

## Application Notes

### Electrocorder Range of data logging products

Data measurement - identify energy savings

Ongoing Data Logging - capture your energy profile

Calculate acceptable reduction and savings

Low cost investment for long term energy saving and monitoring

There are many ways to save energy, most of which cost little to implement and realise savings. As with any process, it is useful to start by assessing where you are, your present consumption, the purpose is not to decide whether energy reduction is applicable, rather to set a benchmark; start by gathering some data and doing some very simple calculations. Read your meters (electricity, gas, heating oil, petrol, diesel and water).

You may only get billed monthly or quarterly, so reading the meter every week preferably every day will give you a better breakdown of when the energy is used. Read the meter first thing in the morning, at lunch start and end and the end of the working day. How much are you using in the morning, lunch and afternoon and at night? Plot a graph using a spreadsheet, do this for a week or two at the most, compare Friday evening's to Monday morning's reading. Benchmark – kWh per employee or kWh per m<sup>2</sup>.

For an office that does not produce a physical product, therefore has no manufacturing space a useful ratio is kWh per employee per annum, the total number of kWh used over the year, divided by the number of employees in the office. Be careful, the kWh/employee figure can be deceptive, it assumes that all employees are equally efficient. For this to work we need to be honest, here are the figures for Acksen Ltd's Office for 2010:-

1,500 kWh per employee per annum (2010).  
94kWh per m<sup>2</sup> per annum (2010).  
10kWh per widget per annum (2010).



### Compare to your neighbours, competitors, partners.

If you are a pink widget producer, it can be difficult to compare with other pink widget producers, I therefore suggest you compare with similar non-competitive industries, sometimes that can be as simple as your neighbouring industries, use the figures above, however you may both be open to discuss actual energy figures.

### Education.

This is an easy step to take, ask staff to turn out lights when leaving an empty office, not to leave PCs on when going for an hour's lunch, a 12% saving on its daily running cost, don't leave them on at night either. Incentivise, make energy reduction and savings part of the bonus scheme. Turn lights, PC's, radiators and heaters off when the room is vacant.

### Lighting.

There are legal limits re. the amount of luminance needed in various work settings. Assess your needs, if you have too much light, remove some bulbs/tubes. Consider upgrading to higher efficiency units. Where and when possible, open the blinds, let the light in. Ensure you have no incandescent lamps in the building, upgrade halogen spotlights to low energy types.

### Thermostatic control & HVAC.

Heating and cooling settings should not be adjusted by members of staff, only by those that are authorised. If certain staff want to be warmer or cooler, move them closer to, or further from heating and cooling. Ensure that HVAC is not on Saturdays and Sundays, this is common problem and of course, on one ever knows it is on, as no one is ever there. Ban the personal fan heater, they get left on, electricity is normally the most expensive form of heating.

**Look at your Bills (electricity, gas, heating oil, petrol, diesel,... we all forget,... water).**

The easiest way to assess your usage is to simply look at the various energy bills you have received from the energy providers, this will give you a feel for the energy spend compared to other aspects of your business, we'll look at benchmarking later. It may be useful to create a pie chart of the company spend on all major purchases, see where energy comes, it may be an unpleasant surprise! It may also help you to estimate the amount of time you should invest in the audit process.

**Invest in a data recorder, we recommend the ElectroCorder!**

The AL-2VA is designed for use in the office or home, it allows you to determine the actual energy profile of many items of equipment. For larger premises, perhaps with 3 phase electricity, a current logger is sufficient to tell you the rough energy usage over a week or so, this will let you compare the theoretical estimates to these actual results.

A voltage 'Duty Cycle' logger will let you analyse a pump or fan run duty cycle, which in turn can tell you when an oil or gas heating system was on. Although the fan or pump energy usage may be fairly insignificant, the overall heating energy use (gas or oil) may be very significant,... does it run when the building is empty, is the frost protection set to 15C rather than 5C?

**Vending machines.**

As long as there are no perishables in the machines, turn them off at night, put them on a 5/2 time-switch, on an hour before work starts, off an hour before work ends and off at the weekends.

**Toilets.**

Put the lights on an IR sensor, check hand dryer sensors are working correctly and the timer is set, such that you can indeed dry your hands.

**In the Kitchen, minor stuff.**

Educate staff not to fill the kettle to the top, just according to what they need. Put coffee makers on a time-switch, so they are not left on at night. Get staff to co-ordinate their breaks, so one kettle boil does several people.

**Set targets for reduction.**

A good starting point is a 5% or 10% reduction target, perhaps to be achieved in 6 to 12 months, the sooner you implement the changes the sooner you start to save. Energy reduction make you more competitive and gives you the edge, any money saved can be devoted to product development, process improvement or advertising. Monitor your progress towards the targets. Use time-clocks and time-switches to enforce a 'use-envelope' of use for non-critical equipment.

**Authorise someone or indeed several.**

If your cleaners enter your site at 05.00 and turn on all the lights, the HVAC, escalators, vending machines, they are spending a considerable amount of money on your behalf each year. Check up on them. Appoint a responsible person, to analyse and check all spending on energy. Put several members of staff in charge of checking vacant rooms are not lighted or heated.

