

## Case study 2: Packaging Company Network operating company WPD East Midlands

Reactive power charge at time of survey – the bill for this site was not specific about unit charges for kVArh, but instead just gave the total reactive power charge. This charge would have been based upon not achieving an average power factor of 0.95 and averaged £250.00 per month.

Available Supply Capacity (ASC) charge - £1.59 / kVA / month.

During our site survey the following load vectors were recorded:

kVA	kW	PF	kVAr
637	452	0.71	448

From the metering information the estimated maximum demand load vectors were as follows:

kVA	kW	PF	kVAr
867	650	0.75	573

In order to correct the maximum demand condition to a more economical level of 0.97, 400 kVAr of power factor correction was offered.

With the above capacitors connected the maximum demand condition was predicted to be as follows:

kVA	kW	PF	kVAr
673	650	0.97	173

The reduction in maximum demand predicted =  $867 - 673 = 194$  kVA

### Potential annual savings

From the above information, the following savings were calculated:

Excess reactive power – on average the client was receiving £250 / month in reactive power charges. By installing the equipment

recommended this charge was virtually eliminated as an average power factor greater than 0.95 would be maintained. Achieving annual savings of  $£250 \times 12 = £3,000$ .

Available supply capacity – the reduction in maximum demand of 505 kVA represents an annual available supply capacity saving of  $194 \times 1.59 \times 12 = £3701.52$

Total potential annual savings =

# £6701.52

### Installed cost of equipment recommended

The total installed cost of the equipment recommended was £8499.00

### Payback period of equipment

From the cost of the equipment and the potential annual savings, the payback period of the equipment was calculated as approximately 15 months.

### Result of survey

The equipment recommended was installed. The reactive power charges were eliminated and the client is presently evaluating their reduced maximum demand before re-negotiating their available supply capacity.



**THIS INSTALLATION  
OF POWER FACTOR  
CORRECTION AT THIS  
PACKAGING COMPANY  
ACHIEVED SAVINGS  
OF ALMOST £7000 PER  
ANNUM, ACHIEVING A  
PAYBACK PERIOD OF ONLY  
15 MONTHS. ”**



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