



Re: Power Factor and Energy Star Specification for Desktop Computers

Andrew Fanara
Energy Star

Dear Mr. Fanara,

It is vitally important to the electric utility industry and their customers that the desktop computer power supply Energy Star specification include the requirement for 90% or better power factor. The 80 PLUS program which includes an 80% efficiency goal and a 90% or better power factor goal, has already begun the market transformation process. The technology has evolved to a point where all power supply manufacturers can build compliant power supplies. Many utilities are providing incentives to promote the market for this new technology.

Power Factor is the ratio of the useful or real power (watts) to the total power (volt-amperes, VA) supplied to the load. As harmonic (non 60Hz) current increases, the VA increases and the power factor decreases. Electrical distribution systems are sized based on VA.

We are often asked by our customers to help evaluate the numerous products designed to mitigate problems caused by harmonics. These harmonics are generated from the hundreds or even thousands of desktops computers in the customer's facility. The 3rd harmonic currents, the predominant harmonic in PC power supplies, causes overloaded neutrals, overheated transformers, and nuisance circuit breaker tripping. Many thousands of dollars may be spent on equipment which will either filter or block the harmonics or withstand the heating effects of the harmonics. *These problems would not exist if desktop PCs utilized power factor corrected power supplies.*

Another important consideration is the sizing of uninterruptible power supplies (UPS) for computer loads. UPS's are rated in VA (volt-amperes) and priced accordingly. A power factor corrected computer power supply will use 40% less VA and therefore a smaller and less expensive UPS may be purchased.

For new construction, it is common practice today for electrical distribution systems to be "supersized" in order to handle the affect of harmonics. Most electrical specifications written by electrical consultants or building owners contain language requiring separate or oversized neutrals, de-rated or K-rated transformers, limited number of receptacles per circuit and double sized neutrals for panel boards. *"Supersizing" due to low power factor adds unnecessary costs to building design and construction.*

Again, we would like to stress the importance of including power factor in the Energy Star specification; as a result, utilities and their customers will have reduced energy bills and save on electrical distribution system costs.

Sincerely,

Scott Gibson
Snohomish PUD (www.snopud.com)

Chris Fate
Power Quality Service Center (www.pqsc.org)