Rectify power problems in even the harshest conditions with CVT technology

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Consistently high standards of power delivery has been a commodity that the majority of organisations have taken for granted; until recent years. However, the reality is that even when supplied power is available and is seemingly stable, there are still minor variations that can occur that are sufficient to cause operational problems with a variety of equipment, in particular sensitive technology such as data centre solutions and servers. Add to this the challenge of now on-going power problems, and the issue becomes a far more significant one. Ensuring a consistent, clean power supply has become the responsibility of all businesses wishing to protect their equipment. Constant Voltage Transformers (CVTs) offer an affordable solution to assist local organisations across a variety of industries to protect their equipment both from everyday fluctuations as well as harsher power conditions.

In developing countries, industries that make use of high-tech electronic and electrical equipment, such as mining and manufacturing, have long understood the effects of unstable power on their equipment. Operations for these industries often take place in areas where clean and consistent power is difficult to come by, and the effects of dirty power can cause equipment to fail prematurely.

However, for other businesses, this has not been an issue until recently with load shedding and the evident issues surrounding power delivery. Today organisations rely on data centres for their daily operations. The data centre has become known as the heart of the business, and these business hubs are made up of highly sophisticated technology that is sensitive to the supply of power. Even the slightest variations in supply can cause vital equipment to crash and essential processes to falter. Worse still, data processing errors can arise as sensitive equipment struggles to cope with any variety of surges, sags and dirty mains. This could result in organisations losing business critical information. A direct symptom of this sees many equipment manufacturers now specifying

that their devices and electronic components are void of warranty, in the case of poor mains supply feeding their equipment.

Enterprises in other sectors should begin following the path of the mining and heavy industry sector, with robust power solutions to filter power and stabilise voltage to prevent potential issues as a result of power problems. CVTs are a type of ferro-resonant transformer, a highly robust technology that provides power filtering and voltage stabilisation. Power filtration is delivered through a process called galvanic isolation, which is created by isolated primary and secondary coils within the transformer. Voltage stabilisation is generated through the ferro-resonance of the transformer.
A CVT unit can perform a number of functions, including as a power filter, voltage stabiliser, isolation transformer and a harmonic filter, enabling it to rectify power sags, swells, dips, spikes and harmonics. It provides multiple functions around power conditioning to help organisations protect their equipment from dirty power, making it a very cost effective solution. CVTs are also highly robust technology, and are often called 'bullet proof' when dealing with harsh power requirements. This is as a result of the composition of the CVT, which allows the unit to resort to current limiting mode in the event of a power short. Such a dead short, or immediate power cut, would usually either damage equipment or trip breakers, however a CVT can handle this extreme power problem by collapsing the output voltage to zero before the issue reaches connected equipment. The dead short can then remain indefinitely without damaging the CVT, which will continue to perform as expected once power is restored. It effectively acts as a barrier between harsh voltage swings, harmonics, dirty or noisy power, which are fed into the CVT, and ensures clean smooth output of the sinewave, which is then delivered to equipment.

While CVTs have traditionally been utilised in the mining sector because of the need within this industry to deal with dirty power conditions on a regular basis, they are in fact applicable across a wide variety of sectors and all applications, from heavy equipment to sensitive IT solutions. Factories and industrial environments can make use of CVTs to filter power before it reaches equipment, IT environments can make use of the solution to filter power before it reaches sensitive equipment such as the

data centre. In addition, sectors such as transportation can utilise CVTs to protect essential equipment like security camera networks and recorders even during power problems. A single CVT unit can handle far more power issues than any other technology that exists, and can rectify the majority of power problems, limited to single phase power at a maximum power capacity of 20kVA. The only thing a CVT cannot do is provide backup power – and for this function most organisations make use of a UPS and a generator. However the CVT can also be used to protect the UPS itself from power fluctuations, helping once again to extend the usable life of this equipment. With power conditions in South Africa becoming increasingly harsh, organisations would be advised to examine power protection solutions such as CVTs.

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