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Northwest Products and Services

IN THIS ISSUE:

Motors and Drives

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Energy Efficiency - Motors and Drives

Dave Hall – Managing Editor

Motors are estimated to consume two-thirds of the electrical energy used by industry, in a time of increasing fuel prices this means that even the most modest of improvements in efficiency can equate to significant cost-savings. Our lead article demonstrates the significant saving potential of investing in an efficient system – over £400k year on year in this instance!

Often the costs associated with running motors are vastly underestimated, a fully-loaded motor can cost between £1000 a year for a 2.2kW motor and £18,000 a year for a 37kW one. It is for this reason that the current issue of Energy Efficiency NoW focuses on motor and drive technologies. It showcases some of the technologies available from Northwest suppliers, highlighting examples of installations which demonstrate the benefits of more energy efficient systems.

If you are looking to source energy efficient products and services the North West Energy Forum Annual Conference is the perfect opportunity. The half-day conference will be held on the 27th November at Manchester Central and will include an exhibition of the latest energy efficient and microgeneration technologies from across the region. For more information, or to register for your free delegate entry please visit www.nwef.net.

Energy Efficiency NoW continues to receive positive feedback from both end-users and energy efficiency suppliers of products and services. We are determined to build on the success of the past 3 years and are actively seeking case studies from Northwest suppliers which demonstrate the business benefits and bottom line savings of energy efficiency measures. If you would like to be considered for inclusion in the next edition of Energy Efficiency NoW please do not hesitate to contact us.

foreword

The Rights & Wrongs of Variable Speed Drives

Variable speed drives may be the right energy saving solution but attempts to calculate total lifetime costs may be simplistic and wrong. Steve Barker, Energy and Power Quality Manager at Siemens Automation & Drives offers a warning to those who may be tempted to use ‘simplistic’ measures of efficiency and demonstrates how one UK glass manufacturer achieved a £400k saving using VSDs.

The massive increase in energy costs in recent years has led many UK manufacturers to investigate the use of variable speed drives (VSDs) for a variety of applications from cooling fans, pumping schemes, compressors, conveyors through to high performance positioning systems.

However, there have been increasing concerns that some companies are using crude and incorrect criteria as a means of comparing life cycle cost of different drives. By crude attempts, I mean companies are considering VSD efficiency values, quantities of each rating and operating hours before multiplying this information with electricity cost to achieve at “total operating cost”. The operating cost across the lifetime is > 99% of the total cost which leaves the purchase price at much less than 1%.

However, this calculation is completely incorrect, ignoring the reality of manufacturer efficiency figures and missing the whole point about “system efficiency” – namely that it is very easy to improve the apparent efficiency of the drive, but this is usually achieved at the expense of motor efficiency and may well reduce the overall efficiency.

From my point of view, as an individual who makes his living advising companies on energy efficiency techniques, the really shocking point is that some very large users have managed to convince themselves that this factually incorrect calculation is a correct and rigorous technique, despite the fact this totally avoids any semblance of factual accuracy.

The root cause of the problem is that many large users are misusing manufacturer catalogue efficiency data. A recent report by the University of Nottingham concluded that “the efficiency figures quoted by manufacturers of voltage source inverters are not accurate enough to allow for a direct prima facie comparison between products with any degree of confidence”.

There are numerous reasons why manufacturer stated values of efficiency cannot be directly compared to one another and therefore cannot be used to calculate relative lifetime cost.

Firstly, no standardised method of efficiency for inverter driven systems exist and therefore it is impossible to compare data from different sources. Efficiency measurements can also be artificially influenced, by switching patterns for example.

Consequently, manufacturers usually model/estimate the losses in the separate components of a voltage source inverter and then sum them to get a figure for overall power loss. The complexity of the various loss mechanisms in an inverter inevitably lead to an estimate of efficiency that is not accurate enough to allow for a comparison between products.

Secondly, inverters are inherently efficient devices with circa 2 - 3% losses being typical across most manufacturers. Fundamentally, the more efficient a system the harder it is to measure its efficiency or loss accurately. This is because conventional techniques, such as direct measurement of input and output electrical quantities rely upon calculating the difference of two very similar numbers.

As previously mentioned measures to improve inverter efficiency may reduce motor efficiency and therefore total system efficiency. Also instrumentation types, such as transducers and monitors, can greatly affect measured results – far in excess of expected tolerances.

It is also worth noting that input / output methods are only useful for comparative measurements (not absolute values) and attendant system disturbances, such as power frequency harmonics, greatly affect any measurement systems. Products with the lowest intrinsic efficiency (eg “AFE active front end” devices) may actually provide the highest system efficiency due to elimination of harmonic losses.

Finally, the cost of purchasing equipment being used in crude calculations can be misleading as the capital cost of an inverter is negligible compared to the cost of energy consumed over a 10 year lifespan subject to a high duty cycle of use. Furthermore, in industries with high downtime costs, reliability is crucial and the effect of one fault could result in a financial cost significantly more than the purchase cost of the inverter.

The danger of such simplistic lifetime calculations is that the real factors which affect energy efficiency and lifetime costs are ignored and such calculations are open to exploitation by unscrupulous suppliers.

Which begs the question, why do manufacturers state efficiency figures at all? In short, a measure of the heat loss of the VSD is necessary to allow panel manufacturers to provide the correct cooling and airflow arrangements to prevent excess temperatures inside the cabinets. This is the only purpose of stated VSD efficiencies.

Such arguments offer an unwelcome distraction from the real benefits - unlike high efficiency motors, the benefit doesn't derive from the product efficiency. The whole point of adding a VSD is to vary the speed of the load resulting in energy savings due to reduced mechanical power demand. Engineered correctly, the savings will be an order of magnitude greater than the intrinsic VSD losses!

Efforts to increase overall efficiency should concentrate on overall system issues. This involves matching of all components to the required load characteristics (especially pumps), motors and the necessary torque / speed profile. Careful attention must be addressed towards correct system co-ordination and the attendant compatibility issues.

Experience also shows that installation, commissioning and maintenance remains a major issue in achieving continuing levels of high efficiency.

Anecdotal evidence from one large UK utility company suggests that efficiency gains of up to 8% were obtained by simply re-checking the correct installation and commissioning of VSD systems. Also, many UK water companies continually suffer from the extremely expensive effects of incorrect system co-ordination.

It is clear therefore that whilst being arithmetically convenient, it is totally misleading and incorrect to compare inverter efficiency values. The only sensible approach is to apply technically rigorous engineering solutions to achieve "best practice" system efficiency.

Variable Speed Drives Case Study – UK Glass Manufacturer

A typical example of the energy benefits that can be derived from VSDs is demonstrated by a UK glass manufacturer which retrofitted VDSs to 15 fans.

The company recognised an opportunity to make significant energy savings by fitting VSDs after identifying a power quality problem at its site, which was resulting in power transmission problems to nearby housing, including the flickering of interior lights and suffering from the debilitating increase in energy costs of recent years.

Glass manufacturing is a very competitive and energy intensive industry and this particular manufacturer had suffered an increase in energy costs of £5 million during the course of one year.

The Siemens solution to the problem did not merely involve prescribing new equipment but also involved consultation on power quality regulations, a survey of the entire site and professional payback calculations for the installation of any new equipment which involved the installation of a complete VSD / motor solution for 15 fans.

The end result was that the company not only solved its power quality problems but also saved 22, 000 kWh per day giving c.£400k saving per year. The entire cost of the variable speed drive system including installation, motor modifications and power quality measures was paid for within ten months.

