

Re: Generators and switch mode power supplies.

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- *From:* Sylvia Else <sylvia@xxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Thu, 12 Feb 2009 17:54:02 +1100
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JosephKK wrote:

On Sun, 08 Feb 2009 23:30:44 +1100, Sylvia Else
<sylvia@xxxxxxxxxxxxxxxxxxxxxx> wrote:

Nico Coesel wrote:

Sylvia Else <sylvia@xxxxxxxxxxxxxxxxxxxxxx> wrote:

Given the parlous state of Australia's power systems, I've been considering buying a standby generator. One marketing point of some of the inverter based models is their suitability for 'sensitive electronics' with computers given as an example. This appears to be based on the fact that they'll provide a consistent sinewave output.

But given that computers invariably use switch-mode power supplies, are they actually going to care what waveform they see – from square wave thru 'modified sinewave' thru pure sinewave?

Not really. A computer doesn't care much as long as the voltage is within range. One thing to consider is that computers are a bad load to a generator. As a rule of thumb you need a generator with at least twice the VA rating as the total VA rating of all computers. Otherwise the generator cannot keep its rpm constant (starts speeding up and slowing down).

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I assume that's related to the harmonic load represented by switch mode power supplies.

Circuits for significantly improving the harmonic performance have been around for a decade, but I suppose little will happen until legislation requires their use.

Sylvia.

May not have happened yet down there, but has been around for about 2 decades in the US now.

I came across this

http://www.enhanceusa.com/designguide/atx12v_v2.0.pdf

which doesn't mention any US requirements, but does refer to some European and Japanese ones.

This document gives details from EN 61000-3-2.

http://www.reo.co.uk/files/handbook_en_61000-3-2.pdf

The class D limit of 3.4mA/W for the third harmonic means 1.7A for a 500W (input) PS, which would be drawing only just over 2A at the fundamental.

Doesn't seem an exactly onerous requirement. Indeed, I'd have to wonder what an uncorrected 500W SMPS would be drawing. Have lobbyists managed to get the standard set so that manufacturers actually had to do nothing?

Sylvia.

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