

# NEW CLEMENT STEEL WINDOWS - A SUSTAINABLE, ENERGY-EFFICIENT CHOICE

*Hot on the heels of COP27, with war in the Ukraine continuing and another UK recession looming, climate change and energy price rises are the topics de jour. As people look for ways to increase the energy efficiency of their properties, in order to make them more sustainable and avoid incurring increased costs, it is worth noting that old windows and doors can be among the most common causes of poor temperature control within a building.*

New windows can help to reduce energy costs while also improving the comfort of a property through better thermal control and noise proofing. In double glazing, argon and krypton gases are commonly used between the two panes of glass, because they are heavier than air and poor conductors of heat which slow down or even stop energy from travelling through them. The type of gas used is one factor affecting the Window Energy Rating (WER) – to comply with current Building Regulations all new windows should be rated 'C' or above and this is calculated using several variables including:

- Thermal transmittance (U value) – this measures how much heat can escape through the glass in Kilowatt-hours, per sq m each year;
- Solar factor (G value) – this measures how much solar energy is gained through your windows from the sun in Kilowatt-hours, per sq m each year; and,
- Air leakage (L value) – this measures the air leakage, which should be minimal, in Kilowatt-hours per sq m each year.

The material a new window frame is manufactured from is also important. From a sustainable point of view, steel is one of the most recycled materials in construction. Indeed, new steel requires an element of recycled steel in its production process. The process of recycling steel is very straightforward - the steel gets picked up by magnet and melted down - so there are no complicated separating procedures to follow. Waste from the manufacture of steel building products is easily collected and separated for recycling and on the construction site steel products generate very little waste.

As it is so inherently strong, steel can be recycled infinitely without losing that innate quality, giving it a high value as a secondary raw material. At the end of its life cycle, a steel product can be recycled and made into new products that are of an equivalent standard to the original material.

Steel is traditionally made using either the Basic Oxygen Furnace (BOF) or the Electric Arc Furnace (EAF) method; however, while the BOF route can only accommodate 35% recycled steel, the EAF method can

*Below, the recently refurbished Ladywell Convent in Surrey. Photography: Laura Kelly, LSK Photo.*





accommodate 100% recycled steel. In the UK, the infrastructure is not available to meet the demand for recycled content above 35%, so steel is instead sourced from Europe.

The steel used in Clement Window Group's hot rolled steel windows, doors and screens comes from Montanstahl in Switzerland and is made using the EAF method meaning there is a higher proportion of recycled steel. Montanstahl is committed to sourcing its raw material at prestigious European mills that comply with high levels of recycling and where profiles in the form of hot rolled steel billets are manufactured with a very high amount of recycled scrap metal (typically around 98%). Scrap produced by Montanstahl as a manufacturer of steel profiles is sold back to a mill and then also used for recycling purposes.

Steel is a low maintenance material and hot dip galvanised, hot rolled type steel window frames will usually last the lifetime of the building they are installed into, meaning it will be a long time before they will need to be replaced and the whole steel window cycle will be going again.

Steel is the perfect choice of framing material for many Listed Buildings or properties in Conservation Areas and Clement Windows specialises in replicating original windows but with a modern specification. Designed with this in mind, the Clement EB20 range of new double glazed steel windows is a range of exceptionally slim (20mm) insulated glass units manufactured with krypton gas as standard, Part L compliant and achieving a 'B' WER. Manufactured from recycled steel and created for

projects where a traditional steel window appearance is required, the EB20 range is designed to replicate the appearance of original or existing windows while simultaneously providing all the advantages of 21st century technology, including first rate thermal and weather performance.

Windows from the Clement EB20 range were recently selected for the refurbishment of Ladywell Convent, the Motherhouse of the Franciscan Missionaries of the Divine Motherhood (FMDM) congregation, an international religious congregation of Catholic women. Situated in the beautiful Surrey Hills, the Convent offers hospitality for returning Missionaries and visitors and is also the site of La Verna, a home for elderly sisters and those who support them.

Previously named Tuesley Court and bought by the FMDM in 1956, Ladywell is Arts and Crafts in style, Grade II listed and an oasis of calm and tranquility. An extensive refurbishment was recently carried out to the residential and conference buildings on the site ensuring their suitability for an aging group of sisters. Two new support buildings were also constructed.

