



WORKING KNOWLEDGE WITH TERRY MACKENZIE HOY

SURGES AND SPIKES IN THE TIME OF LOAD SHEDDING

At this time of load shedding the authorities switch off large blocks of load and switch them on again. In general, energising and de-energising a circuit where the load is a few megawatts is no big deal, especially if one is switching on the medium voltage side of a transformer and the load is on the secondary side. However, let's think about a large system of connected canals filled with water which is allowed to drain away. When the flood gates reopen the water rushes in and there are many sudden ripples, waves and peaks as the after level stabilises.

So, while so-called surges and spikes on a power system actually occur very irregularly, they become more frequent and damaging when the supply authority is switching large blocks (tens of megawatts) of load. The most common effect of this is the failure of some piece of electronic equipment, as was the case with our office video cards and a large 48-inch display screen. It would have been great if these items had been unplugged, but that requires organisational skills not available in our office. In any event, switching off the computer, screen, printer or whatever does not disconnect the neutral. If the neutral in the power supply system is not disconnected you can get temporary high voltages on the neutral which cause failure. A great idea is to make sure that the neutral is isolated at the same time as the live. In our office, now, we have a two pole isolator which disconnects live and neutral and, thus far, no further problems.

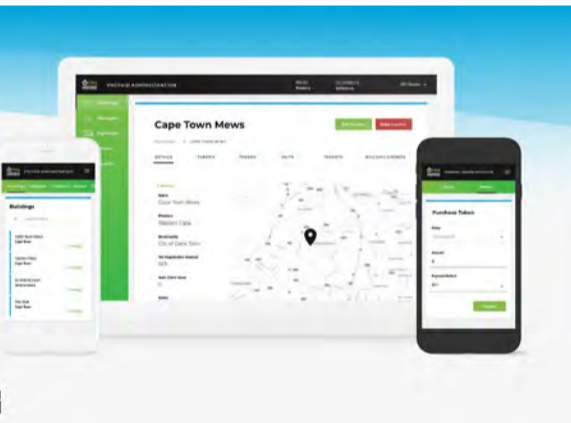
There are many 'surge arrestors' on the market that supposedly provide protection against over voltage, with some of them being quite good. However, it is a fact that electricity travels 100 metres in one micro second, so if a high voltage appears the arrestor has to operate pretty quickly to avoid damage. It is wise, no imperative, to use a surge arrestor to specification SANS 101421 which will divert high currents that have a waveform of 8/20 micro

seconds, which is a spike with a rise time of eight micro seconds and a duration of 20 micro seconds. This is known as a class 2 surge protector. A class 1 protector does much the same but protects against lightning as well.

One important thing to note is that, like connoisseurs of wine, there are a thousand self appointed experts out there, all of whom will have a different opinion, will correct you on fine points of surge protection and will tell you, forcefully, what will or will not work without ever conceding that they may be wrong. My own experience, growing up in thunder storm country, was to protect sensitive equipment using capacitors from fluorescent lamp circuits. We would wire the capacitors between live and earth and neutral and earth, put them in a box with a cord and plug and plug it into the wall. This, I calculated, would neutralise all surges. The fact was that equipment was not very sensitive

in those days and normally survived all but direct strikes and, in my case, I never had any equipment damage due to surges. The point may well have been that the equipment was sufficiently robust not to be damaged, surge arrestor or not, but I did no experiments.

Very often damage occurs when an earth connection to a circuit has a high voltage due to a lightning strike and flashes over to other circuits. People try to fix this by having an array of spikes or an earth mat to try tie the earth voltage to a low value. It won't work. It is better to have no circuit earth if possible, and then there is no part of the circuit which will develop a high voltage. This is generally against regulations but you can get around that by 'double insulating' the circuit and then no earth is required (do let me know if I am wrong). It's a sensitive topic, but then so is having to replace the 48-inch monitor...



The Meter Management Portal offers detailed consumption reports that can be customised per property, building and meter. It also allows for the remote management of costs and offers customers detailed transaction reports. Accessing the portal is simple – the user simply logs in with the details provided by Citiq Prepaid and then has a full view of the data that they require. Should they encounter any issues, they can contact our dedicated call centres and one of our trained support staff will provide them with clear instructions to using the system and getting the most out of the data provided.

"All the meter data our system collates is provided to the property owner, giving them a comprehensive view of their properties and allowing for them to make increasingly informed business decisions," concludes Scheepers. "Tenants can also access the portal to see their personal meter data and understand their own usage requirements and costs."

The Citiq Prepaid portal ensures that the company lives up to its goal of being the most reliable, easy and convenient way of accessing, controlling and managing electricity consumption and usage. The completely South African business is designed to meet the needs of the property market, and continues to do so through innovative products and solutions tailored to the local market's unique needs.

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For more information contact:
Connie Jonker: Tel: 011 396 8251
Email: connie.jonker@safehousesa.co.za
Barry O'Leary: Tel: 011 396 8117
Email: barry.oleary@safehousesa.co.za

www.safehousesa.co.za