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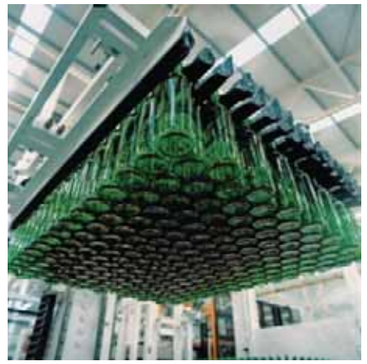

New motor enables OEMs to offer customers significant energy and space savings

Manufacturers of pumps, compressors and fans will soon be able to offer their customers significant energy savings with a new motor from Lafert that employs permanent magnet motor technology. With the ability to reduce running costs by up to 80% compared to conventional AC induction motors, the new motor gives OEMs the opportunity to design pump/compressor solutions that offer their customers the potential of ongoing savings to combat energy costs that are increasing at an unprecedented rate.

In addition to the energy savings, Lafert's new 'HP' (High Performance) motor achieves reductions in frame size and weight reduction thereby helping to minimise space and load penalties by as much as 50%.

The HP motor offers substantial efficiency advantages over EFF1 and even Premium efficiency motors. This is exhibited across the whole speed range and under variable load.

This is because as with the brushless, permanent magnet motors, the rotor of the Lafert HP motor has no losses. Also, stator currents are lower, consequently generating lower losses due to low current demand (Joule effect), which in turn results in reduced temperature rise for both the windings and bearings. These low temperature rises can go on to eliminate the need for a cooling fan and its related losses. Ultimately, the sum of these minimised heat gains provides the options of higher running speeds or extended bearing life.

The new High Performance motors from Lafert are available for both single and three phase supply with ratings 0.75 – 2.2kW, 200 – 240V 50/60Hz and 0.75 – 22kW, 380 – 480V 50/60Hz, respectively.

The High Performance motor can be used with a standard servo drive when fitted with an appropriate transducer but, ideally, it should be used in conjunction with a sensorless drive developed by Lafert Drives to maximise the motors performance and superior efficiencies for the specific application.

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Vacon and Ralspeed help drive energy savings

Vacon and Ralspeed have joined forces to offer energy efficient solutions based on variable speed AC drives. The partnership offers free site surveys, energy saving calculations and complete solutions to tackle climate change.

Using variable speed drives (VSDs) to control the speed of motors on pumps and fans delivers big energy savings in industrial and commercial applications. VSDs enable more cost effective production, reduce the carbon footprint and play a part in meeting government emission targets. Despite this, less than one in ten electric motors in the world is fitted with a VSD, whereas there is financial justification for using a VSD with at least one in three electric motors. Energy savings of up to 50% can easily be achieved in pump and fan applications and in addition Vacon drives are relatively simple to install and retrofit thus give excellent payback periods.

The partnership between Vacon and Ralspeed offers customers from all industrial segments the opportunity to see how energy efficient drives can reduce energy usage and cut their energy bills. The collaboration will benefit an array of different businesses, including hospitals, supermarkets, banks, airports, water treatment sites, offshore oil and gas applications and manufacturers.

Visit **www.vacon.co.uk** or **www.ralspeed.com**

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Ex-Or offers complete range of lighting management and control systems

Ex-Or, the lighting controls company recently acquired by Honeywell, offers a complete range of energy and cost-saving lighting controls and managed lighting systems for both newbuild and refurb commercial property projects.

Architects, lighting designers and electrical consultants are choosing Ex-Or LightSpot controls which automatically detect the presence of occupants and monitor levels of daylight to automatically switch lights on when needed and off when they are not.

LightSpot utilises all three major types of presence detection technology: passive infrared (PIR), ultrasonic and microwave. As each is suited to a different type of application or pattern of usage, there is always a perfect LightSpot control solution, whatever the application.

For flexible, building-wide lighting control there is the Ex-Or MLS Digital Managed Lighting System. Operating via a network of communicating detectors, the system delivers energy savings via presence detection and daylight regulation. Detectors share information on occupancy and light levels to provide lighting tailored to the needs of occupants – and in conveniently configured work zones.

These operational zones can be set up quickly and easily using a hand-held programmer; there is no centralised computer. Settings and lighting configurations can be changed again just as simply whenever required. To enhance safety and comfort, lighting in key circulation areas can be held on automatically when any other programmed zone is occupied.

Whether specifiers choose LightSpot or MLS, the benefits of lighting management from Ex-Or are clear. It dramatically cuts energy use, so reducing energy bills and helping to cut the building occupiers' carbon footprint. It ensures compliance with legislation such as Part L of the Building Regulations. As the amount of light is automatically set at optimum levels it delivers the most productive working environment for the building's occupants.

The Ex-Or lighting management and control offering is complemented by systems providing scene-setting and dimming, emergency lighting testing, washroom management and quick and simple plug-in connection.

For more information visit www.ex-or.com.

Efficiency in the workplace is a breeze

By Clive Pimlott – MD of ACP&D Limited

Traditionally relatively small diameter high speed fans have been used to cool large and small premises. Originally they operated at fixed speeds. Later for many applications these 'conventional' fans were often driven by a.c. variable speed drives (inverters) as fans invariably operate under a 'cube-law' characteristic and by throttling back a fan from it's nominal 50Hz speed a significant energy saving could be made. In large buildings such as warehouses, bus stations, cow sheds, etc. there are normally many of these 'conventional' fans sometimes approaching three figures in large buildings.

A more recent development in this field is the introduction of the HVLS fan (High Volume Low Speed). Through various studies undertaken by a number of research bodies (NASA being one of them) it was established that the traditional 'conventional' fans are actually very inefficient as they create narrow turbulent columns of relatively fast moving air. The turbulence produced is very counterproductive and it causes the small column of air to be dissipated over a relatively short distance from the fan. This is why large numbers of 'conventional' fans are required in large buildings and why you often see them mounted on the walls where the buildings roofs are quite high.

In contrast to the conventional fan the concept behind a HVLS fan (or MegaFan) is to move large amounts of air slowly. The MegaFan achieves this by having a very large diameter (typically up to 24 feet) and a high number of blades (typically 8 or 10). What the designers of the HVLS technology discovered when it comes to the effective movement of air around a building, the displacement (the volume of air that is actually moved through the fan) is of no real significance. By moving a lot of air very slowly, the MegaFan creates a quiet, less disruptive airflow and makes for highly energy-efficient fan.

The profile of the blades on the MegaFan is critical and much of this design work was undertaken at NASA. Their studies took into account the physical laws of air movement that conventional fan designs just ignore. The relationship between speed (r.p.m.), diameter, aerofoil shape and the resultant size and momentum of the fan's air column yield exceptional efficiencies. The fan produces a soft, cooling breeze that is effective in mixing the air in the plant. Wind speeds are only around 3 mph (less than walking speed), producing a breeze of nearly 300 feet per minute. A HVLS MegaFan can replace up to 25 conventional fans however the running costs of the MegaFan is often same as a single conventional fan! The resultant gentle air flow of a MegaFan is ideally suited to manufacturing and warehousing facilities.

Workers feel cooler and happier about their working conditions; management can keep productivity and morale high, while minimizing energy costs.

