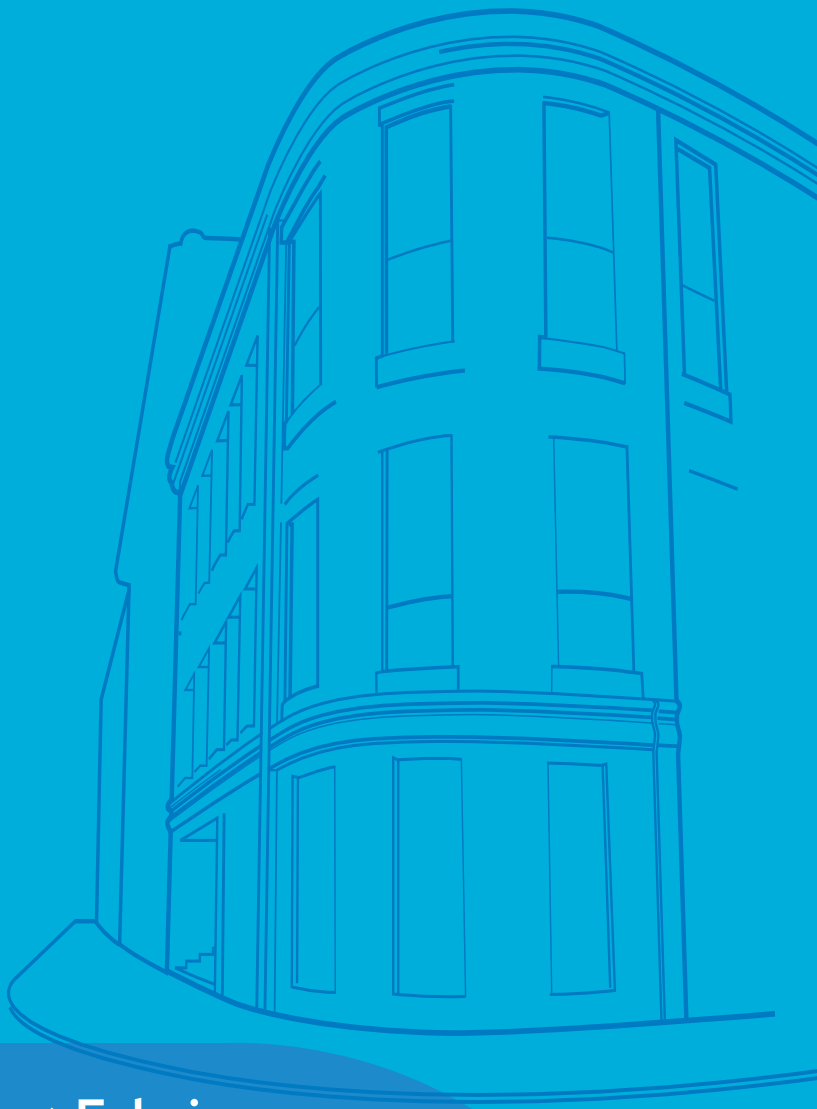

Energy Saving Fact Sheet | **Building Fabric**

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Making business sense of climate change

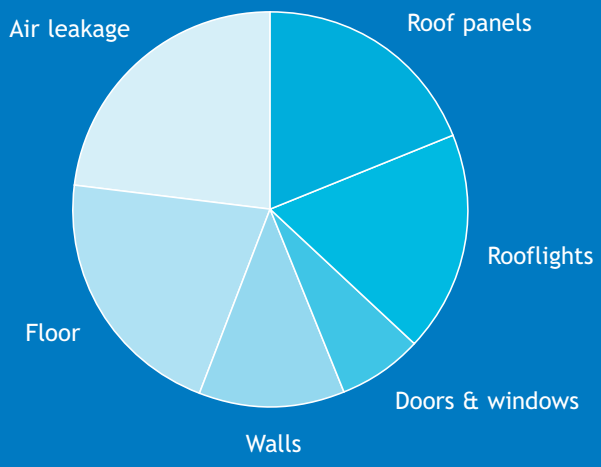
Improve your building — improve comfort

It's often the little things that can put pressure on your energy costs — small details that can get overlooked. This fact sheet will show you how you can save money quickly by taking some very 'obvious' measures. You could end up with smaller energy bills, better working conditions and happier staff.

Energy wasting hot spots

Want to know where you can start saving energy? This chart shows the proportion of heat lost through different elements of your building's fabric. For many more helpful hints, simply call the Carbon Trust Energy Helpline.

Breakdown of heat loss for an industrial building with a central valley gutter



Source: Kingspan

Fact!

An industrial building could be losing 75% of its heat through the building fabric.

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Good housekeeping tips

Walk around your building, paying particular attention to the windows, doors and around skirting and eaves. Ask staff to report any areas that feel draughty or suffer from over or under heating. This will help you identify priority areas.

