WILSON POWER SOLUTIONS *Responsible Power Engineering*

VOLTAGE REGULATED SUPER LOW LOSS AMORPHOUS **TRANSFORMER REPLACEMENT PROJECT**

SECTOR: RETAIL

ASDA

INSTALLATION BENEFITS AT A GLANCE

1. 7% reduction in energy usage
2. Saving over 285000 kWh /year
3. Equating to more than £25,000 /per annum (based on £0.09/kWh)
4. Minimised plant footprint
5. Maximising savings through Voltage management
6. Cost effective solution - payback under 4 years

ASDA

285000
ANNUAL kWh
SAVINGS

PAYBACK
£25,000
ANNUALLY

Based on electricity costs of £0.09 /kWh

THE CHALLENGE

ASDA is committed to sustainability principles and has made significant strides in terms of their own environmental performance. Since 2005 ASDA have reduced energy use in their existing stores by 33% and in new stores by 45% with the Wilson e2 super low loss amorphous transformer contributing to this since 2009. Today, ASDA is committed to continue to become ever more energy efficient. In fact, ASDA set a new energy efficiency target in 2012, aiming to maintain flat usage by 2020 (based on 2012) irrespective of growth. This means the energy team faces a significant challenge in evaluating technologies available that drive energy efficiency yet remain cost effective.

THE PROJECT

Since 2010, ASDA specify the Wilson e2 super low loss amorphous transformer based on its significantly reduced transformer losses. On most sites, ASDA did not make use of the transformers in-built voltage management capabilities but installed dedicated voltage management equipment downstream from the supply transformer.

The Wilson e2+ transformer is a super low loss amorphous transformer with an on load tap changer (OLTC) that provides stabilised site voltage and thus maximises potential savings from reduced site voltage (when compared to the standard Wilson e2 with extended off load tapping range) without the need for dedicated voltage management equipment. Having identified their Dunfermline site as being able to likely benefit significantly from dynamically regulated site voltage, a Wilson e2+ super low loss transformer with on load tap changer was installed in August 2012.

Following the installation of the unit, ASDA have cut their electricity usage by 7% and saved in excess of £25,000 /per annum. The project will achieve payback in under four years time.

DATA

VOLTAGE

PRE WORKS STANDARD TRANSFORMER

Phase	14 days before	7 days before
A	240	240
B	241	241
C	240	240
Average voltage	240	240

AFTER NEW TRANSFORMER INSTALLATION

Phase	14 days before	7 days before
A	227	226
B	227	227
C	226	226
Average voltage	227	226

RECORDED ENERGY & TEMPERATURE

	7 days before	7 days after
Average kWh	11,313	10,532
Average temperature (°C)	14.2	13.5

Phase	7 days before	7 days after
A	240	227
B	241	227
C	240	226
Average voltage	240	227

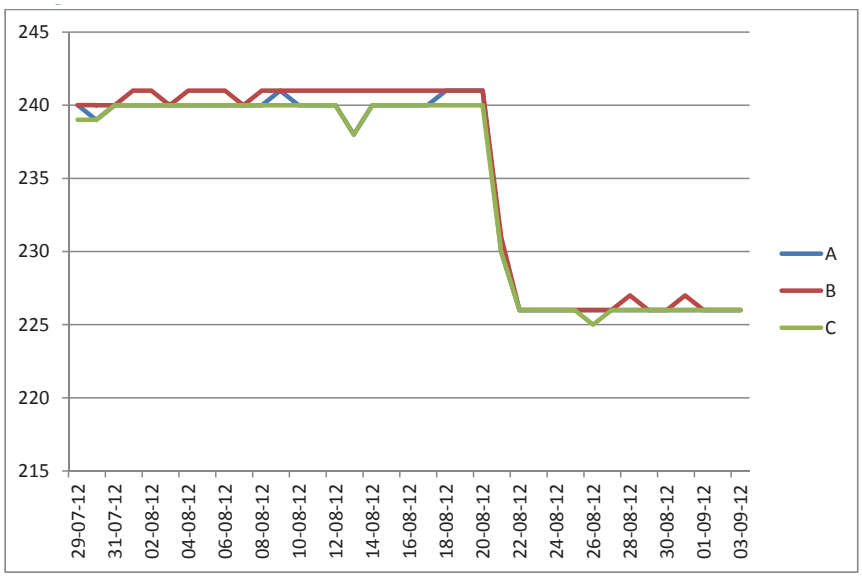
ENERGY SAVINGS

Average savings (kWh) 781kWh/day, equals 7% reduction in energy usage. Equals energy saving of £70.29/day or £25655 /year.

V

VOLTAGE DATA

The following graph details the recorded RMS voltage for the supply.



ENERGY SAVINGS - Continued

kW

POWER DATA

The following graph details the recorded total power during the period of the survey.