This highly efficient product is not solely used in industry it's used in many sectors including the agricultural sector. Farmers have long known that a cool cow in the summer is a happy cow and happy cows produce more milk. Also a knock-on effect of the air movement produced by the MegaFan in the cowshed was that the number of flying insects in the shed were radically reduced which brought down the sickness levels in the cattle. Yes there are many ways to measure efficiency!

Facility energy savings with MegaFans can be realized all year round. During the summer months, still, stagnant air in hot working environments causes employees to work more slowly and to require more frequent breaks. In the winter, cold, damp work spaces also adversely impact worker output. In the summer, MegaFans generate gentle breezes within the entire facility, cooling workers, improving air quality and most importantly, keeping people on the job. In the winter, destratifying, or thoroughly mixing, air in the facility means that air from heaters and operations does not become trapped at ceiling level (an effect that conventional fans can have), and cold spots on the floor are eliminated thermostats can be lowered because workers will be more comfortable at lower settings when the MegaFans are operating. It has been found that adjustments of the thermostat can achieve energy savings of 3-5% for each degree of change which is a significant amount in these energy-conscious times.

It is however important to remember that the fans don't drive themselves, they are driven by ac variable speed drives (inverters) and it is the inverter and it's operator interface which enables these systems to be installed and to operate at optimum efficiencies.

One well known UK supermarket store chain recently took a new approach when they were building their new warehouses when they decided to incorporate a bus bar system throughout the

buildings as they were being built. They foresaw this as an important first step in their efforts to be more energy efficient, ...well 'every little helps'. The presence of the bus bar system enabled each of the subsequently installed MegaFans in the buildings to have their own individual small inverter (usually 0.75kW) mounted in close proximity to the fan in the ceiling area. More importantly the inverter only required to be supplied from short length of 1.52mm power cable as opposed to a 102mm of SWA (Steel Armoured Cable) which would have had to have been used due to the voltage drop which would have occurred when the inverter was mounted on the warehouse floor, sometimes over a hundred metres away. The bus bar system saved almost two kilometres of SWA cable in the installation of the MegaFans which gave a huge saving in installation costs.

Mounting the inverters in close proximity to the MegaFans has been made possible by the ability of the inverters to operate remotely via a serial interface. The newly launched Mitsubishi E700 inverters have CANbus available and RS485 as an option and have proved ideal for this type of installation (see http://www.acpd.co.uk/mitsubishi-e700-inverters.html for further details). Using a serial interfaces to control the inverters has enabled HMI (Human Machine Interface) screens to be incorporated in the operator area. These Mitsubishi E1000 HMI units enable the building, fans and inverters to be represented graphically and in this graphical representation the fans can be controlled individually or in groups as desired. Up to 32 MegaFans can be controlled from a single screen. This graphical representation is simpler for operators to use and give a degree of control which keeps the building air flow at optimum efficiency.

Access to the various levels in the system can also be password protected with the HMI screens so individuals with a 'low level' authority cannot enter areas of the system requiring a higher authority thus safeguarding the system from accidental or malicious misuse. Use of the HMI also enables: advanced monitoring of the fan status; speed; current; fault history; link to BMS fire alarm; and monitors the service history, giving an indication when a service is required a requisite number of operating hours, which when adhered to, keeps the whole installation operating at optimum efficiency levels.

Finally as we are now in the 21st Century the HMI can even offer monitoring of the fan network over the internet so engineers could problem solve from half-way around the world if necessary rather than taking expensive and environmentally unfriendly journeys to ascertain fault diagnosis. This really is a new age of efficiency for airflow systems in large buildings.

For more information on MegaFans, inverters and HMI screens please visit www.acpd.co.uk or ring +44(0)161 343 1884.

digitalenergy™ approved for the production of Display Energy Certificates and Advisory Reports

Developed to assist public sector organisations meet the requirement to produce Display Energy Certificates (DEC's) and Advisory Reports (AR's), digitalenergy became the first independent software solution to be approved for the production of operational ratings.

Actual Screenshots

With October 1st looming for occupiers of public buildings with floor areas greater than 1000m² time is of the essence. At the recent 'Countdown to DEC' events organised by Asset Skills and Communities and Local Government speakers from CLG, Faber Maunsell and i-Prophets energy services addressed the concerns of the people responsible for some of the 50,000 buildings requiring certificates

Specialists i-Prophets energy services designed the online approach as a user friendly, intuitive solution to the preparation of DEC's and AR's in large or small quantities. As a completely scalable solution it enables information to be collated in a common portal, enabling a co-operative approach to the production of certificates and reports. Lodgement and quality of documents remains the responsibility of the accredited energy assessor but digitalenergy enables a simple approach for the assessor to enlist the support of others.

"In typical buildings information resides in different departments, with different people safeguarding it. Using digitalenergy as a common framework information can be collated much quicker and assembled ready for calculation of the operational rating" said Richard Hipkiss, Sales and Marketing Director, "The approach not only makes year one easier but it takes a forward thinking approach to the renewal of certificates, organisations do not need to panic again next year!"

The approach is unique in that on the creation of a new DEC a building logbook is created for the building enabling an audit report to be created during the initial assessment period that can be maintained and updated throughout the year and support the drive for a lower operational rating in subsequent years.

A certificate requires the display of a simple A to G rating of assessed buildings energy efficiency, with a previous two years history to enable performance to be visible to the public. In the online format digitalenergy goes one stage further with the visualisation of an entire portfolio of buildings with three years history, enabling a quick comparison for decision making.

Creating a structured approach to the process of creating not only the certificate but also the advisory report digitalenergy creates a streamlined end to end process. From creation of the building with a unique property reference number (UPRN) to the automated lodgement of the certificate and report with the accreditation scheme at the click of a button, production of documents can be carried out in a positive manner to enable Facilities and Energy Managers to get back to concentrating on the reduction of energy usage.

"With its work flow approach digitalenergy will enable the processing of multiple buildings requiring DEC's at the same time making the 1st October an achievable date event for authorities with large numbers of buildings" said Richard Hipkiss.

digitalenergy is available from i-Prophets energy services (**www.i-prophets.com**) or via approved partners.

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Next Generation powers cost and carbon savings

Leisure group Next Generation, which now incorporates David Lloyd Leisure, will save £900,000 and cut carbon emissions by 16,060 tonnes annually following a major green energy deal with UK-based cogeneration specialist Ener-g.

Ener-g will install and maintain all Next Generation and David Lloyd's combined heat and power (CHP) requirements over an initial five-year period. This is part of a 20-year energy efficiency programme designed to reduce the leisure group's long term energy costs by £18 million. Projected carbon savings to 2028 amount to 321,200 tonnes.

Contracts with individual leisure clubs are to be run on a discount energy purchase basis, where Ener-g provides the CHP system, installation, and maintenance for free and sells electricity generated at low cost. Typical savings compared to grid prices are more than 30 per cent, with an average club cutting its annual energy bill by £15,000. This enables customers to take advantage of lower energy prices and reduced emissions without needing to wait to find capital, making low carbon projects immediately achievable.

Next Generation and David Lloyd joined forces following a £925 million deal in June 2007 aimed at creating the UK's leading racquets, health and fitness club group. The enlarged business operates 77 clubs in the UK and a further 10 sites across Europe, with two new clubs due to open soon.

Ener-g is well placed to build on its existing success after working with David Lloyd for seven years and Next Generation for five years. Currently, 36 Ener-g units are installed at David Lloyd centres, with two replacements in the pipeline, while ten Next Generation clubs are fitted with Ener-g CHP technology. Ener-g will install CHP technology in at least two new build clubs over the next five years and initially retro fit CHP into a further ten.

