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Power to the People

AC Treatments are a Smart Sell

By Mark Fleischmann

The most colorful come-on for the latest in power-line accessories comes from Richard Gray's Power Company: "Have you ever been in the shower when a so-called 'loved one' flushes the toilet resulting in a few seconds of scalding hot water pouring from the showerhead?" Ouch.

A correctly installed home theater or networked audio system should do no harm to any part of the anatomy. But power-related problems — not all that different from Gray's water-based scenario — can still plague your customers' AV systems with uneven performance and disappointment. A new crop of AC power treatments has sprung up to help solve the problem. Simply put, no custom-installed home entertainment system should be without one.

POWER CORRUPTED

Electric power is not a perfect product handed down from above. Homes are situated varying distances from local power stations; those farthest away may receive a range of chronically inadequate voltages. When the power company is experiencing peak demand — routine in summer or winter — or sustains any damage to a plant, it may deliberately reduce voltage across the board, resulting in brownouts.

Certain conditions closer to home create briefer power disruptions, known as sags. If the neighborhood is using a lot of electricity, which it invariably does during peak evening "prime-time," voltage sags are an everyday occurrence. Even the home itself isn't safe. If someone activates a power-sucking appliance on the same household circuit, it is not unusual for lights to dim, a visual clue as to what's going on with the rest of the household's electrical capabilities. While a carefully installed entertainment system may receive power from a dedicated circuit breaker or fuse, even that doesn't guarantee a perfect supply of power, especially on a hot night when all the neighbors are using their air conditioners. Of course the most catastrophic surges result when lightning strikes — which never really happens, right? Yeah, right.

POWER-LINE ACCESSORIES 101

Basic power-line accessories are common — even necessary — additions to a good installation. A power-line accessory may include more than one of the following functions, though it's rare to find one that does it all.

The most basic function is surge suppression. Plain UL 1449 certification (which indicates that a product will not catch fire when jolted with a maximum of 6,000 volts) and joule ratings (which are often inflated) are not sufficient. When recommending power treatments for your customers, be sure to evaluate

voltage let-through (how much voltage is allowed through before the device begins clamping) and response time (how quickly the device reacts to surges).

Better power-line conditioners include isolation transformers to prevent components from polluting one another through ground loops (which occur when two unevenly grounded components set up a closed circuit through their power and interconnect cords). Ground loops can and do generate hum in audio components and noise bars in video displays.

A good power-line conditioner should also filter EMI (electromagnetic interference) and RFI (radio-frequency interference) out of the power supply — both are common causes of video and audio noise. And, of course, it's always helpful to have multiple receptacles when hooking up a sprawling system — though the use of cheap power strips should obviously be avoided for both safety and performance reasons.

The basic functions above improve the quality of power. But a new class of devices has broadened the spotlight to include the quantity of power. These products don't merely clean up the power supply — they ensure that the amount of power is sufficient.

STABILIZE THE POWER SUPPLY

The latest thing in power-line accessories goes under various names — voltage stabilizer, AC regenerator, AC regulator — though the common goal is to ensure that a system receives a clean, steady stream of 120 volts. The benefits should be easy to explain, or better yet, to demonstrate with a volt meter.

As previously mentioned, any home theater or multi-zone audio component with a power transformer is subject to power-related disruptions, including low voltage. When a video display gets less juice than it needs, its power supply struggles to keep up, and various performance parameters (brightness, contrast, etc.) lag behind. Sudden dips or spikes may cause flickering or other video artifacts. A front- or rear-projection set, which includes a high-intensity lamp, may suffer from lost focus or geometric distortion. Sometimes, you can literally see power sags shrinking the picture.

Surround sound and multi-zone audio gear is no better off in the face of power reductions. The problem is especially acute when a home theater system feeding five to seven speakers, plus a subwoofer or two, needs to draw more power at a volume peak. A collapsing soundstage does nothing to enhance the audience's immersion in the story. Simply maintaining a uniform volume level is difficult when the power supply is sagging or spiking.

Performance isn't the only problem. Constant voltage fluctuations take a slow, steady toll on the life expectancy of components. Customers need to be warned to protect their existing investments in equipment. All of which explains why voltage stabilization is an up-and-coming idea for the performance-oriented home theater buff. And several companies are looking to catch that wave.

FURMAN SOUND

Furman Sound, with decades of experience in professional sound-reinforcement products, has made a natural progression into the residential custom-install market. The company offers three AC line voltage regulators, as well as a wide variety of power-line conditioners, distributors, switchers, monitors and other products.

The big kahuna is the AR-2330D ($2,079), which accepts 220-, 230- or 240-volt input, and outputs an even 220 volts with 30 amps of current capability. It's designed for pro-level projectors, just in case you are installing an elaborate setup involving 9-inch CRT or three-chip DLP monitors.

For mere 120-volt mortals, Furman offers two products that accept incoming voltage of 114 to 126 volts and output a reliable 120 volts, plus or minus a tight tolerance of 1.5 volts. They shut down to protect components when the power dips below 90 volts or surges above 130. The RA-1210 ($2,249) has current capability of 10 amps, while the RA-1220 ($2,349) ups the ante to 20 amps. Both provide surge suppression, plus additional filtering for digital components. Voltage and current meters keep you abreast of power conditions.

