



Leading the way in Passive House education

metaltechnology.com



What is Passive House?

Established by the Passivhaus Institute in Darmstadt, Germany in 1996, Passive House was one of the pioneering concepts for the construction of low energy houses and buildings. The design is focused on making best use of the passive influences in a building - e.g. sunshine, shading and ventilation - rather than active heating and cooling systems, such as air conditioning and central heating.

This, coupled with very high levels of insulation and airtightness, make it possible for a passive building to use 90% less energy than those which are traditionally constructed.

Passive buildings offer superior indoor comfort due to consistent temperatures and good air quality. They also have the added benefit of reducing both external and internal noise due to the high levels of insulation.

35%

of global energy consumption currently stems from the building sector alone

The operational stage is the largest contributor to carbon emissions, the majority of which is from heating and cooling demand. Passive House buildings provide a transparent, quality assured approach to meeting our climate goals, whilst also creating a sustainable built environment.

For a building to be considered Passive House, it must meet the following criteria:

Space heating and demand - not to exceed 15kWh or 10W (peak demand) per square metre of usable living space.

Space cooling demand - targets matching the heat demand with an additional, climate dependent allowance for dehumidification.

Renewable primary energy demand - not to exceed 60kWh annually for all domestic applications (heating, cooling, hot water, and electricity) per square metre of usable living space.

Airtightness - maximum of 0.6 air changes per hour at 50 pascals pressure (as verified with onsite pressure testing both pressurised and depressurised states).

Thermal comfort - thermal comfort must be met for all living areas year-round with not more than 10% of the hours in any given year over 25 degrees Celsius.

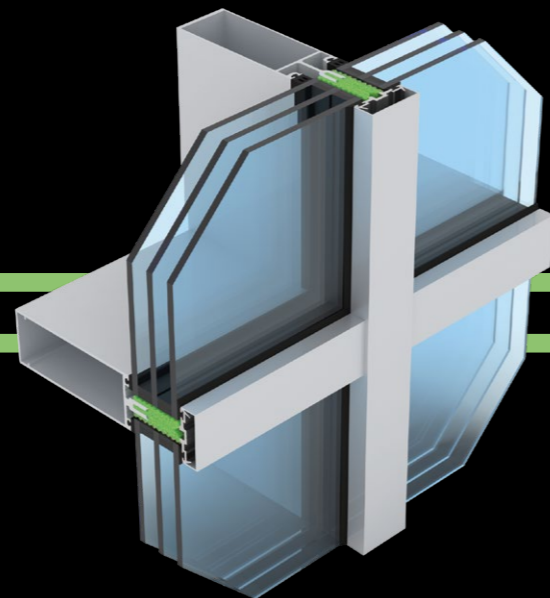
Sustainable Passive House Solutions



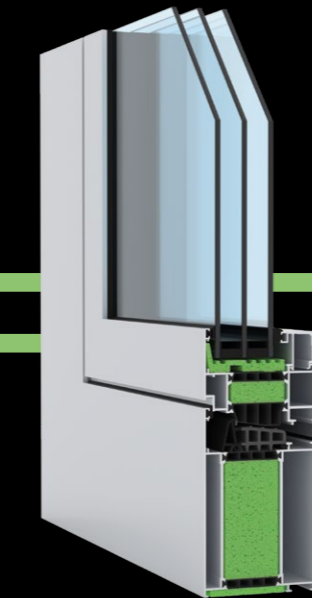
Metal Technology's System 17 Hi+ Curtain Walling, System 5-45 Hi+ Window and System 5-35D Hi+ Door have been certified by the Passive House Institute, recognising that our products meet the required energy-efficiency criteria.



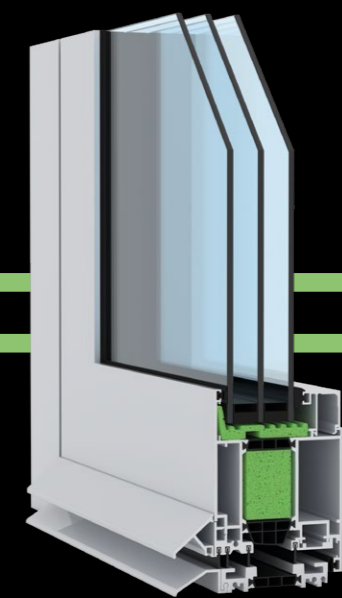
The PHI is an independent research institute that has played an especially crucial role in the development of the Passive House concept - the only internationally recognised, performance-based energy standard in construction.