Energy services consultancy B2B Energy Limited was instrumental in bringing the deal to fruition by working closely with both Next Generation/David Lloyd Leisure and Ener-g to produce a feasibility analysis demonstrating the effectiveness of CHP technology to the leisure group's commercial activities. B2B's continuing role involves its web-based product Energy Impact monitoring gas, electricity and water usage to maximise the efficiency of CHP units across the entire Next Generation/David Lloyd Leisure estate.

Under the new contract, CHP will be installed across the majority of the group's clubs – generating an expected total annual electrical output of 73,000,000 kWe and a heat output of 114,815,530 kWh each year.

CHP technology enables leisure centres to generate their own electricity, radically reducing carbon emissions. This method is highly energy efficient as it recovers heat created in the electricity generation process and avoids transmission losses because the energy is generated locally. In conventional power stations this heat is wasted because it disappears into the atmosphere. Instead, Next Generation and David Lloyd centres will use it to provide heating and hot water.

Commenting on the contract, Martin Kinnaird, group project/facilities manager said: "At a time when environmental management issues are increasingly at the heart of commercial decision-making, this CHP agreement with Ener-g Combined Power harnesses substantial bottom line benefits with the need to reduce emissions. Our new contract with Ener-g underscores the unique, long term relationship between our two companies and means that we have a powerful springboard to launch this enterprising and forward-looking initiative."

Ener-g Combined Power managing director Alan Barlow added: "Next Generation's forward thinking approach to energy efficiency will pay both commercial and environmental dividends. The intention is to work together with the management team to make installation of CHP systems simpler and more cost-efficient, either during construction or soon afterwards. The cost of installing CHP systems will be picked up by Ener-g as part of the contract."

All round energy management solutions

Responsibility for the energy used in their buildings has come to the top of the agenda for every commercial building manager and owner. This is the result of new certification coming into force from April 2008 – Energy Performance Certificates (EPC's) and Display Energy Certificates (DEC's).

The EPC's are certificates that measure the energy performance of a building's fabric and its services, based on its design. They do not demonstrate actual energy usage. This is taken care of by the DEC's that show actual energy use and help the public see its energy efficiency. DEC's apply to buildings occupied or part occupied either by a public authority or an institution providing a public service to a large number of persons and have a total useful floor area of over 1000m^2.

Therefore the pressure is on to make continuous energy savings and this must be achieved through effective building management. Systems that track the energy performance of a building in real time can identify all areas where there is need for improvement, allowing the owner (occupier) to take steps to further improve energy efficiency. How to find the best building management system and how to fine the most effective long-term solution to controlling energy usage is the challenge.

In short, what is the most effective way of achieving A-rated commercial buildings on a continuous basis?

Paul Murphy of Forum Technik who are KNX automation specialists has found major commercial building owners and occupiers are rapidly accepting the KNX Standard as the best available technology to achieve maximum energy efficiency. It has a number of advantages over alternative solutions. For example, at a time when BEMS are expected to be even more widely employed, it has the ability to be integrated with any type of BEM thanks to its open protocol OPC Gateway. Once this integration has been achieved, the other advantages of KNX come into play to bring local and zone control to every area of a building.

The over-riding advantage of KNX is that it provides a holistic approach to efficient energy usage. It is not limited to lighting or heating or metering or appliances or A/V any other specific function - the KNX platform has been adopted by many and highly respected major manufacturers with their vast choice of products covering all these product lines. In the longer term, this is also important to building owners, as any installation is future proofed. Choose a proprietary protocol from a single manufacturer or integrator and you are beholden to that company and its technology and this could be problematic during the life cycle of a development. With KNX, in the event of a certain product no longer being available, there will be an alternative to replace it.

A number of manufacturers have also developed 'gateways' to other control protocols, such as DALI (Digital Addressable Lighting Interface). These simple devices are used to expand the capability of KNX control systems to provide the complete solution for a building. KNX has also worked closely with management-level protocols such as BACnet to enable a close co-operation between these two standards when the project requires additional integration.

Consultants, specifiers and end users looking for an open solution for building control applications are increasingly heralding KNX and recognising the drawbacks of proprietary solutions or various hardware-based controls.

With the pressure on energy management, it is vitally important to make the most effective use of energy. For instance, a lighting control system can be simply configured to only put the lights on when someone is present in the room, and can monitor natural daylight levels to dim or turn the lights off when enough ambient light is present. A very simple example of preserving energy, but drive through any town centre or industrial estate at night and you will see that there is an awful lot of energy that could be preserved by employing these simple measures. Effective use of lighting control alone can result in highly significant energy savings and when integrated with shutter and blinds controls, solar panels, façade management and effective monitoring, there are potentially massive savings.

The beauty of KNX is the ability to seamlessly add more energy saving functions that work away in the background and go largely unnoticed. What is more, KNX is distributed technology so in the event of failure of one element of building services, the rest carries on regardless.

KNX is accepted throughout the world from China to the United States as well as Australia and the Middle East. Paul Murphy believes KNX is "Europe's best kept secret", so advanced are many of our neighbours in embracing its capabilities. It is even taught in schools in Germany! The UK is now also embracing KNX in many landmark developments and refurbishments from T5 to the British Library, the Passport Office to Bridgewater Place.

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Why a basic energy audit could prove the saviour of UK industry

During an initial meeting the audit engineer takes a look at the inventory of motors contained within a plant.

As energy prices continue to escalate and firms are pressured into attempting to reduce their carbon footprint, there has never been a better time for industry to consider the merits of variable speed drives and high efficiency motors. One of the world's leading manufacturers of such products, ABB, has developed an energy audit that quickly and accurately pinpoints the potential savings in an industrial plant.

A variable speed drive (VSD) and electric motor combination, when used to control the speed of pumps and fans, can reduce the energy bill of these applications by some 70% with a payback in less than 12 months. Equally impressive is the impact on carbon emissions.

And yet a survey of British manufacturing managers with engineering roles has revealed that they do not regard VSDs as being the best way of cutting their companies' energy bills. The survey, conducted for ABB, reveals that the 67 engineering managers surveyed placed VSDs at the bottom of a list of the ten most effective measures for cutting energy bills.

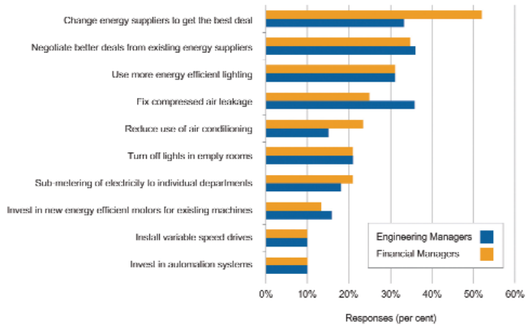
Joint top of the list were negotiating better prices with their company's existing energy suppliers and fixing compressed air leaks. The engineering managers also gave high ratings to changing energy suppliers and using more efficient lighting.

The survey, conducted for ABB last year by Benchmark Research, also included 52 managers with financial and accounting roles. More than half of them believe that changing electricity suppliers is the best way to reduce their companies' energy costs. The chart (overleaf) shows the favoured methods for cutting energy bills for both the engineering and financial managers.

ABB had expected the survey to show significant differences in attitude between the financial and engineering managers, with the latter appreciating the role that high-efficiency technologies could play in cutting energy bills.

