

Keeping the lights on in your smart building

 By [Marco Da Silva](#)

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Intelligent, connected technology is a growing trend and property owners and managers, particularly in the retail space, are either constructing smart buildings from the ground up or retrofitting existing buildings with smart solutions. These include connected security, surveillance and access control, heating and cooling systems, timed or motion sensor lights and building management systems that connect all of these systems and provide holistic data for improved building intelligence.

However, all of these smart solutions rely on having available electricity in order to run and are also often highly sensitive, which means that they require a steady supply of clean electricity. Power assurance and power quality solutions are, thus, essential for the continued operation of smart buildings.

No power, no business

As the power crisis in South Africa continues, retail outlets and businesses are seeing a significant loss of revenue, being unable to operate when the lights (and other systems) go out. For some businesses, such as supermarkets selling fresh and frozen goods, the impact of power outages with no backup power are greater than just the loss of foot traffic. Spoiled perishable goods could cost these retailers potentially hundreds of thousands of rand a year.

For other enterprises, such as banks, no power means no transactions can be processed and poor customer service, resulting in significant loss of revenue. Even in instances in which generators are installed, providing power assurance and backup electricity in the event of outages, it only addresses half of the problem - the power assurance side.

Generator power is subject to a diesel or petrol-driven motor, which can result in fluctuating power voltages. In addition, generators take a few seconds to start up when outlet power is lost and in those seconds of zero power, equipment can be damaged. Power quality is essential, not only during outages but at all times to protect sensitive equipment from voltage fluctuations that could damage circuits and corrupt data, and this requires the implementation not only of generators, but also Uninterruptable Power Supply (UPS) with Automatic Voltage Regulator (AVR) capability.



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Harmonics, surges, dips and spikes

While smart buildings offer a number of benefits to property owners as well as tenants, they require special consideration

in light of the current power situation. Smart building solutions are typically controlled by IT infrastructure and equipment such as servers, which are highly sensitive to power anomalies such as harmonics, surges, dips and spikes. Protecting equipment is essential or buildings face the risk of lost or corrupt data, including all feedback data from smart equipment as well as the programming that controls this equipment.

In a smart building, if the building management system goes offline, the entire building is offline, potentially creating security issues and other challenges. Smart buildings need to ensure they have a UPS in place that interfaces with the building management system, to perform a controlled shutdown if the generator fails, or to provide a bridge between outlet and generator power. An AVR, which remains online at all times, will ensure that power supply to all connected equipment is constantly clean and stable, minimising the risk of damage.

In addition to protecting equipment and data, power quality and assurance solutions also have additional benefits for building owners. For example, property owners can maximise their rent per square metre by offering an integrated solution of floor space with power assurance solutions. By guaranteeing customer uptime, landlords will attract a higher rental rate while providing an essential service to their tenants. Furthermore, guaranteed uptime can be used as a competitive differentiator, as customers will be more likely to take up space in a building that can guarantee their continued operations during load shedding and power outages.

A number of considerations

When it comes to implementing power solutions, it is beneficial to partner with an expert service provider as there are a number of considerations that need to be taken into account. These include correct sizing of generators and identification of essential services to run off generator power, as well as the actual installation of the generator.

This is often a complex process when generators are retrofitted, as the placement, environment and cable reticulation need to be taken into account. It is also essential to ensure adequate ventilation for the generator fumes, while ensuring it does not exhaust into a populated area, and if the generator will cause high levels of noise, soundproofing should also be included. In addition, access control for the generator area is essential.

As the unstable power situation in South Africa is set to continue for the foreseeable future, power assurance and power quality solutions are increasingly becoming essential business equipment. Ensuring businesses can continue to operate even during power failures is currently a competitive differentiator for building owners, but this is fast becoming essential for attracting tenants. In addition, a UPS and an AVR are essential equipment for keeping the lights on in any smart building.

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