

helping to measure, manage & control your energy

Alan Ward
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In this report the names of the consultant and client have been removed in order to safeguard confidentiality.

Commissioning Report Saturday 22nd August 2009

Customer: xxxxxx Ltd

Date of Visit 22nd August 2009

Engineers: Alan Ward & Colin Bartlett

In March 2009 Alan Ward visited site at the request of x, a consultant with x limited and his client x.

The problem concerned a PRI Premier sub-meter that did not appear to be reading accurately. This meter was used to bill tenant 1 by subtracting from the main billing meter which is also a PRI Premier. The difference between the main billing meter and the sub-meter was used to bill tenant 2 who is no longer on site.

The Premier sub-meter has diagnostic capabilities and by connecting to the meter with a laptop it was possible to check the operation of the meter. The screen shot below shows that there was something wrong with the operation of the meter.

The Premier measures voltage and current independently on each of the three phases and the relationship between voltage and current. It is clear from the image below that one of the phases appears to be running backwards.

I1 = 101.02A, I2=-68.480A & I3=92.740

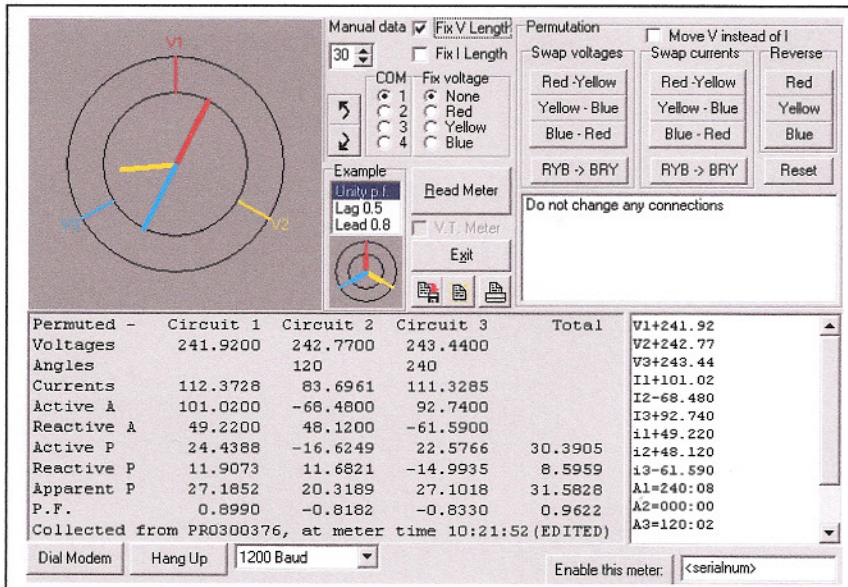
Active power from which kWh consumption is derived from the image below is:

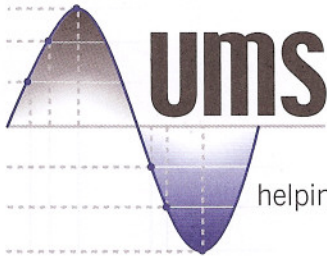
$$kW = 24.4 - 16.6 + 22.5 = 30.3kW$$

Active power should have been

$$kW = 24.4 + 16.6 + 22.5 = 63.5kW$$

In effect the meter was recording only approximately half the actual consumption.





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The most likely cause of an Ofgem approved metering not working correctly is due to a wiring error. However, this required a shut down in order to establish that this was the problem.

A visit was organised for Saturday the 22nd of August so that the supply to the meter could be fully isolated and the wiring checked. The contractor had used the same colour cable for all current transformers (CT) and so six (two from each CT) identical cables had been threaded through a length of conduit with no means to identify which cable belonged to which CT or which cable was the S1 and which was the S2 (The S1 goes to the meter and the S2 is the return leg from the meter. This forms a circuit and mixing these up will lead to a reverse current flow).

As this was the likely cause of the problem it was decided to disconnect all the cables at both ends and then re-connect using a multi meter continuity check to confirm correct connection.

Once the connections were re-made the equipment was switched on so that we could confirm correct operation of the meter as confirmed by the screen shot below.

Our conclusion is that the meter was incorrectly wired from day 1 and as a result tenant 2 would have been over billed for a number of years.

