

Case Study



Woolworths Melrose Arch

Prior to electricity saving initiatives, the Woolworths branch located in Melrose Arch Johannesburg was experiencing an excess voltage supply of 239V from the recommended industry norm of 220V. Electricity supplied in excess creates a negative impact on the optimum functionality of electronically powered equipment, as well as contributing to the rising cost of electricity. An independent Group of metering surveyors, Energy Cybernetics, was appointed to audit power savings achieved at the Woolworths branch by conducting a power consumption audit prior and post the installation of a power optimization unit, known as PowerStar®.


powerstar
S O U T H A F R I C A



WOOLWORTHS

The Customer

The Woolworths flagship store in Melrose Arch covers a floor space of 6700m² and was the first Woolworths store to be built over three levels in recent years.

The Store caters for the dynamic needs of shoppers from all over Johannesburg, offering customers access to almost all Woolworths ranges including a fresh food hall, home, and fashion departments.

The Challenge

Prior to the installation of a power optimisation unit, Woolworth Melrose Arch was experiencing an incoming voltage of 239V, creating an excess of 19V above the recommended voltage supply of 220V.

The challenge facing this unique store was the rising electricity costs related to excess voltage supplies, which in turn was creating a domino effect by running electronically controlled equipment at temperatures above the industry norm, and potentially shortening the life span of equipment.

In addition to direct electricity challenges facing the Group, Woolworths, being one of the most innovative and forward thinking shopping Retailer's of this day and age, is committed to aiding the environment with go green initiatives & attitude, and was seeking a solution.

The Solution

The Woolworths Group was approached by PowerStar to consider the benefits of voltage optimisation at a site which could provide significant energy savings.

Voltage optimisation is a term given to the systematic controlled reduction in voltage received by an energy consumer to reduce energy use, power demand, and reactive power demand. This gives the end-user the ability to control and optimize their electricity supply locally, correcting voltage and power quality problems from the national power grid.

In South Africa electricity is supplied at a range of 216V & 253V, creating a fluctuating supply dependent on the position of an energy consuming site. The core of the national power grid produces power at 253V which in turn decreases over distance. Sites close to the core of the grid will experience high voltage and therefore undergo increased energy consumption.

The PowerStar voltage optimisation unit is a highly efficient triple wound transformer that has a patent design to correct over-voltage supplies by bringing it in line with the actual needs of equipment on site.

The system effectively reduces the voltage to an optimum level whereby all equipment operates correctly, resulting in less power being consumed.

In addition the PowerStar unit offers a number of benefits to improve power factor, reduce harmful harmonics and thus improve the sites overall energy usage.

Prior to installation at Woolworths Melrose arch, a full site survey was conducted by PowerStar in order to determine the exact electrical loading characteristics of the site equipment. Voltage measurements were captured, assimilating an average voltage intake over a period of one week.

Voltages recorded indicated an excess supply of: 239V

Once a clear indication of voltage overload on the Woolworths site was ascertained, PowerStar proposed the installation of a 1000kVA PowerStar unit.

The Installation

PowerStar's team of professionals installed the PowerStar unit after trading hours in a record breaking 2.5 hours.

Benefits on commissioning of the PowerStar unit were displayed within the instant. The oversupply of voltage was dramatically reduced

from 239V to an average of 223V.

The reporting of the savings over a period of time was critical. As a result an independent measurement & verification power audit was conducted by Energy Cybernetics, who verified the following:

A saving of 8.27% on kWh consumption had been achieved which was close on 20% more than we originally guaranteed.

Conclusion

On installation of the PowerStar unit, Woolworths Melrose Arch began benefitting from reduced energy consumption, a decrease in electricity costs, and a sound reduction in carbon emissions.

In addition, the Woolworths team have seen a prolonged life span of all electrically functioning equipment and lighting, thus reducing maintenance costs on major electrical components.

PowerStar is proud to prove our engineering solution in the face the energy crisis.