The financial managers believe that clamping down on visible waste, such as inefficient lighting and compressed air leaks, is important. Investing in equipment that makes industrial processes more efficient came at the bottom of their list.

"This list is back to front," says Ruddell. "Making industrial processes more efficient can save much more than the other methods, but financial managers are simply unaware of the savings they can make. Most companies can save thousands of pounds worth of electricity and some can even save hundreds of thousands of pounds by upgrading existing processes, often at comparatively low cost.



A survey, conducted for ABB last year by Benchmark Research, of British manufacturing managers with engineering roles revealed that they do not regard VSDs as being the best way of cutting their companies' energy bills

"Changing electricity suppliers is not going to make much difference at all in a market where prices rise across the board," he adds. "In addition, this does nothing to reduce the company's carbon footprint, which also ought to be a priority."

The results of the survey are even more surprising when the amount of marketing by the largest VSD manufacturers over the past decade, targeted at the engineering community, is taken into account.

ABB is in the vanguard of energy promotion, launching in 2004 its award winning 6-step energy saving plan.

6-step energy saving plan

The plan documents six basic steps towards understanding and planning an energy saving campaign.

Step 1. The facts:
Gives an insight into the latest thinking on the Climate Change Levy and UK government actions to encourage greater energy savings.

Step 2. The savings:
In just half-a-day, an energy audit can help identify the applications that offer the best energy saving opportunities.

Step 3. The finance:
Offers information on how to finance a drive purchase while still benefiting from the government's Enhanced Capital Allowance.

Step 4. The products:
Guides the end-user through selecting the best motors and VSDs for specific applications in order to secure the substantial savings possible.

Step 5. The proof:
Gives examples showing how industry has benefited from using VSDs and motors.

Step 6. The action:
Gives advice and further contact information at ABB and its extensive UK channel partner network.

Energy saving audit

At the heart of the 6-step plan is ABB's energy audit. On a typical industrial site with a £150,000 annual electricity bill, £100,000 will be spent on running motors. For example, are any motors or fans running on full power all the time when they could be driven by demand?

The answer is a professional energy audit. An audit provides a good opportunity to look at a plant's energy use and see where savings can be made.

Undertaken by a trained engineer, an energy audit will identify those applications that would most benefit from the introduction of VSDs. The results, based on measured data from the application, will help a user target their investment so that it produces the highest possible savings and gives the best return.

ABB has devised a very simple and methodical energy audit that presents the customers with hard, compelling facts about the energy they can save.

An effective energy audit will have several characteristics. These will generally include:

1. Outlining the scope of supply
During an initial meeting the audit engineer takes a look at the inventory of motors contained within a plant.

Energy surveys are most suitable for processes involving motors of 11kW or higher, used on large pumps and fans. This is where the savings from a VSD really start to look good compared to the investment cost. The ideal size, which gives the greatest savings and thus the shortest payback period, is between 22 and 90 kW. Often payback times of two years and below and sometimes under one year, can now be achieved.

ABB meets the end-user and outlines the benefits of the audit in detail, together with any assistance the end-user might need. This could include information on access to equipment and help in setting up and connection of meters. They will also be interested in anything unusual that might affect the energy profile during the audit.

Research shows that much of the information in the market place on energy efficiency and the Climate Change Levy is confusing to the end user. So ABB devised a very simple and methodical approach that presents the customers with hard, compelling facts about the energy they can save.

General Domestic Appliances Ltd saved £17,000 on its annual energy bill

Following an energy audit at one of its pumping stations, West of Scotland Water expects to make savings in electricity costs of £80,000

2. Collecting the data
The data collection phase is an active phase. It involves an on-site audit with selected fans and pumps, to determine operating parameters such as voltage, current and power factor and the energy being used. This stage will usually be performed over seven days to gain a complete picture of the plant's typical energy use. The energy auditor will look, not only at the fixed speed drives, but also any VSDs used, to see if the application is running at maximum efficiency.

The end-users own staff may become involved at this stage although different auditors have different approaches. Some will train on-site staff during the initial appraisal, others will do this subsequently. In either case the aim is that the site staff should be able to perform subsequent energy audits with minimal support.

3. Analysing the data
Following the collection of the data, the findings will be analysed and potential savings identified using dedicated software. The findings will be methodically presented - often tables or graphs will be created to help see where savings are likely to arise.

4. Recommendations
The action plan will then be prepared, usually comprising an Executive Summary and a detailed engineer's report, highlighting applications that can save the most. The figures will normally be translated into monthly savings, and there will be detailed recommendations for fitting particular VSDs or motors. Often the recommendations will show that VSDs can provide excellent savings in particular applications. The report should also clearly show the expected payback time on fitting new equipment.

5. Implementation
While not strictly part of the audit the aim is that the recommendations should be fully implemented. Once new equipment is fitted it is normal to track the actual savings against the predictions shown in the report. This will also help justify the investment in VSDs.

6. Benefits
An energy audit carried out by ABB or one of its channel partners brings the following benefits:

- Clearly identified energy savings
- Complete audit results and energy saving calculations
- History of other audits and associated energy savings
- Proposed payback times
- Degree of customer training given as part of the process

There are also other aspects to consider, for example whether financial options are available and if your supplier offers a replacement drive scheme.

Carbon emissions calculator

More recently, ABB has added another tool to its 6-step energy saving plan.

As carbon emissions take a higher priority on company boardroom agenda's, ABB has developed a simple to use and understand carbon footprint calculator. "Again we are trying to simplify the message and get it into the boardrooms, particularly with the finance guys," explains Ruddell. "Our on-line calculator shows how an organisation can reduce its carbon footprint by using VSDs to control its motors. The carbon savings are also translated into car and air miles to give a more human equivalent as to what carbon dioxide actually relates to."

The user enters a motor's rating, and the calculator shows the energy savings in kWh, as well as the monetary savings, the cost of a suitable drive, and the payback time.

"Quantifying the carbon footprint helps organisations to manage their footprint and reduce emissions over time," says Ruddell. "But motor energy use is frequently overlooked, despite being the largest are of electricity use in industry.

"There are already many carbon calculators around but none, as far as we know, that addresses this huge area of energy use," says Ruddell. "Our new calculator aims to plug a huge gap in the market."

The carbon calculator can be accessed via www.abb.co.uk/energy

Audits in action
General Domestic Appliances

It was just such an energy audit that produced spectacular benefits for a cooker factory, saving £17,000 on its annual energy bill.

ABB's Carbon Calculator also translates the carbon savings into car and air miles

General Domestic Appliances Ltd, in Stoke-on-Trent, Staffordshire, makes 12,000 cooking products a week for its market leading Creda, Hotpoint and Cannon brands. Because of the increased energy costs that would soon be imposed by the Climate Change Levy, the company decided to look at the energy consumption of its wet fume plant, which extracts waste vitreous enamel from four paint booths. Some of the booths were not in constant use and were closed off by a mechanical shutter, yet the 132kW fan used to extract the waste enamel was run at a constant speed, wasting energy and money. GDA asked ABB Drives Alliance partner, Central Electrical, to conduct an energy audit on the plant.

GDA's Plant Engineer Andy Rowe says: "Central Electrical's report concluded that the fan would consume £30,000 of electricity per annum if nothing was done. They estimated we would save approximately £16,000 on the energy bill for the wet extraction plant in the first year if we adopted their recommendation of an ABB industrial drive. In fact we saved £17,000 and achieved a payback period of only four months."

