THERMAL™
5-35Hi+

High Insulation (Hi+)
Window and Door Systems
To comply with the latest building regulations, Metal Technology has developed a range of high performance window and door systems. Using the latest technology, the company has developed bespoke thermal gaskets, cellular foams and polyamide thermal isolators which will allow architects and designers to achieve low U values.

Since its inception in 1985 Metal Technology is now one of the UK and Ireland’s leading designers and suppliers of bespoke architectural aluminium window, door and curtain wall systems. Annual installations now exceed £120 million and the company operates daily dispatches to the UK and Ireland from its 3 acre manufacturing and distribution headquarters. The company is ISO 9001 and ISO 14001 quality and environmentally accredited and is an approved CWCT training centre.

For further information on our full product range visit www.metaltechnology.com
Nationwide Fabricator Coverage
Metal Technology has an approved network of fabricators throughout the UK and Ireland to ensure geographical continuity and capacity, with companies specialising in all market sectors.

Market Sectors
Metal Technology products are designed for a diverse range of buildings within the construction market. Key sectors include: Commercial, Retail, Education, Health, Residential/Housing, Hotel/Leisure.

High performance systems offering bespoke solutions and total design flexibility.

Technical Support
Metal Technology offers a comprehensive design and specification service to architects, developers and main contractors through its team of dedicated architectural advisors. Tailored specifications are provided in NBS format and are also available online along with CAD details and full test data. Thermal modelling and free air flow software allows accurate information to be analysed at early design stage assisting with WER (window energy ratings) and Breeam assessments.
Metal Technology’s System 5-35Hi+ offers the designer a wide and diverse range of profiles that will provide structural integrity, weather performance, thermal enhancement and security. The high performance 5-35Hi+ glazing system complies with the following standards: BS 6375 pt 1, 2 and 3, PAS 24 and is acoustically tested in accordance with BS EN ISO 140-3 and BS EN ISO 717-1.

<table>
<thead>
<tr>
<th>Test</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Infiltration BS EN 1026</td>
<td>Class 4</td>
</tr>
<tr>
<td>Watertightness BS EN 1027</td>
<td>Class E900</td>
</tr>
<tr>
<td>Wind Resistance BS EN : 12211</td>
<td>Class E2400</td>
</tr>
</tbody>
</table>
Thermal Performance

Metal Technology’s THERMAL range, in conjunction with the correct glass specification, is designed to aid compliance with the latest thermal requirements of the current building regulations. The extended polyamide thermal break profiles, incorporating integral fins have been specifically designed to minimise heat transfer across the window profiles. This innovative and advanced thermal break technology provides the basis of the 5-35Hi system.

The 5-35Hi+ System further boosts thermal performance through the introduction of specially designed thermal gaskets and foam profiles. These reduce radiation heat loss across the air cavities within the window profiles to provide additional thermal enhancement. The 5-35Hi and 5-35Hi+ systems offer significantly improved U-frame values over more traditional thermally broken aluminium window systems.

<table>
<thead>
<tr>
<th>U-frame values</th>
<th>5-35Hi</th>
<th>5-35Hi+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed light outer frame</td>
<td>1.92 W/m²K</td>
<td>1.34 W/m²K</td>
</tr>
<tr>
<td>Outer frame and tilt turn vent</td>
<td>2.30 W/m²K</td>
<td>1.63 W/m²K</td>
</tr>
</tbody>
</table>

The following table, based on a standard commercial GGF window configuration and warm edge spacers, demonstrates how such improved U-frame values then contribute to improving the overall thermal performance of a complete window.

<table>
<thead>
<tr>
<th>Achievable whole window U-value</th>
<th>Centre pane U-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 W/m²K</td>
<td>0.6 W/m²K</td>
</tr>
<tr>
<td>1.49 W/m²K</td>
<td>1.10 W/m²K</td>
</tr>
<tr>
<td>1.33 W/m²K</td>
<td>0.94 W/m²K</td>
</tr>
</tbody>
</table>

Metal Technology can provide tailored U-value calculations using their dedicated estimating software to calculate overall project average window U-values for their full range of systems.

Breeam Sustainability Rating
When assessed in accordance with the profile mass formula, as set out in the BRE’s Green Guide for sustainable design and environmental performance, Metal Technology’s 5-35Hi and 5-35Hi+ Systems achieved an ‘A’ rating.

Window Energy Rating
Metal Technology’s 5-35Hi and 5-35Hi+ Systems has been assessed by an approved simulator in accordance with the BFRC’s guidelines, using their official Window Energy Rating software, and has been proven to be capable of achieving an ‘A+’ rating.
Introduction
The Metal Technology 5-35Hi+ polyamide tilt and turn window suite has been developed with a diverse range of profile options. Bespoke thermal isolators and insulation combined with structural mullions, vents and outer frames offer architects and designers the ability to achieve flexible design solutions.

