

# Need to save energy?

Why should a local authority save energy? Apart from the environmental concerns, in the last twelve months there have been dramatic increases in energy prices for everybody including consumers in the public sector. Energy has a real cost whether used to photocopy documents or run the air conditioning. Saving energy will make an immediate impact on your organisation's bottom line. Revenue saved through increased energy efficiency can be reinvested in any part of the organisation including, as examples, staff, training and improved facilities. Getting started needn't take a long time or involve much investment.

In the experience of Webb Sciences Ltd the key issues a local authority must consider are:

- Recognising your current levels of energy efficiency and where improvements might be necessary.
- Understanding how improvements in those areas targeted can be made.
- Address any organisational barriers preventing those improvements being made.
- Motivate everybody to achieve improved energy efficiency.
- Measure the improvement to demonstrate achievement.
- Maintain the impetus for further improvement.

One method of introducing greater energy efficiency is by undertaking a programme of good housekeeping within individual buildings. The great advantage here is that good housekeeping is a no-capital cost programme of measures. Good housekeeping can be implemented by:

- Ensuring that your heating, cooling and lighting systems are only on when required.
- Turning off office equipment when people are not using it, especially at night and weekends.
- Check that individuals operating thermostats and other controls are using appropriate settings.
- Check that control systems are not working in opposition to one another.
- Optimise the use of daylight, opening blinds and turning off lights when not required.
- Collect information that will enable you to monitor and improve your energy efficiency.



*A fan pressurisation test in progress*

Undertaking a programme of good housekeeping may lead you to the conclusion that further revenue savings can be made. These, however, may lie beyond the implementation of good housekeeping and require an energy audit. Briefly an energy audit, as offered by Webb Sciences Ltd can range in scope from an on-site walk through of a facility to identify major energy issues, to a comprehensive analysis of the implications of energy efficiency measures sufficient to satisfy investment criteria, i.e. pay back periods.

As part of an energy audit airtightness testing and infrared thermal imagery can be used to establish the degree to which the existing fabric of building compromising the energy efficiency of a building. Webb Sciences Ltd has used both these methods to demonstrably highlight the ineffective thermal performance of a building through its walls, windows and roof.

Even if the walls and roof provide adequate levels of insulation uncontrolled air leakage through gaps in the building's fabric can lead to the waste of expensively conditioned air, with up to 30% being wasted in this manner.

Apart from the waste of energy the uncontrolled flow of air through the building can also carry corrosive contaminants around the building's structure.



**WEBB Sciences Ltd.**

In taller buildings stack effect, where warmer air tends to rise through buildings, can be responsible for drawing air and contaminants from, for example a basement car park, up through the building. Such mechanisms can contribute to sick-building syndrome which can have a cost in terms staff morale and absence due to sick leave.

Staff at Webb Sciences Ltd has been involved in a number of studies of buildings where occupant comfort was an issue and by using fan pressurisation equipment adverse air paths and missing components have been identified as the culprits.

A fan pressurisation test uses fans, as illustrated, to produce a series of reference pressures in the building under examination. Not only can the amount of warm air leaking from a building be quantified, but with the use of hand-held smoke tubes or smoke machines air leakage paths, for example around windows, can be identified. Without pressurising the building many of these leaks can remain invisible.

On occasion Webb Sciences Ltd have located, what are in effect holes in the building's fabric allowing large quantities of conditioned air to escape. The resulting air leakage audit can be used as the basis for further action around the building, allowing specific, targeted remedial works to be undertaken. Tackling uncontrolled air leakage has a beneficial effect on energy consumption, thermal comfort and can also contribute in the longer term to preservation of the building fabric.

In conclusion, energy costs will have a significant impact on the revenue flow of an organisation. Often where energy waste is occurring, other unintentional problems can arise such as thermal discomfort and even sick building syndrome. A number of techniques, however, can be applied to examine a building's thermal performance and solutions are available to reduce its energy consumption.