**System 17 Hi+
Curtain Walling**



**System 5-45 Hi+
Window**



**System 5-35D Hi+
Door**

Metal Technology, for almost 40 years, has accrued vast experience in supplying its high insulation, low air permeability glazing systems across various sectors, and is a trusted partner of fabricators, developers, contractors and architects.

We are committed to excellence in all aspects of sustainable product design and low carbon solutions, providing guidance and support from design stage to technical detail development to on-site installation.

As the UK works to reduce its carbon emissions, there has been an increased demand for new education buildings utilising the Passivhaus standard or improved Fabric First approach. This, along with our commitment to creating

a sustainable built environment, has led to the development of our Passivhaus compliant systems.

Leading the way in Passive House education, Metal Technology's Passive House products are being specified to assist in providing the overall requirement of Passive House criteria for a significant number of innovative and sustainable new education facilities. We have therefore become a valued single supplier for such projects, priding ourselves on our diligent and proactive support of stakeholders.

Further Passive House products are under development as we continue our drive to reduce our carbon footprint on our road to Net Zero.



Scan the QR code to read more about our range of Passive House certified products. Metal Technology's product system manuals and Logikal estimating and production software are available to allow pricing and manufacturing.

Please speak to one of our sales representatives in relation to any current projects that require design or pricing assistance. For technical information, please contact our technical dept: technicalenquiries@metaltechnology.com

St Columba's RC High School & Woodmill High School

Part of the new Dunfermline Learning Campus

Metal Technology has supplied its 'next generation' Passive House systems for one of the world's largest Passivhaus buildings at 26,666m² – St Columba's RC High School and Woodmill High School.



St Columba's RC High School and Woodmill High School (part of the new Dunfermline Learning Campus) were designed by AHR Architects and delivered by BAM UK & Ireland. This high school development is currently the largest UK Passive House education facility at 26,666m² and accommodates 2,700 pupils. The schools form part of AHR's and Fife Council's journey to reduce energy use and carbon emissions.

Metal Technology, with approved fabricator NetZero Facades Ltd, were heavily involved in the design process by working in collaboration with BAM UK & Ireland and AHR Architects. Metal Technology's Passive House certified System 5-45 Hi+ Inward Opening

Windows and System 17 Hi+ Curtain Walling were installed in the development to great success, achieving an airtightness test of 0.45 m³/hr @ 50Pa.

Metal Technology assisted in developing optimal window configurations for classrooms that could accommodate specific ventilation requirements, and developed feature 300mm cappings to its curtain walling system to meet the designer's shading needs for the façade system. High performance doors, louvres and barrier grilles from Metal Technology's product portfolio were also installed in this exemplar campus, performing seamlessly together to deliver the desired aesthetic and performance standards.

Erne Campus | South West College

Enniskillen, N. Ireland



The £29m South West College Erne campus in Enniskillen has been recognised as a UN Centre of Excellence for High Performance Buildings. The project has joined 25 other buildings around the world as an exemplar of green construction.

Metal Technology played an intrinsic role in the design process of Erne Campus, assisting approved fabricator and installer, D & K Architectural Systems Ltd. The campus was the world's first educational Passivhaus Premium building and the first non-domestic Passivhaus Premium building in the UK, delivering an average project façade u-value of 0.8w/m²K.

Designed by Hamilton Architects LLP and built by Tracey Brothers Ltd, the state-of-the-art 8,000m² education and community facility is situated on the prime site of the former Erne Hospital. Mullarkey Pedersen Architects were the lead Passivhaus design team and the project has achieved BREEAM outstanding accreditation, generating four times more energy than it uses.

Erne Campus is a world-class, award-winning environmental building, pushing the boundaries of sustainable design and energy efficient buildings.



Riverside Primary School

Perth, Scotland

Metal Technology provided its Passive House certified systems for Scotland's first Passivhaus Primary School.

