation

Besides higher initial costs for a UPS system, several sustaining costs must be factored in. These include the ***Electricity Cost*** to operate the UPS, which is much less efficient than most other power conditioning devices. In addition, the UPS will significantly increase the HVAC load of the facility or the installation.

Battery Maintenance

UPS system reliability depends on the condition of the UPS batteries. It is no wonder that a multi-million dollar industry has evolved to monitor, test, and inspect UPS battery systems.

An installed UPS system incurs battery costs in two ways. Batteries must be inspected periodically, in order to determine their condition and capacity. This inspection is often part of a Service Contract with the UPS provider. (Complex electronic devices such as UPS systems also need occasional repair and preventive maintenance.)

Batteries have a finite lifetime. While battery reliability has improved steadily in the past few years, typical battery life is 3-5 years under optimum environmental conditions. You can expect to replace a UPS battery system, and this replacement cost should be factored across the battery lifetime.

Cost of Floorspace

In addition to the costs that have been addressed, UPS systems have some less tangible costs associated with them. A UPS system has a larger footprint than other power conditioning options -- sometimes as much as 400% higher than a transformer based power conditioner when service space is considered. In places where facility floorspace is in high demand, the costs of this additional footprint can be calculated and factored into the UPS decision.

Unsure of whether you can justify a UPS for your critical application? You can quantify the benefit costs of reduced downtime, and compare these to the higher initial costs and the cost of ownership of a UPS system. If the benefits outweigh the costs, the decision is simple.

Remember that other power conditioning options can provide substantial improvements in system performance and uptime. These devices are often much less expensive to purchase, install, and maintain than a full UPS system.

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