Scope
This specification defines materials, construction, finishes and size limits for the Tilt and Turn Window.

Materials
Aluminium profiles are extruded from aluminium alloy 6060T6, T5 or T4 complying with the recommendations of BS EN 12020-2 / BS EN 755-Parts 1 to 9. Polyamide thermal breaks are produced from glass reinforced nylon sections designed to withstand temperatures in excess of 200°C, allowing the sections to be powder coated after thermally breaking.

Construction
Frame members are mitre cut at 45°, corners are reinforced with extruded aluminium crimping cleats and corner braces, and a secure joint is formed by pneumatically crimping into the extruded crimping cleat. Mullion and transom bars are square cut shaped and fixed securely to the frame by means of stainless steel screws and fixing cleat joints. All frame joints are sealed during construction against entry of water using Metal Technology’s two-part adhesive. Metal Technology recommend that only A2 or A4 Austenitic (300 series/class 70) stainless steel fixing screws are used in the assembly of their products.

Finishes
The range of sections can be provided in either of the following range of finishes: Anodised to BS EN 12373-1 or BS 3987. Powder organic coated to BS 6496 or BS EN 12206-1. The System 5-35Hi+ window can accommodate a different colour/finish internally to that used externally if required.

Glazing
This system offers internally glazed sashes and can accommodate glazing units from 28mm to 47mm units. Fixed panes may be externally glazed with the addition of a liner bar profile.

Security
System 5-35Hi+ has passed PAS 24 “Specification for Enhanced Security Performance” as generally accepted on Secure by Design projects. To conform, the window hardware must be in accordance with the tested sample as detailed in Metal Technology’s technical literature. Security products should be labelled by the fabricator in accordance with BS 4873.

Installation
Detailed installation instructions are provided in Metal Technology’s technical literature which should be strictly followed.

Max Size Limitation

<table>
<thead>
<tr>
<th></th>
<th>Vent Width</th>
<th>Vent Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt Before Turn</td>
<td>1500mm</td>
<td>2500mm</td>
</tr>
<tr>
<td>Tilt Only Sashes</td>
<td>2400mm</td>
<td>2000mm</td>
</tr>
<tr>
<td>Turn Only Sashes</td>
<td>1500mm</td>
<td>2400mm</td>
</tr>
</tbody>
</table>

Maximum height and maximum width cannot be achieved simultaneously. This table provides basic guidance. Please refer to size limitation charts in Metal Technology’s technical literature for further details.

Open In Window Fittings
The 5-35Hi+ sections are designed to suit tilt before turn fittings, turn only fittings (side hung) and tilt only fittings (bottom hung), all come with a variety of handle options. See the relevant section of Metal Technology technical literature for details of ironmongery hardware options for specific window sizes. Metal Technology should be contacted for any special operating requirements.
Aluminium is the earth’s third most abundant element after oxygen and silicon (ahead of iron).

Aluminium does not emit dust, vapour or particles and is not toxic to touch. Given its durability and resistance due to applied surface treatments such as anodising or powder coating, aluminium structures need only regular cleaning with neutral detergents followed by rinsing with water.

Aluminium is non-flammable and, when it reaches its melting point in the event of a fire (about 650°C), it gives off no flammable gases or vapours.

Life Cycles
Recycling is a valuable asset in the battle against the greenhouse effect. The global aluminium industry has made great strides during the last century to reduce its environmental impact at all stages of the supply chain. Aluminium extraction and refining companies have reduced their energy requirements by almost 70% since 1900.

This has seen the growing use of hydro-electric energy coupled with a vast increase in aluminium that is recycled. At present more than a third of global aluminium production is from recycled metal, a figure that is growing. Recycled aluminium takes just 5% of the energy needed to produce primary metal with a consequent reduction of 95% in the greenhouse gases produced. The recycling process is economically attractive and viable. Recycled aluminium meets almost 40% of the demand for the metal in Europe. Approximately 70% of the material used to produce Metal Technology extrusions is recycled.

Aluminium is infinitely recyclable with no loss of its properties: The aluminium cycle is a closed life cycle.

Meeting Standards - ISO 14001
ISO 14001 is an international quality system for environmental management, providing a framework to allow businesses to minimise the impact of their operations on the environment. It seeks to establish a company policy for planning environmental objectives and for complying with laws, directives and regulations.

Aluminium
The intrinsic qualities of aluminium, its infinite recyclability, strength and lightness, durability and low maintenance qualities mean it is one of the most sustainable building materials to be used.

Our commitment to sustainable products

Recycling and Waste Reduction
Where we can influence the design and use of our products in developments, we will base decisions on a sustainable basis where the health and safety of the occupants can be combined with the conserving of resources for future generations. As an industry we are using resources more efficiently with the minimum of energy consumption, to deliver a project that is flexible, durable, has longevity, and where practical, using fixtures and fittings that can be reused.

Our products are 100% recyclable