Complimentary power-line conditioners are also available: the RI-1210 ($2,199, 10 amps) and the RI-1220 ($2,399, 20 amps). They balance the power supply to prevent noise from entering through the power cords of connected components.

PS AUDIO

PS Audio provides a varied selection of Power Plants, which the company describes as AC regenerators. Their trick is to convert alternating current to direct current and back to alternating current — but the latter is rock-solid. Along the way each product provides surge suppression and ground isolation. Input is 120-240 volts and the output frequency is adjustable.

Moving up the line, PS Audio offers the P300 ($1,245, four outlets, 300 watts output); the P600 ($2,395, eight outlets, 720 watts output); and the P1200 ($3,950, eight outlets, 1,200 watts). The P1200, with its 3-foot-long undulating side panels, is a particularly intriguing bit of industrial sculpture. For a projection monitor or a pair of mono-block amps, there's also the two-receptacle Ultimate Outlet ($299/15 amps or $399/20 amps).

PS Audio also offers a power-line conditioner, the Power Director 4.7 ($1,695), with 14 outlets in four isolated zones, including four 20-amp outlets for amps. To get the benefit of AC regeneration, the Power Director can be plugged into one of the Power Plants above.

MONSTER POWER

The Monster Power AVS2000 voltage stabilizer ($1,499.95) resembles a surround preamp-processor. It's not, of course, but it should look right at home sitting in a rack full of home theater components. The product is designed to maintain a consistent 120 volts, even with input variations of plus or minus 30 percent. Those anomalies can result in 80 volts on the low side and 140 volts on the high side, both of which are unacceptable and even disruptive for high-performance home entertainment. If the power grid fluctuates below or above that range, a safety overload disconnect feature disconnects any connected components. The disconnect also kicks in if power usage exceeds 15 amps.

Three red LED meters tell the user what's going on. These include incoming voltage (ideally, but rarely, 120 volts), voltage correction (-40 to +20) and amperage draw (up to 15). Six smaller LED indicators show on/off status for ground, surge protection, absence of line faults, voltage (whether it's in the 80-140 range), switched outlets and abnormal voltage (not in the 80-140 range). Two front-panel buttons activate the sequential switched outlets and adjust the brightness of the red LEDs.

The six color-coded outlets include four switched outlets, designed for high-current amplifiers, and two unswitched outlets, which handle smaller components that need a steady supply of power to maintain settings in standby mode. Most systems require more than two unswitched outlets — the two provided can accept additional Monster power-line conditioners.

RICHARD GRAY'S POWER COMPANY

Here we move beyond the voltage-regulator area to what Richard Gray's Power Company calls power management devices. You can buy them with four outlets (RGPC 400S, $750), six outlets (RGPC 600S, $1,200-1,250) or 12 outlets (RGPC 1200S, $2,000). The 1200S has twice the power-storage capability of the 400S, and three times as many outlets.

All of them can be plugged into each other in parallel to provide incremental benefits, or used in combination with other power-line conditioners. They also provide surge suppression — using both a large choke (transformer) as well as the customary MOVs (metal oxide varistors) — but components must be directly plugged in for the surge suppression to work.

The 400S, 600S and 1200S all operate between 100-240 volts (a simple switch out of AC cords makes 240-volt operation possible) and are designed to operate on a 20-amp circuit.

Richard Gray's Power Company also offers a somewhat different product, the RGPC SubStation, which operates on a balanced 240-volt line, outputs 120 volts and in doing so, provides twice the power capability of 15- to 20-amp outlets. Inside is a 122-volt transformer — Gray throws in a couple of extra volts to compensate for internal transformer loss. The SubStation combines the benefits of a ground-loop-defeating isolation transformer with high current capability. Providing for both isolation and high current at the same time is unusual — conventional power-line conditioners have separate isolated outlets (for low-current signal sources) and non-isolated outlets (for high-current amps). The SubStation extends the benefit of an isolation transformer to high-powered components like amps.

IT'S ALL IN THE PRESENTATION

Perhaps the best and the simplest way to convince a customer of the need for a voltage stabilizer would be to plug a volt meter into the wall and get a reading. It should be possible to show the customer the impact of various loads: system off, system on, lights, HVAC equipment, etc. You can make a meter drop several volts just by activating a halogen lamp on the same circuit. Needless to say, the kind of sultry weather that requires air conditioning is a great time to do the demo.

Again, it's not difficult to explain to your customers how inadequate voltage can be robbing them of the performance and component lifespan they're paying for. For example, plasma screens — not an inconsiderable investment — have a usable lifespan measured in hours. But those hours are measured under optimal conditions, i.e., a constant flow of 120 volts, which rarely happens in

the real world. The harder the display has to work, the shorter the lifespan. Even if the AC treatments prevent the display from overworking 10 percent of the time (a very conservative estimate), it's easy to see how power treatment products can pay for themselves. And that's before you even get to the benefits of improved performance under these optimized conditions.

While electricity will often be perceived as a mystic science by many of your customers, you don't need to explain how it works to demonstrate how poor electricity will cause trouble, even in brand-new home construction. Voltage problems are easily measurable, so measure them and illustrate the situation. You'll find these profitable add-ons can be a no-brainer for your customers, and for your business.

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