

# The importance of cost effective draught proofing in domestic and industrial buildings

*By Tony Odhams, Chairman, Draught Proofing Advisory Association Ltd.*

***Despite a growing awareness of the benefits to be gained by installing top quality draught proofing, it is estimated that only a quarter of the 22 million dwellings in this country are adequately draught-proofed.***

Draught proofing can cut heating bills by up to 15% and is one of the most self-financing methods of energy saving, offering the quickest return on the original investment – often recouped within the first heating period. Yet against a total market for energy saving products of £1.1 billion, it is estimated that the draught proofing market accounts for only £17 million.

While many new houses are increasingly incorporating the latest draught proofing methods, the gaps around the windows and doors in older properties account for a vast amount of wasted energy which, with very little investment, could be avoided. In the light of the latest gas and electricity price rises – 6% and 10% respectively – it makes even more sense to eliminate unnecessary and expensive draughts.

There are seven million homes in Britain with the occupants in need of assistance with insulation, i.e. those receiving Housing Benefit, Supplementary Benefit or Family Income Supplement. It is encouraging to see many local authorities and housing associations now regarding draught proofing as a standard feature to reduce energy requirements in these homes.

In Worcester 1000 low-rise flats, occupied by elderly tenants have recently had their door and windows draught proofed at a cost of approximately £35 each. Since the start of the scheme there has been a very positive feedback from the tenants, many of



*A member of the DPAA applying draught proofing material.*

whom report increases in comfort and the elimination of long standing draught problems. Evidence suggests that these more vulnerable members of the community will see some impact on the level of their fuel bills next winter.

It is equally urgent to make commercial/industrial properties – especially in the new build sector – more energy efficient. This need was highlighted recently by Peter Morrison, Minister of State for Energy when he said: "In future, the most profitable developments will be those that have been designed with energy efficiency in mind. Building energy efficiency into a new building need not increase its cost, but it can increase its profitability."

In view of the cost effectiveness of draught proofing, it is alarming that only 10% of the one million industrial and commercial buildings in Britain are adequately draught proofed. Why is it that British industry tends to be so lethargic about taking obvious fuel saving measures? One of the simplest and inexpensive ways to offset the cost of rising fuel prices is to effectively draught proof the premises using top quality materials. For example, applied to a medium-sized factory with an annual heating bill of, say, £150,000, efficient draught proofing could mean a saving of £2,500 per annum, for a total outlay of only £2,000.

In comparison with our European counterparts, who place far greater emphasis on energy efficiency, we are guilty of wasting enormous sums of money. According to government figures, industrial and commercial buildings in Britain annually account for energy consumption worth £4 million a year. If we are to compete with other European markets on equal terms in 1992, it is vital that cost effective fuel saving measures are introduced now in order to make British industry more competitive.

Energy costs are one of the easiest costs to control and reduce, with the energy savings directly benefitting profitability. It is vital therefore that all those involved in energy conservation, whether in the domestic or the commercial/industrial sector, should be aware of the benefits that top quality draught proofing products have to offer.

## Weatherstripping

In a building without draught proofing, the gaps around the windows are as much as 2 mm; and around the external doors, as much as 6 mm. This allows cold, damp air to be forced in and warm air to be drawn out. As an example a 5 mm gap under the door can let through 80 cubic metres of cold air per hour.

In the domestic sector, government research shows that £55 spent on draught proofing windows and doors in a typical three-bedroom semi-detached house, centrally heated with a well controlled system for 16 hours a day, shows annual savings of £15 for gas central heating; £20 for cheap rate electricity; £45 for full rate electricity; £20 for solid fuel; and £25 for oil central heating. In houses heated only in the morning and evenings, the savings could be between 15% and 20% less than those quoted.

In addition to being economically viable, draught proofing has other advantages. For instance warm, draught-free conditions create a better working environment and therefore result in increased productivity. In a poor economic situation, when it is often difficult to maintain the minimum statutory working temperature of 19°, it should be understood that, just as draught proofing helps retain the heat, so it also keeps out the cold and damp.

Meanwhile the Draught Proofing Advisory Association urges those responsible for overall energy plans to take constructive steps and make draught proofing a priority consideration. They should insist on draught proofing being built in as original equipment for all new or replacement windows and doors. In this context, it must be recognised that windows and doors are one of the most important components in a building and, as such, only those manufactured to a high standard should be selected. They are the only elements that open and close, making them the most vulnerable areas in adverse weather conditions.