West of Scotland Water

Following an energy audit at one of its pumping stations, West of Scotland Water expects to make savings in electricity costs of £80,000.

The Lomond Street Wastewater Pumping Station in Helensburgh has more than doubled its efficiency since two ABB industrial drives were installed by ABB Drives Alliance partner EDC (Scotland) Ltd. The drives will save at least £80,000 in electricity costs over a 20-year life span whilst minimising the risk of overflowing, as pump throughput has been increased from 14 to 30m³ per kWh consumed.

"Indications are that the electricity consumption has been reduced by 48 percent compared to the same period in the previous year", says Charles McCaig, Electrical Design Engineer at West of Scotland Water's Planning & Capital Procurement Department.

Steve Ruddell
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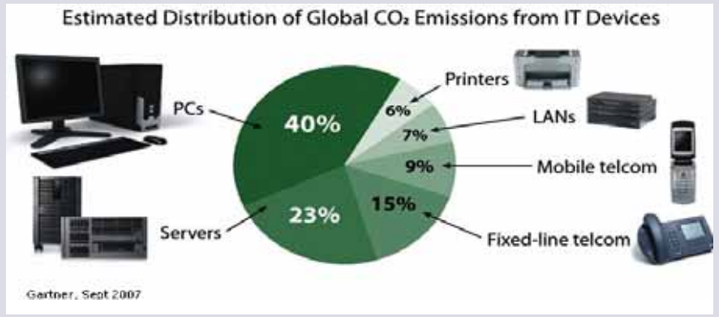
Reducing power consumption – enabling your green policies

With the rise in awareness of the environment and green issues, more and more people are looking to understand how they can reduce their impact on the environment, not only in our personal lives but also at work. This is leading to organisations of all sizes looking to implement policies to enforce their Green Credentials, if not to save the Earth, to save pounds, as being green also enables cost savings and drives out inefficiencies in evolved work practices.



Axial Systems believes that IT plays a significant role in helping the Business with it's green policies, common projects we often assists customers Implement are; Collaboration and Communication solutions that reduce the need to travel for some meetings while not reducing the meeting experience for the participants. These solutions enable indirect green efficiencies by reducing travel as well enabling great opportunities for mobile and flexible working and collaboration. Additionally server virtualisation is often cited as the most common "green" project by IT as it leads to direct power savings in the Datacenter, by reducing the number of physical servers that needed to be powered and cooled.

One area that Axial Systems has recently started to help customers with is reducing the power consumption for Desktop PC's, as it can lead to similar if not more cost savings than reducing power consumption in the Datacenter.

Often one reason for not implementing a solution is that it is difficult to get concrete ROI figures to help the business case for the solution as most vendors only provide generic cost saving figures. To overcome this barrier, Axial Systems often works with customers to do an energy assessment, whereby we capture actual power consumption data within our customers estate over a duration of 2-3 weeks, the captured data is used to produce actual cost savings that can be achieved. Typically we find the ROI on a desktop power management solution is less than 12 months for a 4000 seat organisation and realised cost savings of approx £100,000 over 3 years.

To discuss how Axial Systems could help you to optimise your infrastructure please contact:

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Building Automation Solutions (BAS) introduce BASe, an interactive web-reporting energy information tool, which can help to minimise building-related energy costs and CO_2 emissions

BASe is a web-based, automated, multi-utility, energy Monitoring and Targeting application using the latest technology.

It is designed to work autonomously and to automatically inform users of any data integrity and/or energy abnormalities giving the user peace of mind. Whatever your position, from an energy manager to a building owner, BASe provides the necessary analysis tools and management reports to perform your role effectively.

With BASe as your automated Monitoring and Targeting tool (aM&T) there is no need to purchase software to control energy, simply log-on from anywhere in the world at anytime to utilise its extensive range of tools and reports. With BASe you can:

- Analyse software and controls
- Set energy targets
- Review results
- Set on-going strategies
- Measure, analyse, improve and control
- Take a proactive approach towards support and energy initiatives

Year on Year Savings

Increasing energy prices are unavoidable, however BAS can concentrate on the demand a building has for energy and find innovative ways to reduce the impact of high energy costs. For most organisations energy is their third largest cost (after people and property), a reduction in that cost would bring benefits directly to bottom line profitability. For example, an organisation with a 5% profit before interest and tax, which makes a 20% saving on a £1million energy bill, is generating the same profit equivalent to £4 million of extra sales! This can certainly focus the mind and remember that the saving can be maintained year on year.

As well as cost, failure to manage energy has a huge effect on the planet's environment. Due to this the UK and EU Governments have introduced far-reaching policies, such as the Climate Change Levy and the EU Energy Performance of Buildings Directive. BAS can provide answers to these costs and environmental problems, utilising their web based aM&T package, together with their team of skilled energy consultants and engineers.

Services include:

- Building controls
- Energy optimisation
- Energy survey and audit
- HVAC energy performance analysis and benchmarking
- Full energy remote monitoring and reactive response
- Energy awareness training
- aM&T (automatic Monitoring & Targeting) web based solution
- Costed energy schemes with payback periods identified
- Identify Energy Waste

Who is BAS?

With their vast amount of knowledge, through Landis Gyr, Stefa, Siemens Satchwell and Johnson, BAS is the largest independent systems house in the UK. BAS have the right combination of technologies, products, services, and most importantly people, to make them the leaders in providing Building Energy Management system (BEMs) solutions. As the only exclusive Siemens Solution Partner for BEMs in the UK, they have the backing of a major world-wide corporation, which gives them many advantages which they in turn can pass on to their valued customers.

Engineering Design

BAS specialise in the design, supply, installation and commissioning of BEMs. Their aim is to provide solutions to the many varied challenges that arise in the construction industry (new build) and /or in the retrofit environment. BAS recognise the need for differing skill sets in each of these markets and as such have the relevant specialists to supply the required results, including:

- Pre-order design
- In-house Software integration and design
- Control panel design
- Graphical design
- Record of settings
- Network design and integration
- Setting to work and commissioning
- Specialist control application
- Optimised design for minimum energy costs
- Fine tuning

Project Management

BAS believe "Project Management Excellence" is key to the successful completion of a project in a timely manner. As such they select, train and appoint people to have the leadership and delivery skills to prioritise and manage resources, resulting in successful projects. Their people understand the need for flexibility and are focused and trained to react proactively to the varying external forces that affect programme delivery.

Using proven planning and project management techniques, teams deliver projects to agreed milestones and co-ordinate resources to given time and cost restraints. Their services include:

- Budgetary and planning control
- Quality management
- Risk management and control
- Procurement
- Sub contract management

Support…

Building Automation Solutions are there to bring benefits to your organisation 24 hours a day, 365 days a year from their remote Bureau. With a combination of on-site expertise and remote assistance, they will optimise the performance of the BEMs.

Services Include:

- On site support
- Visits scheduled annually in advance
- Trained and empowered support engineers.
- Remote assistance (Bureau)
- Critical alarm escalation
- 24/7/365 call out
- Data back up support
- Management information
- Advice and recommendations
- Minutes of formal progress reviews

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Low carbon technologies for the future

Climate change is very much a current issue, and with more than a quarter of the UK's carbon dioxide emissions coming from the energy we use to heat, light and run our homes, there is the opportunity for all of us to play a part in tackling the problem. Mark Kelly, CEO of Baxi Group UK and Ireland, explains how the Group's portfolio of low carbon technologies and high efficiency boilers offers complete heating system solutions for all kinds of domestic applications.