Windows from the Clement EB20 steel window range with 12mm oval leads were installed in the Staff Building, polyester powder painted RAL 9005 (Jet Black) semi gloss, providing a good match to the existing heritage windows. The FMDM congregation was keen that the project demonstrated a commitment to environmental sustainability for the whole campus and the longevity and recyclability of the new steel windows support this.



*Above, Clement EB20 windows at Ladywell Convent, Surrey. Photography: Laura Kelly, LSK Photo.*





*Above, photograph courtesy of homeowner*

Sometimes double glazing is not an option and many Conservation Officers will insist on single glazing for sensitive heritage and refurbishment projects such as parts of this incredible barn (above), tucked away in the beautiful West Sussex countryside. Over six hundred years old, the building had previously been updated in parts over the centuries, but nothing like the complete makeover it has had now. It has been lovingly restored from top to bottom into a superb family home and separate cottage.

The new owners wanted to make the barn more sustainable and efficient. Due to years of the building not being breathable the wonderful timber frame had become damaged. The inappropriate cement render was falling off, so after much research it was decided to replace the wall panels with hempcrete which is carbon negative, thermally efficient and breathable whilst retaining the property's rustic appearance. As far as possible traditional, locally-sourced products were used such as heritage tiles, lime plaster, oakum, natural paints and genuine steel windows.

As the barn is Grade II listed it was vital that the new windows and doors matched the original metal fenestration. Clement SMW steel frames were the perfect choice for a heritage project like this. Silicone fronted for an authentic appearance, they outperform original or old windows in terms of weatherstripping, maintenance and security, decreasing draughts and giving better thermal control. For this project, the single glazed leaded glass was supplied locally by Silver Stained Glass.

The client said: "We love how the Clement windows have helped bring our old barn back to life! They look so in keeping with the historic building but are contemporary enough to allow modern living."

Recycled steel forms a proportion of the steel used to make Clement Conservation Rooflights too. Manufactured as a modern reproduction of a Victorian original for both a tile and a slate roof profile, these heritage rooflights will lie flush with the roofline they are installed into, giving a very traditional appearance. More importantly, the range has achieved a British Fenestration Rating Council WER of 'A+'.

Clement Conservation Rooflights were recently chosen for the refurbishment of Grade II listed Staplehill Abbey, a unique estate of 45 two to five bedroom homes, set within beautiful gardens and grounds.

The original Abbey House was built in the early 19th century, with the monastic buildings dating back to the 1840s. The twin chapels were designed by Charles Hansom in 1847 and the buildings were completed in 1851. Founded by a small group of nuns led by Madame Augustine de Chabannes, the Abbey was home to The Cross Abbey order of Cistercian Trappist nuns between 1802 and 1990.

Dorset based developers Ankers and Rawlings worked painstakingly to retain the original artefacts and period features of this historical site. They chose over 60 Clement Conservation Rooflights for the project including both slate and tile profiles in sizes 1, 2, 3, 4 and 5.

New steel fenestration products can, therefore, provide an answer to the construction industry's call for greener, eco-friendly building techniques, as evidenced by the amount and scope of steel recycling, as well as a tool for homeowners and building contractors who are trying to reduce energy costs and create more sustainable spaces for us all to inhabit in the future.





*Above, photograph courtesy of homeowner*





*Above, a size 4 Clement Conservation Rooflight at Staplehill Abbey in Dorset.*

**Clement Windows Group** manufactures an innovative range of steel windows, steel doors and steel screens for both private residences and commercial projects. Based just outside London, in Surrey, Clement also supplies conservation rooflights, available from stock or made bespoke to individual requirements, in either a tile or a slate profile.

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*Below, over 60 Clement Conservation Rooflights were installed at Staplehill Abbey in a mixture of slate and tile profiles*

**CLEMENT®**  
*creating light...beautifully*

**Steel windows and doors by Clement, the steel fenestration supplier of choice for residential and commercial projects of all sizes.**

Our approach is to work closely with all stakeholders in the construction process, including planning where appropriate, to produce window designs that are visually stunning and offer high technical performance.

*superb steel windows, doors, screens and rooflights*

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