Riverside Primary was built in the grounds of North Muirton Primary School and accommodates pupils from both North Muirton and Balhousie Primary School. Designed by Architype and delivered by Robertson Construction, the school opened its doors in June 2023, accommodating 500 pupils and includes a nursery and additional support needs (ASN) provision.

Built to Passivhaus standards, the building is 15-20 times more airtight than a traditional build and has 50% reduced heat energy leakage. For those in the classroom, this means their new school is comfortably cool in summer and warm in winter.

A range of Metal Technology's high-performance glazing solutions, including our Passive House certified systems, were installed by trusted fabricator Avtek Ltd in this state-of-the-art school. We worked with the design teams to ensure full compliance with Passivhaus standards, which involved high level and technical engagement. Metal Technology provided technical detail to evidence the exacting performance requirements for the windows and curtain walling. This technical detail was further developed to enable innovation through the introduction of a slimmer mullion profile to be designed and installed, which resulted in an enhancement in the natural daylight available in each classroom.

The result is a highly energy-efficient, low carbon school, which has provided its pupils and staff with a healthy, innovative learning environment.





Montgomerie Park Primary School

Irvine, Scotland

Metal Technology has supplied its Passive House certified glazing products via fabricator Avtek Ltd, for Montgomerie Park Primary School in Irvine, Scotland, to help meet the development's rigorous energy efficiency standards. The new £21m school accommodates 342 pupils, providing the highest levels of thermal comfort and healthy indoor air conditions.

The school was designed by JM Architects with ECD Architects as Passivhaus Consultants, and delivered by Robertson Group for North Ayrshire Council on behalf of Hub South West Scotland. As part of the council's ambitious net-

zero drive, Montgomerie Park is the first Passivhaus school in the region, which will use 60-80% less energy than a typical school building, resulting in lower carbon emissions and lower operational costs.

Montgomerie Park comprises twelve classrooms, early learning facilities, a gymnasium and dining facilities along with outdoor learning spaces, a multi-use games area and an all-weather sports pitch. The fantastic new school marks a new chapter in the lives of the children and staff, providing a learning and teaching environment of the very highest quality, where pupils can thrive and excel.



Currie Community High School
Edinburgh



East End Campus
Dundee



Monifieth Learning Campus
Angus



Perth High School
Perth

Metal Technology's Passive House products are being installed in a number of education projects across Scotland which are due to open their doors in 2025: Currie Community High School in Edinburgh, East End Campus in Dundee, Monifieth Learning Campus in Angus and Perth High School.

For the four new schools, Metal Technology is supplying its Passive House certified systems, as well as a range of its high-performance, architectural glazing products, through approved fabricator, Avtek Solutions, to help meet each development's rigorous energy efficiency standards.

Adhering to the Passivhaus standard, each of the new ultra low carbon schools will have better air quality, advanced insulation and greater airtightness. Energy usage will be significantly reduced compared to traditional build schools, making each building significantly more cost effective to run. Pupils at each of the new, ultra low carbon, Passive House schools will benefit from learning in a sustainable and inspiring environment.

Currie Community High School in Edinburgh will provide 1,000 student places with three floors of teaching blocks. Designed by Architype and being delivered by Kier Construction, the £65m building will offer beautiful, light filled and healthy learning places and become a vibrant community hub, with outstanding health and fitness facilities, including a Passivhaus swimming pool, a café, outdoor informal play spaces, a sensory garden, and public allotments.

The £100m East End Campus in Dundee has been designed by architectural practice, Holmes Miller, with Robertson Group as the main contractor. The 19,500m² Passivhaus-standard educational and community facility will replace the current Braeview Academy and Craigie High School, bringing the two schools together to accommodate around 1,800 pupils. It will also offer valuable space for

local community benefit, housing a music and drama centre, a café and a library that will be accessible for school use and to members of the public. Sports facilities include floodlit all-weather pitches, a fitness suite, a dance studio, a gym and games halls, which will also be available for use during the day to help create a fully integrated community feel.

The £66.5m Monifieth Learning Campus will be the first large-scale Passive House project in Angus, Scotland, replacing an existing end-of-life school. Designed by NORR architects and being delivered by Robertson Group, the new campus will combine energy efficiency with a high level of user comfort to accommodate 1,200 pupils. The 13,800m² high school campus will feature a central atrium with a social stair, a learning plaza around the dining hall, classrooms arranged over three storeys, a purpose-built ASN department, an early learning centre, a swimming pool and access for out-of-hours community use.

