

## The issue

Our existing housing stock is responsible for 27 per cent of the UK's total carbon emissions and around 85 per cent of the stock will still be standing in 2050. Much of this housing stock is poorly insulated, has lighting, heating and general appliances that are very inefficient and costly to run. The energy used is largely produced from fossil fuels and together with a wasteful building creates a large carbon footprint and expensive bills. There is considerable pressure being put on the government to create further incentives for both landlords and private homeowners to retrofit green technology. In order to achieve a coordinated retrofit approach a whole house survey and retrofit plan is recommended.

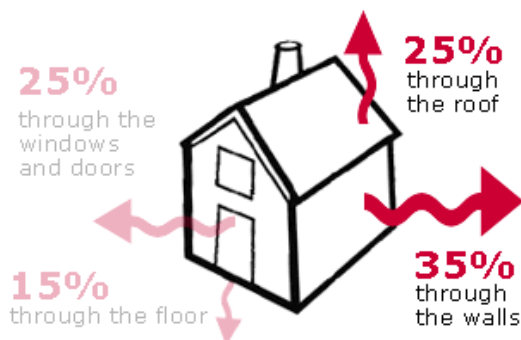


## What is Retrofit?

Quite simply the process of making existing buildings more energy efficient by installing modern heating, cooking and where appropriate electricity production into existing homes. More importantly it also covers the process of reducing wasted heat and power by increasing insulation to modern standards and reducing energy requirements. Depending on what is appropriate this can be as simple as using energy efficient light bulbs or as all encompassing as whole house refurbishment projects.

## Energy minimisation

Energy use minimisation is often the most important yet overlooked issue. Using less heat and power saves fossil fuels, reduces carbon emissions and saves ourselves money - a triple win! Even very simple changes such as low energy light bulbs use around 80% less electricity than an incandescent bulb and AA rated appliances can be up to 40-50% more efficient than normal electrical appliances, saving £100's and 100's kilos of CO<sub>2</sub> per year. Full retrofit delivers far greater returns.



**Insulation** - Even bigger savings can be made with insulation to lofts, wall cavities, floors, windows, pipes etc. For many buildings the thermal performance of the external walls, roofs, windows and floors falls far below the standards required by current Building Regulations. Consequently, many buildings suffer from loss of heat energy due to this lack of insulation and owners and occupiers pay unnecessarily high energy bills, possibly also experiencing drafts and

cold spots. Between 50% and 70% of all energy used in a dwelling is for space heating with a poorly insulated home losing up to 60% of its heat. Overall insulation is only as good as the heat loss through the weakest spot.

## Where will it work?

Any property owner can consider retro-fit. Cost-benefit analysis of the opportunities should be considered along with opportunities for grants from local authorities, and the Low Carbon Buildings Programme. New techniques can now overcome many traditional problems of retro fit for example solid walled properties with small rooms



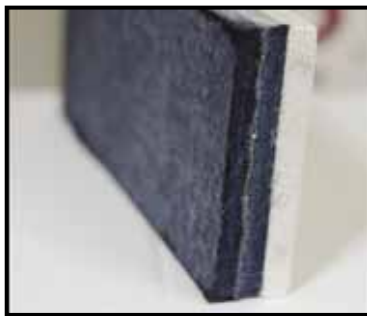
which would suffer if internally insulated. External wall insulation combines the benefits of improving the aesthetic appearance of a building and reducing energy costs. With Retrofit, you can have a 'makeover' which is both aesthetic and which will pay for itself through energy savings and a smaller carbon footprint.

### Savings

There are many forms of insulation that can be retrofitted making considerable savings. The most common being loft insulation. Installing the recommended 270mm depth in an un-insulated loft, could save between £180 and £220 per. year on heating bills and nearly 1.5 tonnes of CO2. Many people are however not aware that 35% of heat is lost through walls and in total 75% of heat is lost through routes other than the loft, leaving huge opportunities for further savings.



With advances in technology and materials there are now a large number of different types of insulation materials available to cater for most occasions and levels of "green" approach including mineral wools, foams, cork, recycled glass, hemp, lambs wool, recycled paper and high tech approaches such as Aerogels - a manufactured material with the lowest density of any known solid. It is derived from a gel in which the liquid component of the gel has been replaced with a gas. The result is an extremely low-density solid with remarkable effectiveness as a thermal insulator and extremely low density, nicknamed "frozen smoke". The techniques and materials are developing at a very fast pace and good environmental consultants can usually find a solution for most retrofit opportunities.



### Once opportunities to minimise energy usage and wastage have been identified - What next?



Further savings in terms of money, CO2 and reduction in carbon footprint can be made by the retro installation of green heat and electricity production including **solar heating, biomass boilers, photovoltaic cells, wind turbines, air and ground source heat pumps** etc.

See **JHWalter** fact sheets for further information on these technologies or book a **HOME RETROFIT AUDIT** with our Sustainable Resource Management Team.



**Scoping**                      **Feasibility**                      **Project Management**                      **Planning**  
**Environmental Compliance**                      **Design**                      **Funding**                      **Delivery**

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