The Government has a long term target to reduce carbon emissions by 60 per cent by 2050, and has introduced a number of directives and policies, such as the Code for Sustainable Homes and Energy Performance Certificates, to drive the move towards more energy efficient and sustainable homes. If we provide the number of homes our population is expected to require by 2050, as much as two thirds are already built, so there is still much that can be done to reduce the emissions from our existing homes.

Low carbon technologies, such as solar, heat pumps, biomass and combined heat and power will play an important role in helping to achieve these targets. In addition, we need to continue developing a well trained and registered installer base that can offer sound advice to households on the most appropriate systems for their property. Baxi Group has developed a range of products that can be retrofitted onto existing properties or incorporated into newbuild designs. Having an extensive portfolio means we can offer the right combination of products for individual property requirements.

Domestic solar water heating

Already well known and widely used, solar thermal water heating devices make use of free solar energy and can reduce carbon emissions of a property by up to a tonne per year.

Solar collector panels or evacuated tubes, fitted onto existing roofs or built into the roof structure of newbuild properties, absorb energy from the sun and heat a mixture of water and glycol that is sealed into the system. This liquid is then circulated through a dedicated coil in a specially designed cylinder, heating the stored water, which is then available for use at the hot taps.

Ideally, roofs should be south facing, although panels can be installed on either side of an east-west facing roof to capture maximum energy throughout the day. In the summer, up to 100 per cent of domestic hot water requirements can be met using a solar thermal domestic hot water system. In the UK, even on a winter's day, 100 W/m^2 can be produced, and about 50-60 per cent of the annual hot water demand can be satisfied. If necessary, hot water can be topped up using the conventional boiler and the second coil in the cylinder, or electric immersion heater.

Heat pumps

Heat pumps are based on technology originally invented by Richard Trevithick in the early 19th century. Ground source heat pumps take the latent heat from the earth via heat collectors called slinkies, which are buried in the ground. This technology is particularly suitable for use in the UK because the ground below a certain depth remains constant all year round.

The fluid in the slinky is drawn into an evaporator and the resulting gas is compressed until it reaches 80 degrees Centigrade. The vapour is condensed and circulated through underfloor heating or low temperature radiators, where a temperature of 40 degrees Centigrade can be maintained. Ground source heat pumps are capable of producing up to four times more energy than they use during operation and can save around 30 per cent or two tonnes per year of carbon.

Air source heat pumps work in a similar way. Air at an ambient temperature is passed over a finned heat exchanger, which extracts the heat into the evaporator of the heat pump. Air source heat pumps can be roof, wall or floor mounted and are ideal where ground space is at a premium.

Ground and air source heat pumps are easy to install and maintain, and are specially suited for off mains gas areas.

Biomass

Biomass boilers uses carbon neutral fuel such as pellets, chips or logs from local, regenerated sources to provide

sustainable and environmentally friendly heat for the home. The carbon released during combustion is balanced by that absorbed during the fuel's production.

Combined heat and power (CHP)

CHP is the simultaneous production of useful heat and electricity from a single source, at the point of use. Large scale CHP that uses an internal combustion engine has been around for some time, and can be configured to produce heat and power for applications such as hotels, schools and multi-tenanted accommodation.

The next generation is micro-CHP, a domestic wall-hung unit that looks and works like a traditional boiler, and generates one kW of electricity for use in the home or export to the grid. Electricity generated locally is much more efficient compared to that generated at a centralised power station, where up to 70 per cent of energy is lost during combustion and the transportation process.

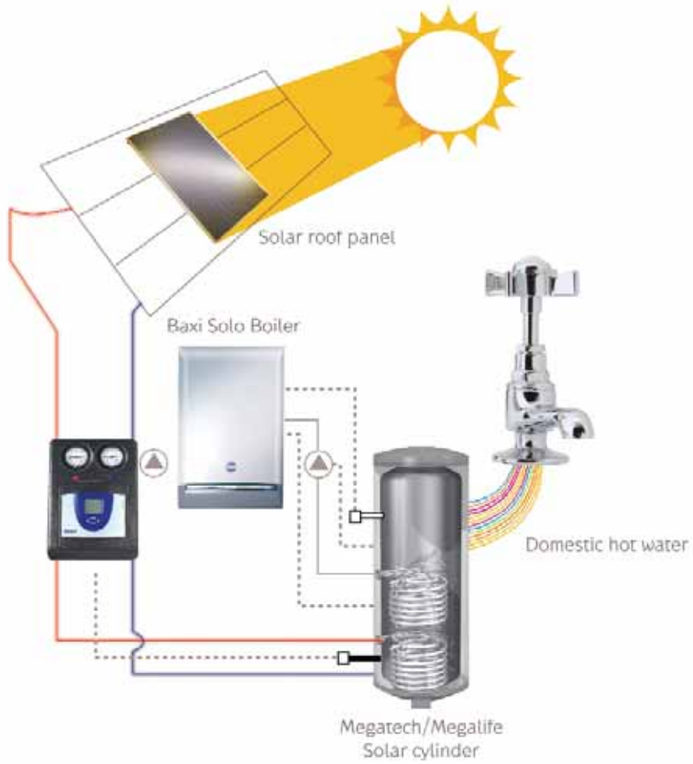
High efficiency boilers

There are around four million old, standard efficiency boilers still being used in the UK (according to the Heating and Hot Water Industry Council). If all these boilers were replaced with new high efficiency (HE) boilers, around two and a half million tonnes of carbon dioxide would be saved every year. By recovering and using the heat that would otherwise be lost up the flue, the best HE boilers are more than 90 per cent efficient.

At our state-or-the-art manufacturing facility in Preston, we produce an extensive range of SEDBUK Band A combination, system and heat only boilers in outputs to suit practically every domestic situation.

Whatever forms our domestic heating and electrical generation take in the future, the concerns about climate change are very much a current concern and Baxi Group is leading the way in tackling the issue and providing efficient, cost effective solutions for all domestic applications.

For more information on low carbon technologies please visit www.baxi.co.uk/products/renewables or telephone 0844 871 1545.



Greener, cleaner, faster, cheaper.

Those clever chemist chaps at Prolong UK have seemingly succeeded in finding the automotive holy grail. A fuel additive that dramatically reduces CO emissions, increases MPG and adds a little extra 'oomph' in the process.

Launched to much excitement from the environmental lobby, 'MPG+' is a simple pour-in additive that once added to fuel, breaks down hard-to-burn hydrocarbon molecules into smaller, more combustible fragments. Incredibly, this works for Petrol, Diesel or Biodiesel. The resultant improvements speak for themselves and could raise an eyebrow or two even amongst the most ardent tree-huggers

- Fuel Economy Improved by 8-10%
- Nitrogen Oxide (N0x) Emissions reduced by 91%
- Carbon Monoxide (CO) Emissions reduced by 75%
- Hydrocarbon (HC) Emissions reduced by 50%

As if this weren't enough, the 'side effects' of this more efficient combustion include improved power and low down torque, a cleaner fuel system and less black exhaust smoke. Used at every fill up, the MPG+ formulation purges the fuel system, creating an ever more efficient engine.

The product has created such an impact in the environmental world that it has already been nominated for the 2007 Green Apple Awards and Prolong themselves are fully committed to the Environmental Protection Agency's Environmental Technology Verification Programme. With many Blue-Chip companies now successfully trialing MPG+ for their haulage fleets, The future looks promising.

