

Belgium heritage sees veritable restoration feat by AGC's FINEO

The restoration of Belgium's historic Wynendaele Castle showcases the perfect harmony between heritage preservation and innovation. Using AGC's ultra-thin FINEO vacuum insulating glass, RenoWindow enhanced 203 century-old windows with modern energy efficiency, sustainability, and acoustic comfort - preserving the castle's neo-Gothic elegance while drastically reducing energy consumption.

"Wynendaele Castle is a magical place,' enthuses Jérôme Matthieu de Wynendaele, the castle's owner. 'FINEO is a magical product,' adds Christophe Vanassche, project consultant at RenoWindow, a Belgian company specialising in sustainable window renovation. The energy-efficient restoration of the historical glazing at the idyllic, moated castle in West Flanders brought together two partners that could not have been more perfectly matched. Wynen-





daele Castle was originally built as a wooden castle complex in the late 11th century. In the 13th century it was replaced by a walled circular castle. In the 12th and 13th centuries the castle was the seat of the Counts of Flanders and later became the setting for many significant historical events, among them the fatal riding accident of the 25-year-old Mary of Burgundy in the surrounding woods. In the 1870s the Matthieu family - who have owned the estate continuously since 1833 - remodelled the castle extensively in the neo-Gothic style, giving it its current appearance with medieval-style towers, battlements, stepped gables and arched doorways. After moving to West Flan-

ders in 2021, Jérôme Matthieu de Wynendaele was faced with major challenges. Saving energy was the main issue. How could the spirit of a 2,000 square metres, 1,000-year-old listed castle be preserved while reducing energy consumption? He believed that the only solution lay in FINEO's thermally efficient vacuum insulating glazing. 'The Flemish Heritage Authority asked us to preserve the existing window frames wher-

ever possible. That's why we needed heat-insulating glass that was just as thin as single glazing,' explains the castle owner. FINEO vacuum insulating glass was chosen as it combines modern energy efficiency with minimal installation disruption. The specialists at RenoWindow recognise the clear advantages of renovating historical windows using vacuum glass. Rather than a complete reconstruction, the process focuses on upgrading the existing frames and replacing the glass to improve energy efficiency. This approach leaves reveals and connections to the masonry untouched - a significant advantage over complete replacement, as historically accurate windows often require customisation and manual fabrication.

TRADITIONALLY INSTALLED, STATE- OF-THE-ART CUSTOMISATION

Wynendaele has 203 windows in around 30 unique designs. Before replacing the glazing, RenoWindow measured all existing glass panes precisely. Using this data, AGC Glass Europe

produced about 60 different glass formats and thicknesses, ranging from 6.7 to 20.1 millimetres, on the ultra-modern FINEO production line in Lodelinsart, Belgium - each one custom-made precisely. Due to strict conservation requirements, the existing glazing bars were preserved and glass units manufactured in small dimensions were inserted to preserve the original subdivision. Every window frame was thoroughly inspected for damage and precisely measured, while the seals and fittings were also checked, with any necessary replacements carried out. Replacing the glass took around two weeks and was carried out in the traditional way. After milling and cleaning the existing rebates, a soft and thick enough putty was used to insert the VIG safely, avoiding hard contact between the glass and the frame. Finally, the painted surface was professionally restored. In only a few cases was it necessary to remove the window sashes to enable more efficient milling. 'Our aim is always to preserve the original aesthetics of the frames and not to use any

ABOUT AGC GLASS EUROPE

AGC Glass Europe produces, processes and markets flat glass for the construction industry (external glazing and interior decoration), the automotive industry (OEM and replacement glass) and other industrial sectors (transport, solar power and high-tech). It is the European branch of AGC, a world leader in flat glass. It has over 100 sites throughout Europe, with around 13,000 employees.



additional materials,' explains Vanassche. 'Thanks to the insulation value and thickness, we can offer glass replacement while maintaining the frame's original appearance 100 percent.'

A VACUUM SPACE OF JUST 0.1 MILLIMETRE THICK PROVIDES THERMAL INSULATION

Stefan Lips, Sales Manager Europe for FINEO by AGC, explains: 'The functional centrepiece of FINEO vacuum glazing is a 0.1 millimetre-thick vacuum space between two panes of glass, one of which has a low-emissivity coating that guarantees high energy efficiency with an extremely

slim design". This system eliminates convection and reduces heat radiation, providing highly effective thermal insulation. Unlike conventional insulating glazing, which is filled with noble gases such as argon or krypton, the insulating effect of FINEO is notably achieved by the vacuum between the two glass panes. Despite having a total glass thickness ranging from just 6.7 to 20.1 millimetres, FINEO achieves thermal insulation values comparable to those of triple glazing. With a Ug value of $0.7 \text{ W}/(\text{m}^2\text{K})$, it is a considerable improvement on the single glazing typically found in older buildings, which has a Ug value of around $5.8 \text{ W}/(\text{m}^2\text{K})$.

'This project was special for our team. Working on this historical moated castle was technically challenging and personally enriching. It's not every day that we're asked not to disturb the tower spirit while working,' says Christophe Vannasche, smiling. Meticulous planning of the construction site logistics was required to avoid disrupting the cas-

tle's operations. Due to the surrounding moat, many windows were difficult to access, so a squirrel scaffold was used.

SUSTAINABILITY ENCOMPASSES MORE THAN JUST ENERGY EFFICIENCY

In addition to its thermal properties, FINEO is characterised by increased light





the original glazing. 'FINEO impressively combines high performance with sustainability, setting new standards in window technology,' says Clément Lemoine, Head of Product Management for FINEO by AGC. 'Our laboratory tests prove that FINEO retains its insulation and soundproofing properties for over 60 years, providing our customers with long-term peace of mind.' FINEO's high quality and reliability are confirmed by various certifications and approvals that recognise it as a pioneer in the glass industry. For instance, the vacuum insulating glass is 100 percent recyclable and is produced with Cradle to Cradle certified AGC glass, which verifies the sustainable nature of the material cycle and the environmentally friendly production process. In November 2024 AGC's FINEO was the first manufacturer to receive the CE mark for its vacuum insulating glass, an internationally recognised seal of quality guaranteeing safety, reliability and high product standards.

transmission. Compared to triple glazing, around 15 percent more daylight enters the interior, which contributes to the quality of the space, particularly in living and working areas. The vacuum glass also provides a

better sound insulation than modern triple glazing - the glass used in Wynendaele achieves values of up to 36 dB. FINEO is also flexible in its application: the standard glass can be customised to meet different require-

ments, offering additional functions such as solar control, sound insulation and safety glass. For use in listed buildings, FINEO Heritage is available, combining Fourcault glass to preserve the historical appearance of

ABOUT FINEO

FINEO is the new generation of insulating glass. This vacuum glazing, with its excellent thinness, provides optimum thermal and acoustic comfort, meeting the expectations of joinery professionals concerned about sustainability and energy efficiency. Under the aegis of AGC Glass Europe, FINEO benefits from a revolutionary production method. Its renowned thinness in no way detracts from its technical excellence, in terms of both thermal and acoustic insulation.

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