Case Study

DJC Engineering 30/03/2017

Scope

Trial installation of a 2-030-C unit within an engineering workshop containing multiple lathe and CNC machines. A survey was carried out before installation and current measurements taken at the supply for the lathe and CNC Distribution Boards. A total variable current of between 30 - 60A was observed.

Installation

The 2-030-C unit was connected to L1, L2, L3 and Earth at the Line side of the Distribution Boards for the lathe and CNC machines. The incoming supply was terminated at 3 separate Henley blocks to which the PCR connections were made. Monitoring equipment was installed at L1 of the supply isolator within the Sub Main Distribution outbuilding located 30m away.

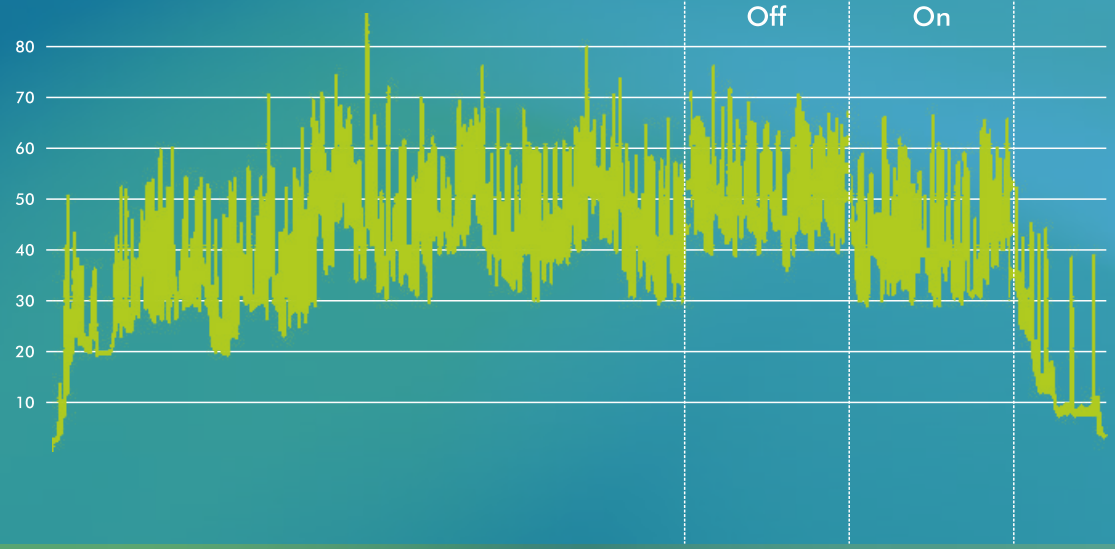
Measurement

Monitoring equipment set to record at 5 second intervals with PCR ON/OFF times as follows:

8 x 10 minute periods of ON and 8 x 10 minute periods of OFF followed by 30 minutes OFF and 30 minutes ON.

Results

Raw data direct from the monitoring equipment is shown on the RHS. Due to the nature of the machines, the current has multiple spikes, however it is evident when the PCR is ON and OFF.



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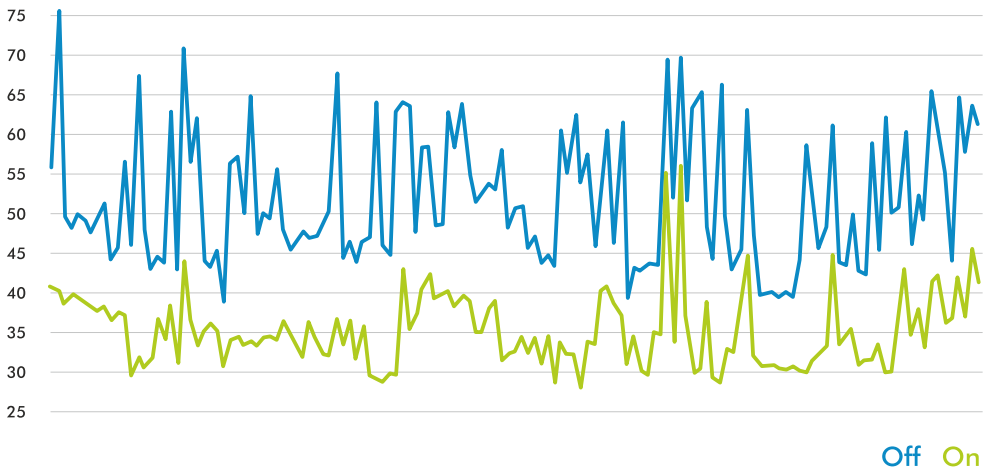
Analysis

By overlaying the two 30 minute periods of ON/OFF data it is possible to see the current difference the 2-030-C creates.

Average Current w/PCR OFF	Average Current w/PCR ON	Average Current Drop w/PCR ON	Average Current Saving %
51.8A	35.3A	16.5A	31%

* The maximum recorded current drop was 35.1A (75.4A OFF 40.3A ON) which translates to a 47% saving



Savings

$$£\ \text{Saving p.a.} = \left\{ \frac{\text{VL-L X PF X Av PCR ON Amp Drop X 1.732}}{1000} \right\} \text{X Operating Time X £/kWh}$$

$$£\ \text{Saving p.a.} = \left\{ \frac{400 \text{ X } 0.9 \text{ X } 16.5 \text{ X } 1.732}{1000} \right\} \text{X } 3744 \text{ X } 0.12559$$

£ Saving p.a. = £4,837.55
kWh Saving p.a. = 38,518.57 kWh

Summary

- Excellent performance and response to a highly variable load.
- Reliable performance at top end of listed capacity.
- Improved installation of unit using 2nd generation PCR design.
- Validation of 2nd generation PCR design in 'real world' situation.
- Improved reliability over 1st generation design i.e. no MCB tripping and fast latent energy discharge.