

AEC Uninterruptible Power Supplies

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Transformer Vs. Non-transformer

Powerhouse has had a lot of questions recently about the effectiveness of transformer Vs. non-transformer UPS systems, so we have included this editorial for your enjoyment.

It is no secret that South Africa and indeed the world is in the grip of a power crisis. Globally, power generating authorities are under severe pressure to meet the rising demand for quality power, but until alternatives can be found to current expensive and environmentally damaging generation methods, uninterruptible power supplies will remain a key component in the supply of clean reliable power.

After 40 years the UPS industry is still quite young, however over the last 10 years there have been significant advancements in back up power technology and today's UPS's are a far cry from the original crude "ferro-resonant" models that first arrived on the market 40 years ago. With the advent of Microprocessors, IGBT's, and high frequency switching we have seen UPS's get smaller, more reliable and highly efficient. Unfortunately in our quest to miniaturise we have made these expensive devices significantly more susceptible to the very thing they are intended to protect us from – power surges!



Whilst today's modern UPS's offer every possible feature, and then some it is important to consider that different applications require different approaches. A 20KVA, transformer-less UPS will provide excellent protection and high MTBF in a data centre, in a highly built up commercial environment – but the same UPS would be hard pressed to provide this reliability when installed at a Toll Gate on top of a kopje in a high lightning area.

As an analogy, one probably wouldn't take a prize Ferrari rallying in the Namib Desert? On the contrary! A rugged Toyota Landcruiser would be far more suited. By the same token harsh electrical environments such as mining, heavy industry and remote isolated locations require a similarly more rugged approach.



In an installation where there are long cable runs between the UPS and the load, there exists the potential for surges to be induced back into the UPS output. This often causes catastrophic failure of the inverter boards. In many cases a failure of this magnitude can render the UPS uneconomical to repair resulting in the need for total replacement of the UPS. As a matter of course, Surge protection should be fitted to the input and output of any UPS installation; however even with surge protection fitted, failures can occur. By isolating the output of the UPS using an isolation transformer one is assured of the best possible protection for the UPS.

AEC – Taiwan has, over the last 40 years developed a range of UPS's which boast both transformer-less and transformer isolated models. Transformer based UPS's may pose challenges in terms of installation due to their increased weight, but this is a small inconvenience when compared with the levels of reliability they provide in the harsh power conditions we experience in Africa.

AEC's transformer isolated UPS's are available from 2KVA single phase machines up to 600KVA 3-phase machines with up to 6 x parallel redundancy. These surprisingly economical UPS's boast superior overload performance with the latest in high frequency technology as well as state of the art communication interfaces, but more importantly they incorporate unparalleled protection for not only your sensitive electronics but the UPS itself.



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