Perth High School will be one of the largest Passivhaus schools in Scotland when completed, utilising a 'Fabric First' and heat recovery approach in its construction that will deliver against the low carbon agenda. Designed by NORR Architects and being delivered by Robertson Group, the new £80m Passivhaus school will feature a large, open double-height theatre, breakout and dining spaces, as well as playgrounds and sports pitches. With spaces flooded in natural light, the new education facility will be a vast improvement for the pupils of Perth High School, providing a fantastic, modern and innovative learning environment.

Client Testimonials

Ciaran Quinn

Senior Architect
JM Architects

“JM Architects have worked with Metal Technology for many years now, on a large variety of education projects. We highly value the early engagement, technical input and general assistance that is provided to us as an office during the early stages of our projects and our main contact, Garry Zinkiewicz, is always available to assist us.”

A number of our projects are adopting a Passivhaus approach and we have found Metal Technology to be at the forefront of development within this sector.

Metal Technology offer a number of excellent products and more notably, provide guidance, detail and installation input and lessons learned which is a continual means of improving their service which in turn provides us with key input and criteria to work and learn from. This assists with informing our early design decisions and assists with identifying project constraints and resolving these during the early stages of our projects.”

Steve Irvine

Operations Director
McLaughlin & Harvey
Construction Ltd

“Metal Technology have proven to be an important partner for McLaughlin & Harvey Construction Ltd. Their involvement on the Nucleus Project, that we delivered for the University of Edinburgh, commenced at RIBA 3 and continued through Stages 4 and 5.”

The advice and support on design, technical and commercial queries was always promptly provided and clearly communicated, more importantly it was always reliable.

This success wasn't achieved by chance, it was achieved as a result of investing time with the key stakeholders, in our case the principal contractor, the design team and the envelope contractor to ensure that the best value response was achieved for all. The team at Metal Technology do “get it” in terms of early contractor involvement and that is vital in ensuring successful outcomes can be realised.”



“We are grateful for Metal Technology’s support in supplying products to the replacement Woodmill and St Columba’s High School in Dunfermline for Fife Council. At over 26,000m² the project is one of the largest Passivhaus Projects in the world and we utilised Metal Tech’s Passivhaus Certified windows, doors and curtain walling system to great success, achieving an airtightness test of 0.45 m³/hr @ 50Pa. We worked with Metal Technology and their subcontracting partner through the environmental requirements and detailing in Pre-construction into Construction. They assisted in developing optimal window configurations for classrooms that could accommodate specific ventilation requirements. They also developed feature cappings to their curtain walling system to meet the designer’s shading needs for the façade system. Following an initial air test trial, they were on hand to assist with detailing queries and provided test data for the specific window configurations adopted. Where necessary they also assisted in the provision of condensation risk analysis at the request of the Passivhaus Certifier.”

Steven Milford

Regional Design Manager
BAM Construction Ltd

“The proactive approach and our early engagement with Metal Technology has proven to be of immense benefit to us as both architects and Passivhaus designers throughout the development of our Passivhaus Classic Standard projects.”

Jamie Gregory

Associate Director
AHR

The quality of information, the support and the excellent technical guidance we receive has enabled us to confidently specify the Metal Technology Passivhaus Certified components in our project proposals.

Laterally the inclusion of the now PHI Certified MT System 5-35D Hi+ external aluminium frame door gives us a reliable single supplier for Passivhaus Certified windows, curtain walling and external doors for our Passivhaus projects.

The service from Metal Technology does not stop upon appointment of the glazing sub-contractor. Metal Technology continue to be on hand throughout the detail development and on site installation of their components. This has proven to be invaluable as we evidence the component information to the exacting Passivhaus requirements.”

“Metal Technology have been supportive and collaborative throughout the preconstruction and construction stages of both our Tain and Currie HS projects. They have attended lessons learned sessions and provided support to the design team on developing robust buildable details. They have also supported the subcontractors and project team during airtightness testing in our sample centre at Currie HS. We look forward to collaborating with Metal Technology on future projects.”

