

Developing local IGU tests

Over the last 25 years, BRANZ has been instrumental in developing robust methods and undertaking rigorous testing to support the local manufacture of quality insulating glass units.

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IN THE EARLY 1990S, double glazing systems, or insulating glass units (IGUs), began being used more frequently in New Zealand housing. Their thermal benefits had long been acknowledged internationally, and as the local housing market developed, they were seen more often in higher-end housing.

Made in New Zealand

Transporting IGUs from overseas was not easy, so more local manufacturers began making units for domestic supply. However, the life expectancy of many local IGUs was poor, with a maximum 5-year warranty given for a typical domestic installation.

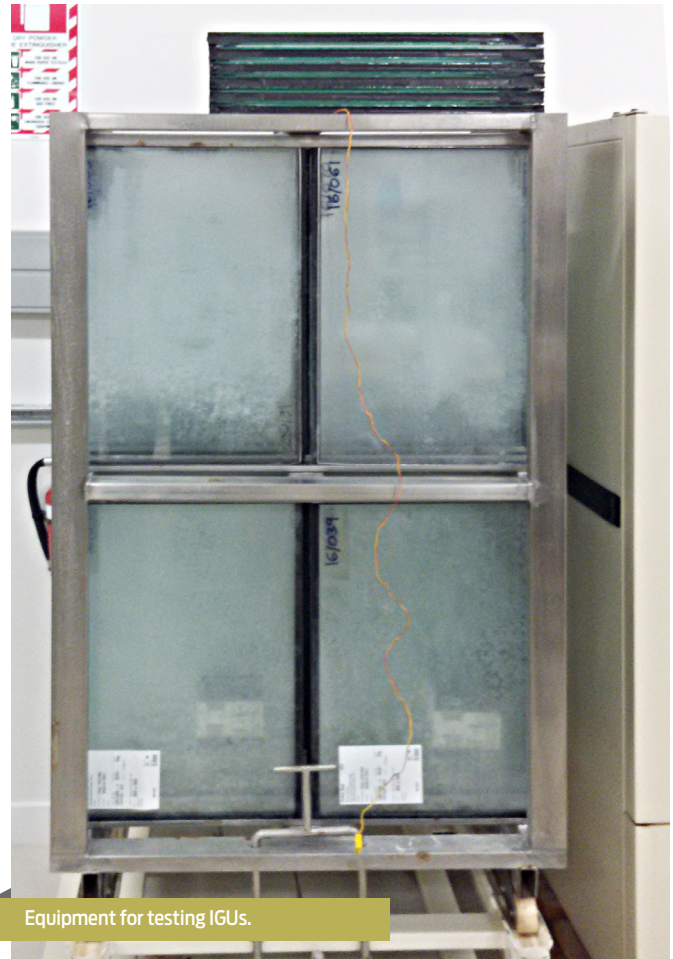
In response, the Insulated Glazing Unit Manufacturers Association (IGUMA) was formed in 1992, in liaison with BRANZ, to represent New Zealand manufacturers of IGUs. As an industry body, IGUMA has been able to address the problems with double glazing found in New Zealand.

Two issues found in the 1990s

During the 1990s, a Building Research Levy-funded BRANZ research project investigated the problems with IGUs. Two main issues were identified - poor installation and poor manufacture.

To address manufacturing quality concerns, the British BS 5713:1979 IGU durability test was identified as the most appropriate test available at the time and was adopted.

Equipment was purchased and commissioned at BRANZ to undertake this test. Further research continued into the reasons for failures, with international developments informing the testing process. ➤



Equipment for testing IGUs.



Testing leads to improved quality

With the introduction of the BS 5713:1979 test, the industry was able to improve the quality of manufactured IGUs. Using the benchmark of BRANZ testing and research findings, IGUMA was also able to better understand the issues that led to premature failure in service.

A testing cycle was soon established to ensure that all manufacturers selling product in the New Zealand market had current testing results.

Improving IGU installation

By this stage, BRANZ research and international understanding of IGU performance had proved that water held in IGU frame rebates significantly reduced the life of IGUs. This helped address the other significant issue - poor installation of IGUs.

In response, an approved set of IGU installation instructions, utilising a sloped setting block for timber glazing, was developed. The sloped block was positioned under IGUs in timber framing, allowing water to drain away from the IGU edge seal. Other block systems were developed by framing and hardware manufacturers to allow water to drain past setting blocks and avoid dampness around the edge seals.

BRANZ developed site manual

In 2000, the BS 5713:1979 test was superseded by the EN 1279 set of tests, which incorporated argon gas loss measurement and assessment of manufacturing quality assurance. The use of argon between the panes of an IGU, particularly with glass panes with

low-emissivity (low-E) surfaces, meant that IGU thermal performance could be significantly improved.

The argon gas loss test took time to be established, but it was important that the argon was maintained for the life of the unit to achieve improved thermal performance.

As part of the product quality improvement, BRANZ also developed a site manual to implement ISO 9001 requirements into IGU manufacture.

Products tested at BRANZ

Today, IGUMA members regularly submit products for testing to prove their ongoing manufacturing quality control. Installation details are well developed, and companies are offering renovation options to upgrade single glazing to IGUs. This often allows homeowners to retain their window frames and upgrade the thermal performance of their homes.

With their durability improved, IGUs can now offer other benefits including:

- enhanced acoustic performance and solar control
- enhanced thermal performance, such as with better low-E coatings
- better argon gas retention
- better inter-pane spacers.

Benefits also accrue from IGUs that are Energy Star certified, a programme operated by EECA. This is an independent, impartial verification that the thermal performance of the window is best in class, and is reliant on EN 1279 testing undertaken for IGUMA at BRANZ. ◀