

# The War On Window Energy Ratings



Since 2010 there have been many articles written about Window Energy Ratings or WER's. Some for and others against. But what are Window Energy Ratings and are they just a sales trick?

## The Argument

Over the last four years there have been many articles and blogs written about Window Energy Ratings. Some singing the praises of the new simplified system, with which consumers and specifiers can easily compare competing products. They talk about how using a simple and easy to understand ranking and labelling system makes buying new windows far less daunting for the average homeowner. They also talk about how energy efficient windows will save you money on your household bills and can even put heat back into your home by means of solar gain.

On the flip side other articles have written about the failings and limitations of the Window Energy Ratings and the belief that these new ratings are simply made up 'rubbish' aimed at trapping the general public into believing that one window is vastly superior to another just because of its energy rating. They state that Window Energy Ratings provide no true measurement for energy performance, and urge people not to be duped by the British Fenestration Rating Council, and their WER Scheme. They call the WER system just another double glazing sales trick and a way to increase competition and profit margin within the glass fabrication industry. One blog even referred to WER's as 'The Emperors New Cloths'.

## The Middle Ground

Many people are concerned that the potential energy savings, and reduction in CO<sub>2</sub> emissions may not be fully realised due to the ambiguous nature of the WER calculations, but many also believe that overall they are a step in the right direction and stop so called 'cowboy double glazing' firms from specifying poor quality outdated products with compliant glass, but what are the facts about Window Energy Ratings?

## The Facts

In October 2010 the WER rating scheme was introduced as a new method by which windows could comply with the Building Regulations. It was made mandatory for all companies within the window industry to test and rate their products, if they wanted to be a part of it. Since it was in many cases easier to achieve the minimum WER 'C' rather than

than the minimum U value of 1.6 w/m<sup>2</sup>k now required by the Building Regulations, many companies did exactly this. The ratings are much the same as with white goods, used to prove the energy efficiency of a product. Windows are rated A to G, and contrary to popular opinion a G rated window could still comply to the building regulations so long as it had a U value of 1.6 w/m<sup>2</sup>k or lower. Window Energy Ratings are an alternative method of compliance, to the humble U value, but how can a window be energy efficient if it doesn't need electricity or gas to run? Its all very confusing isn't it.

## What's The Confusion?

Even now years later many people still do not understand Window Energy Ratings, what they are and confuse them with thermal efficiency (U values) and even believe that they provide a measure of



manufacture quality or security. Some people even talk about A rated glass, which has simply become a term used in the industry to describe a sealed unit with a certain specification. This specification will in most cases (but not all cases) will result in an overall Window Energy Rating of 'A'. It almost makes sense, but glass cannot itself have a Window Energy Rating and this sort of terminology or industry slang, muddies the water and further increases ignorance and confusion.

But what purpose do Window Energy Ratings serve, if any? What are they and how are these ratings calculated?

## Let Us Help To Clear Up The Confusion

We have devoted an entire section of our website, and included information within our online blog, in an attempt to clarify and answer exactly this. If you wish to get to the bottom of the Window Energy Rating scheme then it's a very good and unbiased view to WER's. It will provide you with just the facts; without any speculation into Government Agenda and the glass fabrication industry. Nor does it try to use WER's as a tool to try and sell you new energy efficient windows. We believe that it is certainly worth reading, to get thing clear in your mind, before you decide to invest in new windows.

# Your Questions Answered

Here are a few frequently asked questions to help get you started:

## Q Do WER's Apply To Doors?

**A** As the name suggests, Window Energy Ratings do not apply to doors. You can however get doors tested for energy efficiency, and this comes under DER's or Door energy Ratings. DER's are not currently recognised by the building regulations and therefore only a minority of products have ever been tested. Perhaps this is because a fully glazed door will always be at least 'A' rated, while a front door with only a small amount of glazing will always be 'G' rated, due to the lack of solar gain, or perhaps the rules for Door Energy Ratings are yet to be put into stone by the Window Energy Rating Group. In truth we are not really sure. What we do know is that WERs are accepted as a method of compliancy to the building regulations, but DER's are not.

## Q Can I Specify 'A' Rated Glass For My Products?

**A** NO. The individual components of a window (i.e. Glass) cannot themselves have a Window Energy Rating. Window Energy Ratings are an overall value of the energy efficiency of a complete window. You cannot simply get a glass that is 'A' rated and put it in a product to achieve an overall 'A' rating. Different products may well need different glass specs in order to achieve an overall window energy rating of 'A'.

## Q Are Windows With High WER's More Environmentally Friendly?

**A** YES. In theory windows with a high WER will help to reduce the amount of gas and electricity needed to heat your home, thus reduce carbon emissions. Window energy ratings do not however, take into consideration how green or environmentally friendly the manufacturing process is; only the energy efficiency of the final product (for this you look into BREEAM Ratings, BRE Environmental Assessment Methods).

Nor does it take into consideration the sustainability of the building materials.

## Q Does An A Rated Window Have Better Security?

**A** The energy rating of a window, says nothing about the quality of manufacture, security, strength or weather performance, or even thermal efficiency of the window. It is simply a gage of the energy efficiency of the window, and how much energy it will save you.

