



# Using Energy Management to improve your bottom line

Protect against rising energy costs and improve competitiveness

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If written ten, or even five, years ago, this article would have started with a preamble describing the challenges faced by climate change, finite and diminishing fossil fuel reserves and the prospect of dramatic increases in energy costs.

This preamble is now redundant. Oil prices have risen inexorably in the past few years and now exceed \$130 a barrel, energy costs faced by Irish businesses rose by over 52% from 2000 to 2006 and carbon footprints are a central preoccupation of socially responsible businesses. In short businesses are now keenly aware of the challenges posed by increased energy costs and the imperative to reduce carbon emissions.

In this context more and more businesses in Ireland are making energy efficiency and alternative energy sources a key element of basic business management operations. Energy conservation does not mean compromising services or productivity to save energy; on the contrary, it is a method of maintaining the same standards of operation using less energy by employing a systematic approach to energy management. Energy Management not only future proofs your business against rising energy costs, it can also add immediately and significantly to your bottom line.

## Fundamentals of Energy Management

The Irish Energy Management Standard, IS 393, which pioneered the formalisation of Energy Management Systems and forms the basis of the draft European Standard EN 16001, provides a detailed structured approach towards Energy Management which is aligned with the quality and environmental management standards ISO

9001 and ISO 14001. The basic approach to energy management, as for other management systems is, a commit, plan, do, check, act system.

While full implementation of Energy Management Systems is more appropriate for larger energy users, the IS 393 and draft EN 16001 standards outline fundamental principles of effective energy management which can be applied in any organisation as follows:

Commit	Senior management commits to and champions energy management.
Plan	Understand your usage, identify and target savings.
Do	Implement actions to achieve the savings targeted. Increase staff awareness and promote energy efficiency.
Check	Monitor your usage; are targeted savings being achieved. If not, why not.
Act	Take action to ensure savings are achieved. Build on your success; review the targets and identify new projects.

## Understand your usage and Identify Saving Opportunities

The first and essential step to attaining energy cost savings is to understand your energy use. How much energy do you use? What do you use it for and do you need to use so much?

Analyse your energy bills (electricity, gas, oil) and keep records. There may be errors, you may be overcharged or be on the wrong tariff. When purchasing goods and services, businesses should shop around to get the best deal. However, energy costs, and electricity costs in particular are often

viewed as fixed overheads. The electricity supply market has been liberalised for a number of years now and there are a number of competing suppliers in the marketplace including Energia, Bord Gais Energy, Airtricity and ESB Independent Energy. Small firms with relatively small bills can typically save 10% by shopping around and larger users can save more by availing of 'time of use' tariffs linked to real time electricity generation costs.

Some buildings are intrinsically more efficient than others and the efficiency of your building will affect your energy costs. When buying or leasing a business premises after 1st January 2009 you should ask for the Building Energy Rating Certificate. A Building Energy Rating provides an indication of the building's energy performance and therefore is a good indication of what you can expect to pay for energy.

From an operational energy efficiency perspective, a key step is to develop an appropriate Energy Performance Indicator (EPI) such as energy per floor area or per unit output. This will allow you to track your improvements and to benchmark your operations against international best practice and across sites if you have more than one business location.

Assess what you use energy for, eg space heating, lighting, ICT and office equipment, cooling, motors, drives, process heat. Do you need to use so much, how is it supplied and can it be supplied more efficiently.

This process of identifying and analysing energy use is often referred to as an energy audit and, depending on the complexity of your operation, may be a relatively straightforward review of bills, inventory of lighting and office equipment and evaluation



of the heating system. For more complex operations such as production or processing plants gaining an understanding of energy use is correspondingly more complex and often requires specialist expertise.

Many companies employ the services of an energy consultant to perform an energy audit, which may seem extreme, however simple energy saving measures identified in an energy audit typically pay for the cost of the audit in a matter of months.

## Typical Saving Opportunities

Offices are often over heated or heated when not occupied; relatively simple controls or a Building Energy Management System can reduce the final energy demand for space heating. Servicing can maintain boiler efficiency and it is sometimes cost effective to replace boilers with a new energy efficient boiler.

56 % of total electricity usage in commercial buildings within Ireland relates to lighting and office equipment. Simple good house keeping such as switching off lights and computers at the end of each working day can make a significant impact to your energy costs. Energy efficient lighting can save up to 75% of electricity costs for lighting and can be installed gradually as fittings and lamps are replaced or as an energy efficient lighting project.

ICT equipment is accounting for an ever increasing proportion of energy use in businesses; both in the equipment itself and for cooling of server rooms. More efficient servers and improved controls on cooling systems can yield significant savings.

## Implementation

Your energy audit will identify a hierarchy of actions ranging from zero and low cost measures to projects requiring significant capital investment. Zero cost measures are generally achieved through behaviour change, allocation of responsibility at management level, increased staff awareness and incorporation of energy efficiency into operational management. This can yield short term cost savings that will build enthusiasm and increase motivation leading to further savings.

Beyond savings attained through behavioural change, further cost savings can

- Switch off lights and heating in the office when they're not in use, and particularly in meeting rooms or unoccupied service areas.
- Minimise the use of cooling. Don't overcool and use natural ventilation where possible.
- Replace old light fittings and lamps with energy efficient alternatives.
- Take advantage of natural daylight as much as possible and use task lighting where appropriate.
- Set computers to shut down or hibernate when idle.
- Turn off computers and office equipment overnight.
- Set heating controls to provide a comfortable working environment (20°C)
- Where possible, install automatic controls for switching lights and equipment on and off.

only be achieved by investment in energy efficient equipment and controls. This can range from low cost, short payback, measures such as occupancy and daylight sensors for lighting through to medium cost measures such as energy efficient motors or energy efficient lighting and high cost measures such as replacement of boilers, Building Energy Management Systems or renewable energy technologies.

When renovating a building or purchasing new plant, build energy efficiency and life cycle costs into the decision process. The incremental capital cost for energy efficient alternatives is often not significant and can be greatly outweighed by reduced running costs.

The business case for certain higher investment cost projects is improved by tax incentive and grant schemes administered by Sustainable Energy Ireland:

- The Accelerated Capital Allowance Scheme allows businesses to write off the entire cost of a limited set of energy efficient motors, lighting and building energy management systems in the first year of purchase.
- The ReHeat and Combined Heat and Power (CHP) Deployment Programmes provide up to 30% funding towards the capital cost of renewable heating projects and CHP and up to 40% of the costs of feasibility studies.

## Monitoring

Monitoring usage is essential to understanding your energy use and targeting and achieving savings. Monitoring systems can range from records of energy bills and appropriate EPIs to electronic meters and sub-meters recording data in a Automated Monitoring and Targeting (AMT), Building Energy Management (BEM) or Supervisory Control and Data Acquisition (SCADA) system.

The form of monitoring should be appropriate to the scale of your operations and your energy usage. Most suppliers now offer online access to historic electricity consumption data. For relatively small users, availing of this can be a useful first step in monitoring energy consumption.

## Review and Continuous Improvement

Don't be daunted by the apparent complexity of Energy Management Systems. Take the first steps in analysing and monitoring your usage and implementing energy cost saving initiatives.

Build on your successes to progressively increase efficiency, reduce costs and improve your financial and environmental bottom line.

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