- **Draw them.** Day to day, ensure that blinds and curtains are closed each evening. In winter, this helps reduce heat loss; in summer, it prevents 'solar gain' when the building is unoccupied.
- **Close it.** To enable heating or air-conditioning to work at optimum efficiency, keep door and window opening to a minimum. Instead, use the system controls to achieve the right temperature.
- **Turn it down.** And don't forget, reducing the temperature by 1ºC can cut 8% off your heating bills.

Ventilation

Effective ventilation is essential to provide 'fresh' air, control temperatures and to remove stale or contaminated air. But it's possible to satisfy comfort requirements and reduce energy costs.

- **Exclude draughts.** Keep doors and windows closed unless they are providing useful cooling and investigate and block the source of any draughts.
- **Reducing the need.** Ventilation is often provided to remove unwanted heat gains from electrical equipment (e.g. from computers, lights etc). Reducing heat gains by switching off unnecessary equipment and lights may allow you to reduce ventilation rates.
- **Gain control.** Minimise the use of extract fans and other mechanical ventilation by fitting automatic controls, to ensure rooms and other spaces are provided with the minimum amount of freshly heated or cooled 'supply' air.

Improving the building fabric makes financial sense

- **Keep cool.** Improving the fabric can prevent overheating — giving lower costs for ventilation and air conditioning.
- **Higher productivity.** Staff morale and output can be improved by providing a more comfortable working environment by, for example, reducing draughts, solar glare, summer overheating and noise.
- **Lower capital expenditure.** A more efficient, well-insulated building needs a smaller heating and cooling plant.
- **A good investment.** Better insulation could increase your property's value and attractiveness.
- **Prioritise.** Draught-stripping, loft insulation and cavity wall insulation are often cost-effective.
- **Think ahead.** Other measures such as double glazing don't pay their way when considered as stand alone projects but can be cost effective and be less disruptive when considered during planned refurbishment. Current legislation requires improvement to building insulation to be considered during planned refurbishment.

Roofs, walls and doors

Improving loft and cavity wall insulation is the single most cost-effective measure you can take to save money. Doors can be a major source of draughts, letting the heat flood out.

- **Put more on top.** Make sure that you have at least 200mm (8 inches) of loft insulation. This is the current legal minimum. If not, top it up. Adding 200mm of insulation to an existing 100mm will pay for itself in under four years; adding 300mm to an un-insulated space will pay back in less than two.
- **Fill those gaps.** A contractor will tell you, for free, whether your cavity masonry walls are already insulated. If you *can* insulate further, get at least two contractors to quote.
- **Close it.** Fit automatic closers to external doors and to internal doors, separating areas with different heating or cooling requirements. Think about insulated doors on replacement.

Windows

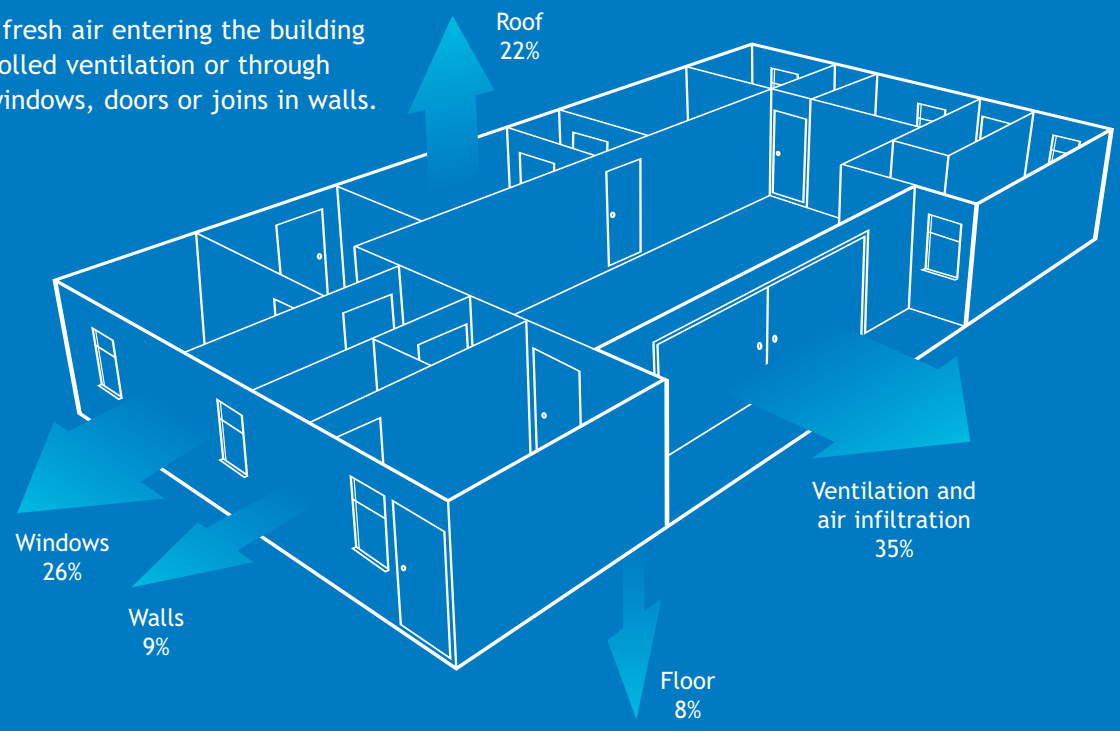
Glazing loses more heat than any other part of the building fabric. Put it at the top of your list for energy savings.

