

Tackling rising energy costs

It is a worrying fact that even if energy prices rise by a modest ten per cent annually, over a seven year period the total cost will have doubled. It is an inevitability that utility costs will rise so it is imperative to consider how best to manage electricity consumption. Craig Needham advises that there is much that can be done in the care sector to help measure, monitor and control electricity usage.

Most businesses are regularly bombarded with mail and telephone calls about the latest energy saving product or initiative, all promising great things. Care providers know that electricity costs are forecast to continue to rise but it is hard to decide on the best way forward and difficult to ascertain if the 'revolutionary' new products will deliver what they promise.

Back in the 1970's Prime Minister Ted Heath asked us politely to simply 'use less electricity' – and the message then was simply to turn something off. Nowadays the message is more complicated with a raft of 'sticks' and 'carrots' designed to encourage us to use

less, but also to penalise us if we continue to use electricity. Today's Government believes that everyone should pay a levy towards creating a more sustainable energy industry.

Of course it would be fantastic if worthwhile reductions in electricity bills could be achieved just by encouraging people to turn things off – but this is an inconsistent measure and hard to achieve in the care sector.

Thankfully new technology offers care business owners real opportunities to measure, monitor and control electricity usage, and an even wider range of energy efficiency products offer the opportunity to reduce consumption. →



→ MONITORING AND TARGETING

There are lots of new (and old) products to help reduce energy usage. eM&T (Monitoring and Targeting) technology enables energy usage to be visualised in real time, across a business, over time, by equipment type, and a whole host of other parameters designed to present a clear picture of where money is spent. This helps to highlight how much energy is being used and any problem areas, such as unnecessary equipment left on overnight.

Payback periods for this type of system typically are under 18 months.

REDUCING USAGE

Voltage Management and VSD's (Variable Speed Drives), are examples of new technology designed to reduce usage. Voltage Management can offer savings on most equipment in a care home, whereas VSD's are applied to specific plant equipment.

Both promise savings but in each case it is recommended that potential suppliers conduct a thorough site survey to ensure savings will be delivered – and ideally guaranteed.

VOLTAGE MANAGEMENT

In late 2011 the Carbon Trust published a clear explanation of the benefits of Voltage Management, how it works, and prescribed a methodology on how site surveys should be conducted – essentially rubber stamping this as a viable and proven way to reduce energy costs. This has developed a minimum standard for the industry and has really helped potential customers understand what Voltage Management is all about and how it is, or is not, applicable to their needs.

There are two basic types of system under the heading of what is Voltage Management. Whether in its simplest form Voltage Optimisation (VO) or in its more effective and technologically more advanced format Voltage Optimisation plus Regulation (VO+R), both can deliver significant savings.

Therefore, this means Voltage Management works because most incoming UK voltages are not at the 230V we expect, but fluctuate across a range between 216V and 253V, and vary during the day too.

To determine whether it will work for a particular site, a detailed survey will need to be conducted. It will need to include at least a week-long mains voltage and load analysis, together with a full and comprehensive site survey detailing which

electrical assets on the site will respond to Voltage Management and which will not.

This comprehensive mains analysis will detail a whole host of characteristics of the site which basic voltage loggers cannot do. The minimum analysis should include the following: nominal voltage, voltage swing, power factor, load imbalance, peak in rush current, voltage drop across the site. In essence a full evaluation of the voltage and load profile. Only with this information is it possible to determine the correct system size requirement.

VOLTAGE DEPENDENCY

But of course it is not as simple as that as savings are only available from certain types of electrical equipment. There are essentially two types of electrical equipment – those that are Voltage

VARIABLE SPEED DRIVES

Another option is Variable Speed Drives (VSD's), which control the speed of electric motors and produce savings by adjusting the motor's output to reflect more closely the demands at the time. This can offer shorter payback periods of six to nine months upwards.

Energy saving is achieved because the VSD's adjust the speed of the motor so that for example when there is no requirement for it to run at full load – it doesn't, saving you money.

Again it is important that a full site survey is conducted to make sure the proposed solution is appropriate to each specific site and specific needs.

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Dependent and those that are Voltage Independent.

Voltage Dependent devices consume power proportional to the supply voltage - the higher the voltage the higher the power consumption – and if the voltage is reduced less electricity will be used. A one per cent decrease in supply voltage will cause a two per cent reduction in power demand - saving money.

Voltage Independent devices however, are designed to consume energy regardless of the supply voltage and with these savings are not possible. Savings are possible on Voltage Dependent devices – and not on those that are Voltage Independent.

Determining what these savings could be for a business requires an evaluation of the mains voltage and load profile. It is only by doing this that a proposed solution will confidently be considered ‘fit for purpose’.

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BEMS

BEMS (Building Energy Management Systems) provide control of plant equipment and the environmental conditions within the buildings.

As a core function most BEMS control heating and cooling and overall air distribution and can help building owners not only more closely manage their environment but help to reduce energy usage dramatically.

There is clearly much that can be done to reduce electricity usage and offset rising energy costs. A new range of technological solutions are becoming available to the care sector, and with the correct advice these will offer some comfort against spiralling costs.

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