

Developing a UK domestic window energy rating system

Windows and doors currently 'use' more energy than any other building component. The cost of heat lost through a window over the lifetime of its use in a building is greater than the purchase cost. Energy and money can be saved, and greenhouse gases reduced, by choosing energy efficient windows.

Window energy rating is a method for assessing the total energy performance of a complete window. Conventional approaches simply assess how much energy a window loses but not how much energy a window can gain.



Domestic Window Energy Rating (DWER) system. This embryo body was also used to involve all the other relevant trade associations and other stakeholders in the project.

A DWER is calculated from the individual values of the major energy transfer mechanisms. It gives a single number to rank a specific window type on a scale of 1 to 100, the higher the number the more energy-efficient a window. BFRC Certified windows will carry a label with the DWER clearly indicated and values for the following:

- U-value, which measures how well a product prevents heat escaping;
- Solar Heat Gain Coefficient, which measures how well a product blocks heat caused by sunlight;
- Light Transmittance, which measures how much light comes through a product.

Air Infiltration, which measures how much air leaks into or out of a window when it is closed, is part of the DWER formula but is not given on the label.

The BFRC rating is provided for two size ranges of windows to represent 'small' and 'large' window sizes. A BFRC rating is not an indication of absolute window performance: this will vary with exact size, location, direction the window is facing and other factors. Rather, the DWER is designed to allow accurate comparison of the performance of windows under identical conditions.

Independent Assessors and Accredited Laboratories are now being selected by BFRC to enable window manufacturers to obtain their BFRC ratings.

The results of the BFRC Domestic Window Energy Rating Scheme will be displayed not only on the window label, but also on a publicly accessible and publicly searchable database of all current window energy rating results. Access to the database, held on the BFRC website, will be free to all.

The BFRC energy performance label and database will help everyone concerned with windows to determine how well a window will perform the functions of warming the building in the winter, cooling it in summer, keeping out the wind and resisting condensation.

For further information please contact The British Fenestration Rating Council, PO Box 24, Hitchin, SG5 2FP (07000 780971; fax: 07000 782 777; E-mail: info@bfrc.org). Full details are available through the Council's website: www.bfrc.org.

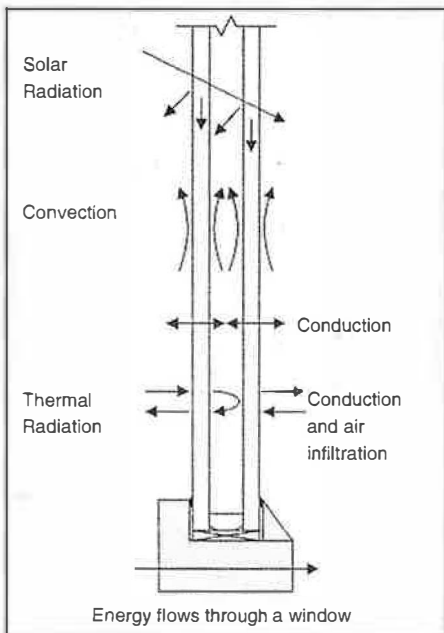


The total energy flow in a window consists of three major components – the solar heat gain in the form of radiation, the non-solar heat losses and gains from conduction, convection and radiation of all of the components of the window (not simply the glass), and the airflow through the window both designed (ventilation) and unintentional (infiltration).

Window energy rating takes all these energy flows into account and considers the whole of the window (both glass and frame) in assessing how much heat is lost or gained.

A DETR and industry-funded Partners in Innovation project to develop a rating system was started in Autumn 1998. Led by the British Woodworking Federation (BWF) with Partners from Leeds Metropolitan University, University College London, Centre for Window Cladding Technology, Fenestration Associates and Energy Advisory Associates, the project was not only aimed at researching and developing algorithms but also at ensuring that the research would be successfully used.

The British Fenestration Rating Council (BFRC) was therefore created at the outset to act as the vehicle for marketing the eventual



The BFRC Scheme is directed at windows used in all new housing and domestic replacement work

Water-efficient housing results

A two-year project to investigate the effective use of water-efficient appliances and products in housing has been completed by BRE for Essex and Suffolk Water.



Tenants at the Heybridge development

Water use was monitored in a new development of 37 houses in Heybridge, near Maldon, Essex. Water-efficient appliances (eg low-water-use WCs and showers) were fitted in 12 of the houses; greywater systems (taking water from baths and sinks, treating it and using it to flush WCs) in three, and the remaining 22 acted as control houses.

The project was designed to establish:

- the practicalities of specifying and installing water-efficiency measures;
- the water consumption of water-efficient appliances and products;
- the reaction of users to water-efficient measures;
- a specification for water-efficient homes.

The houses with water efficiency measures achieved water-use savings per person of 10% for WCs, 10% for baths and showers, and 31% for basins. Issues regarding specifying and installing the water efficient measures are discussed in the project report along with a detailed analysis of the tenants' views on the measures in their homes. The report also presents a modified BRE water-efficient performance specification for new housing, based on lessons learned during the project.

The Environment Agency, the British Bathroom Council and Moat Housing Group on behalf of Plume Housing Association contributed to the project.

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