

# Thumbs Down on UPS Article

By EC&M Staff

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Written by a company specializing in distributed UPS equipment, I feel the article "Uninterruptible Power Supplies: Distributed vs Centralized?" in the March issue was heavily weighted in their favor. An article like this, which will be taken as a tutorial, is wrong! We sell and install APC UPSs, along with several others. We sell their standby and line-interactive units. In the presence of voltage harmonics that distort the basic power frequency (i.e. does not look like 60 Hz), these units QUIT! Moreover, most standby and line interactive UPSs do quit. The response from the UPS maker is harmonic distortion is the "user's problem and not theirs."

To date, only true on-line systems continue to function in the presence of harmonics. When the UPS quits, the customer becomes irate. If we had sold the equipment to him, it would be up to us to make it work. All of our senior engineers have a power analyzer included with their notebook PCs that helps locate problems. The only solution is to sell the customer a true on-line system.

As related to the article: A centralized on-line system is usually less costly in the long run-if the customer's electrical wiring scheme can support it. Another problem is common-mode noise. Here, the solution is a true on-line system, with an isolation transformer as part of the UPS system's construction. This makes it a true "derived" power source, with neutral and ground bonded at the output.

Ed Hodgson

### Response: UPS Author Backs Up Article

No single uninterruptible power supply design can apply to all situations. That is why we (with a worldwide installed base of eight million) and many other UPS vendors offer products designed for desktop use- some feature line-interactive topology. In addition to our larger UPSs designed for centralized use, some utilize an on-line topology. Yet even with a wide variety of products available, you can't use power protection equipment to solve infrastructure problems.

We realize on-line topology can give you an advantage. It is also true that line-interactive units can operate with up to 10% total harmonic distortion (THD) of the input voltage. Most on-lines will deliver an undistorted sine wave at the output of the UPS. This may only mask an underlying problem. THD more than 10% is a problem for more than just electronic equipment. It can cause severe problems in the electrical infrastructure of a building-making transformers, circuit breakers, and neutral conductors subject to potentially disastrous overheating. You can't correct such problems with a power conditioning device or UPS. No manufacturer intends for you to attempt this with their product.

The issue of **common-mode noise** frequently arises when we address computers and power quality. Common-mode noise occurs between the ground and the neutral conductor or between the ground and the phase conductors. A separately derived source, with a bond connecting the neutral to the system ground, will limit common-mode disturbances between the neutral and ground only for equipment located close to the source. **The potential for common-mode disturbances increases as the distance from the source increases.** A computer connected to a long branch circuit on the output of a separately derived UPS source may be as susceptible to common-mode noise as the printer nearby connected to "normal" building power.

UPSs, power conditioners, and surge protection equipment are add-on devices that can be very effective in protecting equipment from power anomalies. We recognize no amount of added devices can cure basic deficiencies in the electrical infrastructure. This "foundation" must be sound to support everything else-even a UPS.

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