Iain Connell

Senior Design Manager
Kier Construction

Client Testimonials

Stephen Paterson

Senior Design Manager
Morrison Construction

“Morrison Construction acknowledge the resources invested by Metal Technology in meeting the changing demands of school building in Scotland. With the introduction of Passivhaus standards, Metal Technology have been pro-active in developing appropriate products to meet and exceed these exacting requirements to enable us to deliver highly efficient buildings and help deliver Government goals for Low Carbon built environment in Scotland.

Metal Technology exemplify the philosophy of collaborative working with ourselves and the extended design team of architects and consultants.

Consequently, Morrison Construction are delighted to continue our support of this valued supply partner and look forward to many more years working with Metal Technology. They continue to go to great lengths to ensure their aluminium glazing solutions are appropriately designed for project specific applications, but also manufactured and installed through an extensive network of approved local and national fabricators.”

Clara Garriga

Project Director
Holmes Miller Architects

“We at Holmes Miller have had the pleasure of collaborating with Metal Technology for many years, particularly in the realm of education and commercial buildings. Their service has proven to be invaluable during the design and specification phases of these projects. We like to jest that their architectural specification advisor is practically a part of our team, frequenting our office and providing quick, precise responses to even our most peculiar queries. This level of support ensures that our designs are well coordinated and specified.

The products provided by Metal Technology are not only tried and tested but also backed by exceptional service during the construction phase and after completion, with any issues flagged up, promptly addressed with expert advice and solutions.

In terms of their product range, Metal Technology stands out in the market. They have continuously developed their range to meet the demands of modern construction, including a remarkable selection of Passivhaus certified products.

This is particularly notable in a market that often lacks commercial products meeting these stringent sustainability standards. Their Passivhaus certified door is a testament to their innovation, being one of the few available that meets the complex requirements of commercial applications, such as panic hardware and automatic actuation. We highly recommend Metal Technology for their exceptional products and invaluable support.”

“Metal Technology has fully engaged with us and our Design Teams to make a significant contribution to the quality of projects delivered – in particular the new Riverside Primary School for Perth & Kinross Council, the first Passivhaus Primary School in Scotland. High level and technical engagement were crucial throughout the development of the aluminium glazing solutions to ensure full compliance with the Passivhaus Classic Standard, a key deliverable for the Council. MT was able to provide the technical detail to evidence the exacting performance requirements for the windows and curtain walling. This technical detail was further developed to enable innovation through the introduction of a slimmer mullion (frame) profile to be designed and installed, which resulted in an enhancement in the natural daylight available in each classroom. Both Robertson Construction and MT have used the learning from this initial project to further develop proposals for Montgomerie Park Primary School for North Ayrshire Council, East End Campus for Dundee City Council and Monifieth High School for Angus Council.

The level of technical support provided to us as the Main Contractor and also to the Design Teams from inception to installation has been exemplary. The engagement and collaboration through the whole design process, along with the on-site engagement with our Passivhaus Champion and site installation teams has been second to none.

Metal Technology has also been influential in the support, training, and guidance of other members of our supply chain in the principles of Passivhaus both at Pre-Construction and delivery stages, MT understood our vision for the project and worked with us to meet our high-quality standards.

Metal Technology work with us in true partnership ensuring that through joint planning they understand our project-by-project requirements and hold sufficient stock to ensure continuity of supply through its extensive network of approved Fabricators / Installers.”

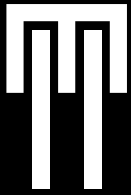
Iain Loud

Senior Design Manager
Roberston Construction
Central East

Alastair Drummond

Programme Manager
School Replacement
Programme | Fife Council

“Metal Technology have provided glazing and curtain walling solutions on a number of Fife Council School projects and more recently have developed aluminium products that have contributed to our ability to meet stringent Passivhaus briefing requirements to satisfy our energy and carbon targets as part of our climate change commitment and those set by the Scottish Government. Early engagement in the design process and ongoing support to completion has been hugely beneficial on this journey.”



Metal Technology
Steeple Rd Industrial Estate
Steeple Road
Antrim BT41 1AB
Northern Ireland

028 9448 7777
sales@metaltechnology.com

Follow us on [LinkedIn](#)
metaltechnology.com