



**Leading the way  
in Passive House  
education**





# 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.

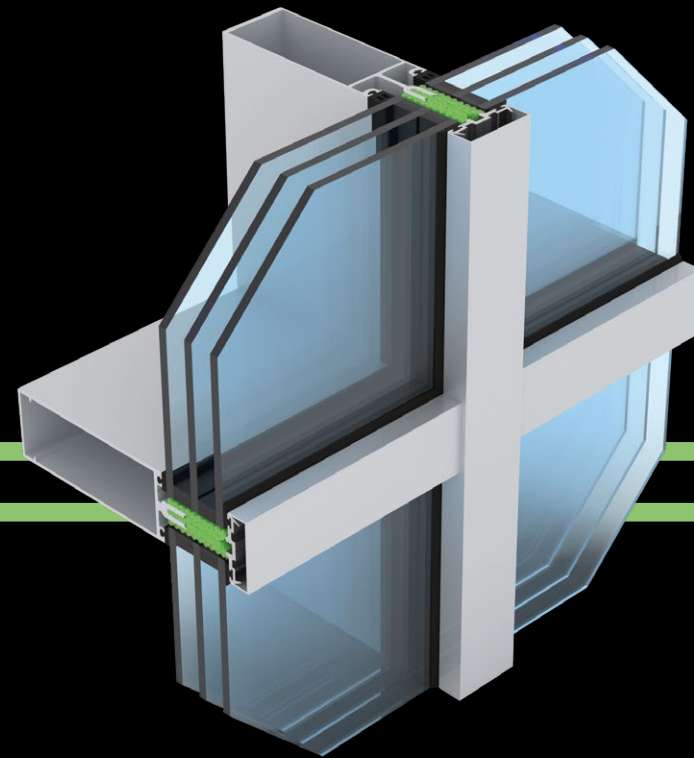


# Metal Technology products certified by the Passive House Institute

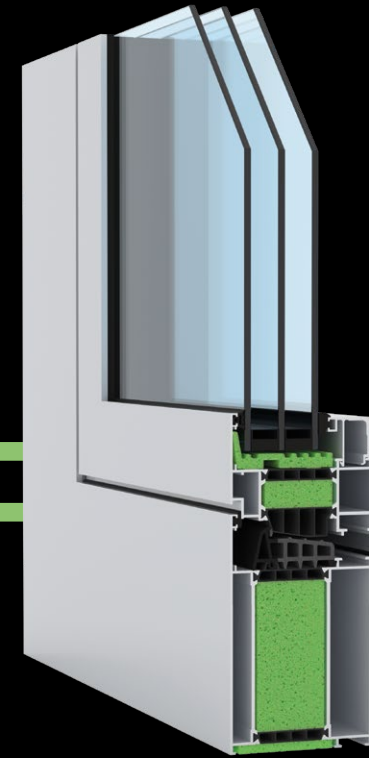
Metal Technology's System 17 Hi+ Curtain Walling, System 5-45 Hi+ Window and System 5-35D Hi+ Door have been certified by the Passive House Institute, recognising that our products meet the required energy-efficiency criteria.

As the UK works to reduce its carbon emissions, there has been an increased demand for new education buildings to meet the Passivhaus standard. With vast experience in supplying its architectural aluminium systems for a wide range of universities, colleges, schools and student accommodation developments, Metal Technology's certified Passive House systems are being specified to assist in providing the overall requirement of Passive House criteria.

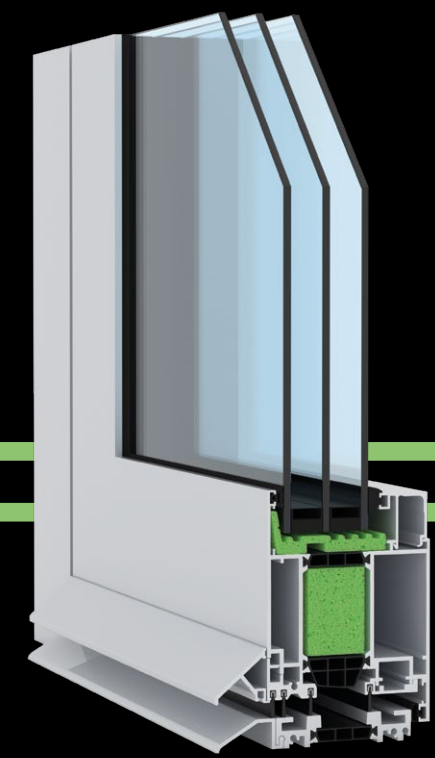
Further Passive House products are under development as we continue our drive to reduce our carbon footprint on our road to Net Zero.



