

## **Power Surge Protection Will Protect Equipment, But Won't Lower Your Electric Bill**

The primary purpose of power conditioning devices, such as transient voltage surge suppressors (TVSS), is to protect equipment. Recently, there have been several TVSS manufacturers that also claim their devices will save energy and money.

A TVSS acts by clamping the line voltage to a specific value and then conducting any excess impulse energy to the safety ground, regardless of frequency. The energy shunting capability of a TVSS is expressed by its joule rating, which determines the amount of energy the device can handle. TVSS devices can be economical solutions for protecting PCs and other lower energy use equipment, dedicated to the specific purpose of isolating harmonics and other low voltage transients.

Power conditioners are often combinations of transient voltage surge suppressors, noise filters, and isolation transformers or voltage regulators. The product specifications vary according to the intended purpose at the customer location. The right combination of mitigation devices is coordinated to lessen the vulnerability of the electrical equipment that is being protected.

When evaluating marketing statements from power conditioning device manufacturers and testimonials from their customers, be aware that the energy savings are dependent on the power quality for a specific application. In addition, power quality is affected by harmonics, most of which are generated internally within a facility by motor drives, switches, older lighting ballasts, and other non-linear electrical equipment. Plus, residential electric meters do not measure "reactive power." For these reasons, a residential customer will not see any money savings from these power conditioning devices.

Numerous products fall into the deceptive and ineffective category. One to achieve significant notoriety is the Xpower Energy Saver. Forum Trading Inc. was collaborating with several other companies to sell a \$200 cylinder they claimed consumers could plug into the wall to trim electricity consumption by 25%, and extend the life of household appliances.

Texas Attorney General Greg Abbott issued a temporary restraining order against Forum Trading's sales last spring, and the case is scheduled to go to trial later this year. Texas-based Forum was selling Xpower through a multi-level marketing scheme, Abbott said.

"With Texas families focused on energy prices and seeking cost savings, these defendants are promising lower electricity bills but failing to deliver," Abbott said in ordering a halt to sales. "Experts who reviewed the defendants' products discovered no actual savings for well-intentioned purchasers."

Engineers at the University of Texas at Austin concluded that the Xpower could produce no more than a 0.06% reduction in electric use in an average house - that's not 6%, but .06%. Laboratory tests revealed that the product is an ordinary capacitor. Capacitors are usually employed in electronic circuits to store energy or differentiate between high- and low-frequency signals.

Unfortunately, it's a buyer beware world with all of these devices, says Dan Greenberg, an associate director at E Source. The Boulder, CO-based organization provides independent research to utilities, major energy users, and others in the retail energy marketplace.

"A lot of these salespeople make unrealistic claims for energy savings," Greenberg says. "They might not even know their claims are unrealistic because the distributor or vendor believes claims from the manufacturer that aren't true."

Generically, Greenberg says, the legal but rather ineffective devices such as Xpower promise to “fix up” a consumer’s power in some way. The device likely won’t harm anything, but nor will it save the buyer a noticeable amount of money on his power bill.

He warns potential customers to be leery about energy saving promises from vendors of products that use capacitors to improve power factor. Power factor is simply a measure of efficiency with which the power is being delivered by the distribution system.

Typically, these devices are substantially more expensive than most power surge protection plugstrips, yet they perform essentially the same function.



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