

Doors and windows may not have the greatest part to play in the Code for Sustainable Homes, but they do make a valuable contribution. Heat loss and its impact on energy costs can be a thing of the past if an energy efficient window or door is in the frame.

And energy efficient windows can make a dent in those points and credits needed for the energy and carbon category of the Code, which contributes up to 36% of the total points available to score code level six, and 29 credits in total. U-values are the driving force within the doors and windows industry as well as in the worlds of walls and roofs, as they measure how well a component keeps heat inside a building – the lower the value the better, of course.

Not just about the Code

With Internorm's doors and windows, it is not only Code levels four to six that can be reached, but Passivhaus standards – a specific construction standard for residential buildings which have excellent comfort conditions in both winter and summer.

"Thermo3, our newest PVCu range, can be easily engineered to fit new build," explains Thomas Hagen, technical and service manager for the international door and window manufacturer.

"It is Passivhaus certified which will be the European standard for energy efficient buildings by 2015.

"For doors, we would recommend to housebuilders the Selection range which matches the windows in any Internorm range in their performance."

advanced construction

Norwegian timber window and door supplier NorDan has launched its NTech Low Energy and Passive ranges which apparently boast an advanced construction. NTech Low Energy yields a whole window U-value of 1.2 when the current Building Regulations level is 1.8. But Passive goes several steps further with a U-value of 0.7.

Marketing manager Matt Collins says that under the Code, the building fabric (a section worth two credits) is assessed based on the heat loss parameter – a measure of how heat is lost through a combination of the building fabric and ventilation.

"Points are available for heat loss values less than 1.3, with extra points awarded for heat loss values less than 1.1," he says. "The low U-values of NorDan's NTech ranges mean there are points to be gained here."

The NTech range has been deployed within the test homes of the BRE Innovation Park, but the success has stretched beyond this experimental set up to everyday

Energy efficient doors and windows are another step towards driving down carbon emissions within a home and working towards compliance within the Code's energy and carbon category. **Suzie Mayes** talks PVCu and timber and opens a window on the issues concerning the industry

Cleaner windows



housebuilders: "We've seen a definite increased interest in our low energy products," Collins explains. "So much so, that NorDan is extending the Low Energy range to include a wider variety of designs, giving architects and specifiers as much choice as possible."

Mumford and Wood's SBD conservation casement window range launched in August sees U-values of

Profile 22 products are made of post consumer waste PVCu, a "hugely recyclable product"

1.8, although lower numbers are possible with higher glass specifications – Mumford is in partnership with double glaziers Saint Gobain and Pilkington.

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Eurocell doors offer up to six times the thermal efficiency of timber doors

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The range seems to have much to merit it. It is Secured By Design certified and provides improved sound insulation with a 40dB acoustic rating, making it a potential point scorer in the health and wellbeing category of the Code. Also A-C window energy rated (WER), the C-grade is a Code level three achiever. "Provided the products are installed properly through the SAP [Standard Assessment Procedure] it will meet the relevant Code requirements," says Roy Wakeman, chairman of the Performance Window Group and Mumford and Wood and Clearwood.

energy bill

"The range can also reduce a customer's energy bill by £90," he continues. "Customers are more aware of energy ratings now and private housebuilders are influenced by the end user. People will be simultaneously asking whether the window is safe to use and is sustainable."

Back to the Code, and not only can housebuilders gain 15 credits within the dwelling emission rate (DER) section of the energy and carbon category – the estimated level of carbon emissions in kg per sq m arising from the total energy use of the home – they can also grab up to 15 credits in the materials category for the environmental impact of materials section based on the Green Guide, which gives simple guidance on how polluting or otherwise a building material is.

Window Specialist Profile 22, part of the Epwin Group, is probably quite pleased that the Green Guide exists. It manufactures doors and windows using post consumer waste PVCu, a "hugely recyclable product," in the words of commercial sales and development director Andrew



Eurocell excels

Eurocell, manufacturer and distributor of PVCu profiles for windows and doors, has recently developed an A rated double glazed window with an energy index of 9.

"This means that the window will allow more heat from the sun to pass through the glass and into the room than is going to be lost through the window," explains sales director Martin Saunders. "In this example, the window will gain nine kilowatt hours per sq m per year, which will con-

tribute towards heating a home."

Not forgetting doors, Eurocell has launched the Dales Collection of doors, offering up to six times the thermal efficiency of timber doors: "This has been achieved through the use of a rigid foam insulation core along with a triple-seal frame that was first pioneered by Eurocell," Saunders says. "The seals enable the door to withstand the worst of the British weather through the use of two brush seals and a gasket seal, which will remain watertight in the most extreme conditions."

Reid. The company now offers a new eco based system, combining a cavity closer which is manufactured from 98% PVCu and a sill system with a 92% recycled content, co-extruded with a virgin skin to deliver good weather performance. All of this has led to PVCu scooping the highest A+ rating within the Green Guide.

