

Excessive Energy Use (Australia)

The financial and environmental costs of energy continue to rise. Conservation is key not only to household and institutional budgets, but to the health of the planet. To that end, many governments now mandate more stringent control and management of energy usage, particularly for large users.

The PowerMonic 45 is a user-friendly and accurate tool to help those in energy management monitor and thereby control energy costs and greenhouse gas emissions.

Reasons for Excessive Costs

Waste – If equipment isn't on, it isn't using power. That's a simple message, but difficult to implement in large organizations. However, a power quality or energy logger can determine when and where electricity is being used, thereby helping you minimize waste.

Poor Power Factor - Poor power factor is most often caused by induction motors in which the current lags the voltage, resulting in wasted energy. Correcting poor power factor can result in significant savings if the electricity tariff imposes a kVA charge in addition to kilowatt hour charges.

Power factor standards are set by the National Electricity Rules for above 1kV and by local distributor for less than 1kV.

Wrong Tariff or Wrong Time of Use Tariff - Logging the electrical load can help determine the most suitable tariff for a premise. Changing tariffs can result in significant savings—in one case an annual reduction from \$20,000 to \$14,000.

Time of Use tariffs charge more for electricity used during peak periods. Careful analysis of PowerMonic 45 graphs and an intimate knowledge of operations may allow for movement of load from higher tariff to lower tariff periods.



Technician installing the PowerMonic 45 for an energy audit.

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Case in Point

A factory that was paying what it considered to be excessive energy bills installed a PowerMonic 45 to record their electricity usage and power factor for one week.

The audit found considerable energy being used at night, when only the cleaning crews were on-site. They realized that the air conditioning for the entire facility was running during these periods. Discussions with cleaners determined that only specific locations needed air conditioning and most of the air conditioners could be left off. The factory’s energy management system was programmed appropriately, resulting in both cost and energy savings.

The power factor at the site was also found to be extremely poor—down to approximately 0.65 lagging on one phase, and never above the required 0.9 standard on any phase at any time (Fig. 1). Installation of power factor correction capacitors saw a reduction in kVA demand and line losses. The power factor correction capacitors showed a positive return on investment within about 18 months. The audit also determined that additional cost and energy savings could be achieved by transferring loads to off-peak operation.

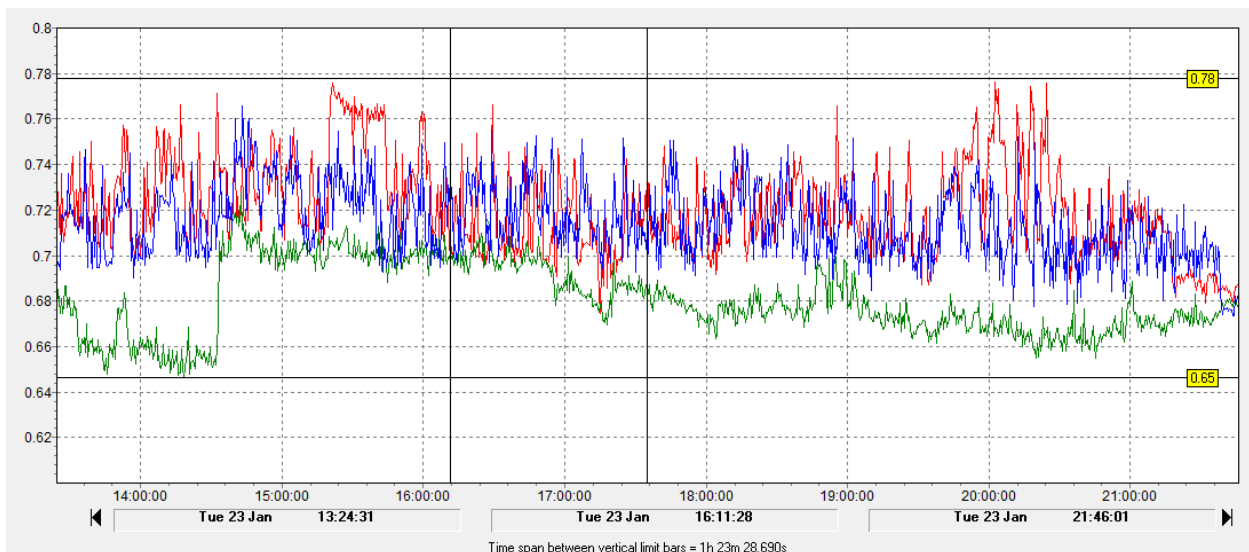


Figure 1. Factory power factor graph