- **Eliminate draughts.** Replace broken or cracked windows and frames as soon as possible and install draught strips wherever draughts can be felt.
- **On the double.** Unless your building is listed or in a conservation area, Building Regulations mean that replacement windows must be at least double-glazed. Triple glazing could be cost effective for exposed sites and where windows are on the northerly facing walls.
- **Beating the heat.** The right glazing can prevent heat build-up, improve comfort and reduce the need for cooling. Consider high-performance glass that has a filter to keep excess heat out. A range of stick-on plastic films are also available for existing glass.

Typically, two thirds of the heat input into a commercial building is lost through the building fabric with the remaining third being lost through air infiltration and ventilation.

The rate at which heat is lost depends on:

- The temperature difference between inside and out.
- The insulation properties of the building fabric.
- The amount of fresh air entering the building either by controlled ventilation or through poorly fitting windows, doors or joins in walls.



Offices

People in offices tend to be more sedentary than those in other working environments and providing a comfortable temperature in which to work is important for staff morale and productivity.

- **Check for draughts.** Identify and block the cause of any draughts, paying particular attention to windows and doors near workstations.
- **Redirect the sun.** Where workstations are in direct sunlight install light shelves or horizontal blinds to windows to allow available sunlight to be redirected onto ceiling areas instead.
- **Fit external shades.** During refurbishment install external shades to these windows to prevent direct sunlight and heat from entering the building in the summer. These devices allow daylight and winter sun to enter the building, but put the windows in shade when the sun is high in the sky during the summer months.

Industrial buildings

Large vehicular access doors can be a major source of heat loss and discomfort from draughts. Energy saving options include;

- **Separate people and vehicles.** Give personnel their own entrance so the large doors can remain shut for longer. This can also contribute to better health and safety.
- **Reduce draughts.** Install and maintain plastic strip curtains over doorways.
- **Stop leaks.** More effective methods include fitting rapid-roll doors, vehicle entrance lobbies or inflatable air locks to vehicular access areas.
- **Redirect the heat.** Heat rises, so fit re-circulation or de-stratification fans to high ceilings to move hotter air back down to occupied levels.

Take action!

Start saving energy today

1. **Take a long, hard look at your building.** Walk round and examine windows, doors, skirting and eaves to see whether they're draughty or damp. This will help you assess the overall condition of your building and identify areas for improvement.
2. **Improve fabric before updating heating.** If planning to update your heating or cooling systems, first improve your building fabric. Improved building fabric reduces heat losses (and gains) and improves comfort by reducing draughts. You may then need less heating or cooling plant.
3. **Focus on windows, doors and roof spaces.** Fit draught stripping to windows and doors where a draught can be felt and install or top-up loft insulation in accessible loft areas.
4. **Use refurbishments.** Some building fabric upgrades have unattractively long payback periods, but should be considered during a planned building refurbishment, so always ask the contractor what the options could be.
5. **Help and advice.** The Carbon Trust can provide further advice, or perhaps an interest-free loan to help with the costs of improving your building fabric. Call our Helpline for more information.

The Carbon Trust Energy Helpline can also give you further energy-saving advice for your business.

Helpline 0800 58 57 94 www.thecarbontrust.co.uk/energy

Keep up with regulations

Today's building regulations stipulate that if you're refurbishing an element of the building fabric, you have to improve its energy efficiency. And things are about to get tougher. In 2006, new regulation is expected to require energy efficiency improvements to the whole building to be considered, even if you are only refurbishing part of it.

Proposed building regulations changes will require buildings to include "reasonable provision" for improvements with a "payback period of seven years or less and whose marginal cost is less than 10% of the total cost of the work."

Such "reasonable provisions" could include:

- Increasing the insulation in roof spaces.
- Insulating all available empty external cavity walls.

Of course, this will require a more thorough approach to refurbishment, but it's also a great opportunity to increase energy savings still further.

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The Carbon Trust helps businesses and public sector organisations cut their energy costs to combat climate change through the provision of free, professional advice and assistance.

Want to find out more?

Here are some useful energy-saving guides available at **www.thecarbontrust.co.uk/energy** or by contacting our Helpline 0800 58 57 94.

GIL124 *Heating fact sheet*
GIL130 *Ventilation fact sheet*
GPG367 *Better business guide to energy saving*

We've got many more tips for improving buildings and their facilities. We can help you save energy and money. So give our Helpline a call today.

Helpline 0800 58 57 94 www.thecarbontrust.co.uk/energy

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