Prolong UK's Marketing Director, Mike Purchase was keen to explain the virtues of his ground-breaking product 'Sadly we can't yet replace the internal combustion engine.' He said, 'But we can make it a lot less damaging to the environment. Car manufacturers are doing their bit, but we as chemists can continually strive to make pump fuel burn more effectively, to minimise it's impact on the atmosphere. If every vehicle in the UK started using MPG+ tomorrow, we would massively decrease our carbon footprint overnight. It's a realistic small step we can all take to make a big difference.'

So saving the planet comes at quite a cost, right? Well, no - not really. The cost of the additive is more than offset by the savings made at the pump. Ally that to the fact that MPG+ negates the need for higher priced, higher octane fuels and the whole exercise becomes completely self-financing.

You may not save the Planet by MPG+ alone. But you may save a few quid in the process and fill up with a conscience that's nearly as clean as your engine!

The results of Prolong's independently commissioned study are clear to see on their website **www.prolong-uk.com**

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A further Breezair order for Cosaf following a successful installation at Patak's

Having already proved the effectiveness of the Breezair Evaporative Cooling System in reducing high temperatures in its Frying/Packaging Areas, Patak's Foods, now owned by AB Foods, had no hesitation in installing the environmentally friendly coolers into its Bottling Hall. Specified and installed by CoSaf Environments, the exclusive UK distributor of Seeley International's Breezair Evaporative Coolers, it is anticipated that the cooler will reduce summer highs of around 32°C to a comfortable working environment of around 25°C when they are turned on this summer.

Looking after the well being of its staff is a top priority for Patak's Foods, so when the existing levels of extraction and ventilation failed to reduce summer temperatures in the Bottling Hall, Ray Brown, Projects Manager at Patak's Foods decided that Breezair evaporative cooling would provide the best solution.

"The Breezair coolers installed in our Frying/Packaging Areas have proved so successful that we also decided to install them in the Bottling Hall to alleviate high summer temperatures and improve working conditions for our staff", said Ray Brown. "Breezair helps meet our stringent environmental policy as it consumes up to 80% less energy than a conventional air conditioning system and contains no ozone depleting refrigerant gases".

The 12 Breezair coolers have been installed outside the building, with air being distributed via ductwork then through air diffusers into the 3,500 square metre Bottling Hall to provide temperature relief. Temperatures are controlled by solid-state programmable regulators, which provide four different control modes.

The Breezair system is housed in a simple, clean, ultra-modern designed plastic casing specially developed to withstand all weather conditions. The Breezair's state-of-the-art components include an innovative water distribution system, which delivers continuous, balanced water coverage to all the pads. The world-patented system ensures maximum cooling efficiency and minimal maintenance problems.

An innovatively designed, aerodynamic fan provides a constant, even flow of air over the pads to provide a welcome cool breeze with minimal noise and low energy consumption. Other pioneering components include a highly efficient water pump that guarantees constant and reliable cooling when most needed, and a long lasting variable speed motor that gives maximum comfort level control.

"Our workforce is very supportive of the Breezair system which has provided a marked improvement in working conditions", concludes Ray Brown. "Breezair introduces cooled, clean, fresh air into the building which provides and healthy and comfortable working environment."

Taking control of your energy spend

Energy costs, driven by increasing prices, have risen high on the agenda for many organisations. In a recent survey, the Carbon Trust asked organisations what action they would take to address the economic downturn. Over 30% of respondents said that reducing energy costs would be their top priority.

Delivering these cost reductions requires action across a number of areas, but critically it is difficult to reduce something you don't have under direct control. Establishing this control requires that you to have both accurate and timely information and an easy means of adjusting consumption.

Of course, at the same time as you a looking to reduce energy use, you must also maintain the working environment to be safe and comfortable for your people and suit your business process. Automated Monitoring and Control systems allow organisations to maintain this delicate balance.

The basic principles of such systems are simple. Data is gathered from a range of sources and collated. This might be about energy consumption, not just at the level of the main meter but also from sub-meters. These sub-meters can be installed to monitor either key elements in the business process, or different areas in a building. Other data can include the readings from temperature or ambient light sensors, as well as information relating directly to the business process like production volumes or customer footfall.

From this data you can then make a range of management decisions to be able to optimise your energy consumption while maintaining the efficiency of your organisation.

The second key capability is to enable decisions to be put into action. The system can connect to HVAC equipment to ensure that the temperature in various parts of a building is suitable for their use. It can control lighting both inside and outside of a building making sure that it is only on when it is needed. These changes can reflect the patterns of the operation of the business, shift patterns, opening times and holidays.

The information you have access to can also help you to identify where equipment or processes have become inefficient and hence where remedial action is required.

If you are responsible for a number of sites this information and control can be extended from a central point across the internet. This means that any building in an estate can have the services of an expert energy manager without someone needing to be onsite all of the time.

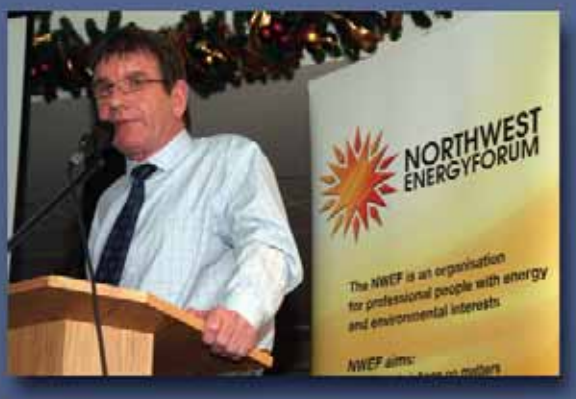
The same principles of monitoring and control can also be extended to other areas. The cost of water supply has also seen significant price increases and leakage can both cause damage to buildings and add to costs. This information can be managed by the same system allowing you to create not just an energy managed building but an environmentally managed one.

Using Automated Monitoring and Control systems is one strand in an overall energy management policy. Alongside the system it is still important to work the people in the organisation to identify and minimise wastage. The real benefit of the system is that it allows many of the actions that would have required human intervention to be done automatically, delivering a much higher level of consistency and the benefits in terms of cost, reputation and regulation.

NORTHWEST ENERGYFORUM

Looking for energy efficiency products and services? Rising energy prices and legislative requirements having an impact on your business? Want to reduce the energy consumed in your buildings?

North West Energy Forum Annual Conference
Manchester Central
27th November 2008
8:30-14:00



The North West Energy Forum has been established for over 60 years, delivering regional energy briefings and networking opportunities for North West energy professionals. Following on from the success of the last years annual conference the NWEF, in partnership with Envirolink Northwest is once again hosting a regional exhibition and conference to showcase North West expertise. This year's conference will focus on efficient use of energy in buildings and will feature presentations by leading professionals from around the region.

Presentations will address the legislation driving improvements in buildings energy efficiency, who will be affected by this legislation and how, and practical techniques for assessing energy performance and identifying areas of improvement. Sessions featuring the latest technologies and products will demonstrate different options for incorporating energy efficiency measures into your buildings.

An exhibition of regional suppliers of both energy efficiency and renewable energy technologies will run alongside the in depth seminar programme, providing the perfect opportunity for professionals interested in improving the energy performance of their buildings meet with regional suppliers of innovative energy saving and low carbon technologies.

Attendance at the conference is free of charge.
To register book online at **www.nwef.net**

Supported by Envirolink Northwest

Envirolink Northwest