"There isn't really a typical Code level that we aim for," Reid admits. "We always work with the developer

Design offering and built to Lifetime Homes standards. Further, the range has been used within the Miller Zero project, launched last month, featuring five homes of different Code levels.

Butterick is convinced of the importance of doors and windows within the Code:

"High performance windows and doors are essential in achieving a highly insulated and airtight building

"Improving the thermal performance of windows and doors beyond those normally used by the building industry means more credits can be collected"

to meet their requirements, however the vast majority of work we currently undertake will be somewhere around Code levels three, four or five, with a window U-value of between 1.2 and 1.6."

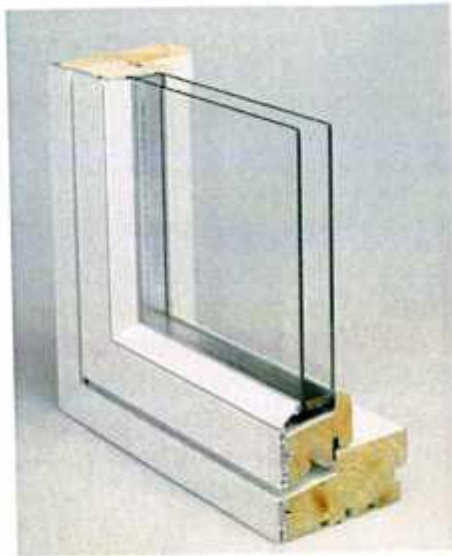
L.B Plastics, another doors and windows company manufacturing materials other than timber, has driven U-values down to 0.8 with its Sheerframe HED window which sports the kind of look that housebuilders wish to build and customers want to have in their homes, so says Mike Butterick, L.B's head of new build. The HED window is another Secured by

fabric. But improving the thermal performance of windows and doors beyond what is normally used by the building industry means that additional credits can be collected thanks to the improvement in the dwelling emission rate and heat loss parameter."

To sway the housebuilder, L.B Plastics has found that using 0.8 U-values reduces the house's dwelling emission rate by 12.9%, surely a credit scorer.

But as if to prove that life is never plain sailing, Profile 22's Andrew Reid, wants to challenge the role of U-values in measuring the energy performance of windows within the Code, and says that WERs give a much more straightforward assessment of energy efficiency. They are an adopted measure in

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doors and windows

glazing products has two major implications. While exceptionally low U-values can be achieved they can only be achieved at significant cost.

"Second, while in new build, in common with refurbishment, you have to secure a minimum U-value to simply pass go, window performance also has to be assessed as part of the overall performance of the building envelope, which does recognise thermal gain as part of SAP ratings."

Apparently, this has a direct impact on window performance, as a low U-value usually means that less heat can pass from inside to out, but in a vice versa situation, the G-value – solar gain – is reduced.

"There's a technical discussion about whether to compromise an insulated window or solar gain," says md of Rational Windows Karl

Zierold, picking up the discussion. "Sometimes a U-value shouldn't be lowered as the window can benefit from solar gain.

"Windows and doors alone can't achieve a particular coding, it is the entire build which scores the credits and points"

Gary Hutton,
general manager at Black Millwork

Rational still produces windows with values of 0.8 through triple glazing, although 1.5 is more typical, and the aim is for Code levels three and four. But after all this, Zierold comments that energy efficient windows and doors will only win housebuilders "two or three points" within the Code.

Meanwhile Gary Hutton, general manager at Black Millwork which, as well as timber windows, produces

Bi-fold doors with a U-value of 1.4, comments that triple glazing is not even essential to the energy performance of a scheme: "Windows and doors alone can't achieve a particular coding, it is the entire build which scores the credits and points. When one of the architects we've been working with specified triple glazing, the calculations showed that

the equations of the roof and walls were more than efficient without it."

"Less heard of are dark U-values, a raw insulation value for windows. We're still trying to engage in the debate here and there could be cost savings at the end of it."

(Eurocell has developed a double glazed window, which allows more heat from the sun to pass through the glass. See box).

cost implications

With triple glazing comes a cost implication, he warns. "One of our key products, the Black casement wooden window, has a U-value of 1.3 which is very good. If we switched to triple glazing and reached a rating of 1.1, the cost of the window would increase by 30%."

This does cause one to wonder how attainable Code level six is in such a short space of time. Whatever the outcome, doors and windows, whilst not producing huge Code wins alone for housebuilders, could still be the tipping point between one level and another, whether U-values or triple glazing are the right approach or not. **hb**



Above: Rational Patus windows. "Sometimes a U-value shouldn't be lowered as the window can benefit from solar gain": Karl Zierold, md, Rational Windows

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refurbishment and this will be what end users recognise.

He explains: "The approach adopted by many specifiers to specify an exceptionally low U-value on

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Performance Window Group/Mumford & Wood	www.theperformancewindowgroup.co.uk	E0606
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