Visit [www.duration.co.uk](http://www.duration.co.uk) for more information

Here are some more frequently asked questions:

### **Q How Does A 'C' Rated window Compare?**

**A** A 'C' rated window is the WER that is required to meet part L of the building regulations. A 'C' Rated window is still very energy efficient and could save you up to as much as £425 on your house hold bills (according to GGF). A window energy rating 'C' would be far more energy efficient than an 'E' rated window.

But remember, there are two methods of compliance, Energy Efficiency (WER) and Thermal Efficiency (U value). An 'E' rated window could still meet the building regulations if it had a overall U value of 1.6W/M<sup>2</sup>K. Whereas a 'C' Rated window may only have a U value of 1.9W/M<sup>2</sup>K and just lots of solar gain. The lower the U value the less heat loss (the higher the thermal efficiency); the higher the g value the higher the solar heat gain (and higher the WER).

### **Q Isn't Solar Gain, A Bad Thing?**

**A** Solar gain is responsible for the heat you feel in rooms with a large glass area in the summer, such as conservatories and shop fronts. For years people have been trying to reduce the amount of heat transfer from the sun through glass using different glass coatings and materials within the glass. So surely we don't want solar gain, isn't solar gain a bad thing?

The secret of a good window energy rating is to get as much solar gain through your windows as possible. Research has shown that solar gain in the average residential property will in fact, provide so called "Free Energy". By specifying glass with high solar gain your windows can actually bring more heat into your home, than is lost. This means that on a cold day, if it is sunny out, your windows could theoretically heat your home for free.

For applications, with a large glass area, where you wish to minimise solar gain (for example a conservatory or office building) you may wish to specify solar control, anti-sun or other solar reflective glass. This will however, result in a poor Window Energy Rating. In these circumstances you will need to specify windows with a low U value, in order to comply with building regulations and keep the heat from escaping your home.



### **Q Will Windows With A High WER Help Heat My Home In Winter?**

**A** In the middle of winter when the weather is at it's coldest and there is no sign of the sun in the sky. A rated windows will probably not heat your home. The amount of heat gained from solar gain will be negligible against the amount of heat lost through your windows. This is where a low U value will come into its own.

### **Q Are Products With A High Energy Rating, More Thermally Efficient?**

**A** No, not necessarily. You need to be careful not to confuse energy efficiency with thermal efficiency. Just because a window has a better Window Energy Rating than another window does not mean that it is any more thermally efficient. Glass with a very good U value often has poor solar gain, since they are by nature poor conductors, this will in affect reduce your WER.

For the a more accurate value for thermal efficiency, you should always ask about the overall U value of the window, not just the centre pane U value of the glass. The lower the U value (thermal transmittance) the less heat loss through your windows and better the thermal efficiency. As a rough guide the average fully insulated cavity wall will have a U value of around 0.3 W/M<sup>2</sup>K, you want to get as close to this as possible. Industry standard double glazed units have a centre pane U value of 1.2 W/M<sup>2</sup>K, where as an average window system will have an overall U value of around 1.6 W/M<sup>2</sup>K in order to comply with the Building Regulations.

Visit [www.duration.co.uk](http://www.duration.co.uk) for more information





Here are some more frequently asked questions:

### **Q Do Window Energy Ratings provide a measurement for energy performance?**

**A** The WER is designed to allow consumers and specifiers to compare competing products using a simple and easy to understand ranking and labeling system. A WER Rating does NOT provide an absolute measure of the energy performance of a specific window or application. For this reason there is no guarantee that a window with a high WER will save you any money on your heating bills.

The actual energy consumption for a specific application will depend on the size and location of the window in the building, the building parameters such as insulation and occupancy, the building geometry and orientation, the local climate and the indoor temperature set by the occupants.

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### **Q Why is double glazing preferable to triple glazing?**

**A** Triple glazed sealed units are made up of three rather than two pieces of glass and can achieve U values as low as 0.9 W/M<sup>2</sup>K when filled with just air and not argon. However, more glass means more weight, which therefore means you need thicker frames and heavier duty hardware to take the extra load, or smaller opening sashes. This can also make triple glazing quite expensive due to the extra glass and thicker frames required.

Triple glazed units have excellent U values but it is more difficult to get a good WER as the extra pane of glass reduces the solar gain (G-value).

### **Q How Are Window Energy Ratings Calculated?**

**A** Window Energy Ratings provide the annual energy balance for a window and are calculated by taking the annual heat loss through a standardised window and offsetting it by the annual solar gain through the window (kWh/m<sup>2</sup>Year). You must first calculate the overall U value of a window (at an industry standard size). To do this you need to calculate the sum of the area weighted heat loss through the window frame, glass and glass edge or spacerbar. The U values for each component that makes up the window. The Air leakage and solar gain must then be calculated. Where AL (or air leakage) though the window in m<sup>3</sup>/h.m<sup>2</sup> at 50Pa pressure difference. The solar gain of the window is then calculated from the g value of the glass multiplied by the visible area of glazing (or glass minus the window frame).

From the U value and air leakage you can work out the amount of heat that is lost through the window per year, this figure is then take away heat gained through solar gain. If the result is 0 or positive your window is 'A' rated. If the result is between 0 and -10 then the window is 'B' rated. If the result is between -10 and -20 then your window is 'C' rated. Therefore the difference between getting an 'A' rated and a 'B' rated window could be as little as 1 kWh/m<sup>2</sup> per Year or 0.02kWh/m<sup>2</sup> per week.

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