There is concern, however, in some instances, that inferior weatherstripping products are supplied to window manufacturers. The draught proofing industry feels that not enough credence is given to the quality of window accessories, other than the ironmongery itself. For instance, if poor seals are included in the original window design, it is these that break down – not the window itself. Problems such as these can arise if, when specifying windows and doors, only those requirements that will enable them to achieve the basic minimum thermal insulation performance, in line with Building Regulations, are requested. Armed with a more detailed knowledge of the draught proofing components required for diffe-

rent situations and locations, specifiers might be in a position to include these in the specification, thus achieving a better end result.

Installation can also have a marked effect on performance. It is often not recognised that a window may well perform to British Standards level in a laboratory, yet, after a year's life span on site, this performance may deteriorate considerably. It is anticipated that British Standards may well need to be reviewed, in order to cope with comfort levels that will be demanded over the next decade.

It is important to look to the future when specifying and ensure that only products incorporating the most sophisticated and well tested weather stripping properties are selected.

### Computer testing

To ensure a long lasting, high level of performance, the latest, most advanced computer controlled testing and survey equipment is used by DPAA members. This can scientifically record the air infiltration at any particular point around the frame to highlight the exact source of the leak or draught. A set series of air and water infiltration tests, plus gust cycles of up to 160 mph, can be preprogrammed.

A portable test rig can also be set up on site, which assimilates laboratory controlled techniques. This reproduces differing types of air infiltration conditions likely to be experienced, not just those existing on the test day, but rather illustrating the amount of air penetration from a mild to stormy day.

When a total package of insulation is being applied, it is important to remember the undesirability of completely sealing the building. A reduction of total air changes per hour to around half – from the four or more often present in an unweatherstripped situation – should provide the required essential ventilation.

However, certain precautions can be taken by those responsible for the insulation programme. Controlled ventilation by means of motorised or natural wind assisted extractors can be installed, as these are particularly helpful in alleviating condensation. In large buildings it may be practical to install heat exchangers, which remove stale air, but utilise the existing hot air to warm up incoming air.

In contrast to the more sophisticated methods, it is simple and very effective to open a window occasionally, particularly in kitchens and bathrooms to let out the steam. A less hit and miss method is to leave out a strip of between six or nine inches for every window or door to be draught proofed. This will certainly create sufficient ventilation, but may need to be adjusted to

meet comfort requirements. In time, legislation may call for certain levels of ventilation at construction stage.

Draught proofing is the only insulation medium that is subject to three major factors: human interference – opening, shutting and painting; environment – water, heat, dirt and ozone; mechanical stress – compression as the seal is deformed.

In the majority of cases, draught proofing is carried out to upgrade an existing building, whose windows and doors are made from wood, metal or a combination of both. Regardless of whether these materials are built-in during manufacture, or retrofitted, the seals are broadly the same.

There is a wide choice of top quality draught proofing products on the UK market. Even where these are selected, it is important to remember that each installation is only as good as the contractor chosen.

There is undoubtedly an urgent need to raise standards generally and thus create an environment whereby workmanship is at least adequate. The DPAA has recently welcomed a recent move by government departments to produce a British Standard and this is at initial draft stage. Meanwhile, the Association operates a Code of Professional Practice, whereby contracting members are bound to ensure that all draught proofing materials are applied strictly in accordance with the manufacturers' recommendations. Members also agree to investigate any complaints levelled against them by customers and, if justified, take the necessary action to rectify the situation.

### READER CARD 251

*The Draught Proofing Advisory Association can provide a valuable and efficient service to all builders, architects and specifiers responsible for implementing energy conservation measures, in all types of property – private, public or commercial. It represents major draught proofing suppliers and contractors in the UK. One of its functions is to promote the advantages of fitting high quality draught excluders as original equipment by window and door manufacturers.*

*Manufacturer members can be approached for in-depth advice on window and door performance and how this can be affected. Advice can be obtained on the appropriate draught proofing for certain locations; to prevent the egress and ingress of draughts.*

*DPAA members can offer a wealth of technical backing in the form of the up-to-date testing and survey equipment available to them, together with years of experience within the industry.*