**System 17 Hi+  
Curtain Walling**



**System 5-45 Hi+  
Window**



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

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.



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](mailto:technicalenquiries@metaltechnology.com)



# St Columba's RC High School & Woodmill High School

Artist's impressions | Part of the new Dunfermline Campus

Metal Technology has supplied its 'next generation' Passive House systems for one of the world's largest Passivhaus buildings at 26,666m<sup>2</sup> – St Columba's RC High School and Woodmill High School.



The new Dunfermline Learning Campus incorporates a new college for Fife Council, and two new high schools: St Columba's RC High School and Woodmill High School. Due to open in 2024, the 55 acre, circa £220m 'super-campus' will accommodate up to 2,700 school pupils and 2,500 college students.

Designed by AHR Architects, the high school development is being delivered by BAM Construction for Fife Council and is one of the largest Passivhaus buildings in the world, at 26,666m<sup>2</sup>. The schools form part of AHR's and Fife Council's journey to reduce energy use and carbon emissions.

Metal Technology has supplied its high performance, Passive House certified products for the two new, groundbreaking schools: System 5-45 Hi+ Inward Opening Windows and System 17 Hi+ Curtain Walling, which have been manufactured and installed by approved fabricator NetZero Facades.

Metal Technology's systems are designed to perform seamlessly together to deliver the desired aesthetic and performance standards. Further products supplied for this exemplar campus include System 5-20D Hi+ Doors, System 23 Louvres and LV023 Barrier Grilles.



## 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/m<sup>2</sup>K.

Designed by Hamilton Architects LLP and built by Tracey Brothers Ltd, the 8,000m<sup>2</sup> education and community facility is situated on the prime site of the former Erne Hospital and has achieved BREEAM outstanding accreditation, generating four times more energy than it uses. The Erne Campus won the 2021 BREEAM Official Public Sector Project – Design Stage Award and has recently been named UK Project of the Year 2022 by the Royal Institution of Chartered Surveyors (RICS).





# Riverside Primary School Perth, Scotland

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

The new Riverside Primary School was built in the grounds of North Muirton Primary School and accommodates pupils from both North Muirton and Balhousie Primary School. Built to Passivhaus standards, where energy-saving measures are an integral part of the design, the building is 15-20 times more airtight than a traditional build and has 50 per cent reduced heat energy leakage. For those in the classroom, this means their new school will be comfortably cool in summer and warm in winter.

Metal Technology Ltd supplied its high-performance glazing solutions for this state-of-the-art school, including its Passive House certified systems. Metal Technology worked with the design teams to ensure full compliance with the Passivhaus Classic Standard, 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 (frame) profile to be designed and installed, which resulted in an enhancement in the natural daylight available in each classroom.







Currie Community High School  
Edinburgh, Scotland



Perth High School



Montgomerie Park Primary School



Tain Community Campus

## Metal Technology continues to secure new Passive House education projects across Scotland: Currie Community High School, Montgomerie Park Primary School in Irvine, Perth High School, and Tain Community Campus in the Highlands.

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.

The new £65m Currie Community High School in Edinburgh will provide 1,000 student places with three floors of teaching blocks. Designed by Archtype and being delivered by Kier Construction, the 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.

In Irvine, the new eco-friendly £24m Montgomerie Park Primary School was designed by JM Architects and is being delivered by Robertson Group for North Ayrshire Council and development partner Hub South West Scotland.

As part of the council's ambitious net-zero drive, Montgomerie Park is the first 'Passivhaus' school in the region. The school will comprise 12 classrooms, early learning facilities, a gymnasium, dining facilities and outdoor learning space, including a 7-a-side all weather pitch.

The new, £80m Perth High School was designed by NORR Architects and is being delivered by Robertson Group for Perth & Kinross Council and development partner Hub East Central Scotland. The much-needed replacement school will be a vast improvement for the pupils of Perth High School, and will feature a large, open double-height theatre, breakout and dining spaces, as well as new playgrounds and sports pitches.

With a ground internal floor area of 15,934m<sup>2</sup>, Perth High School will achieve a high level of thermal efficiency and airtightness as a result of carefully detailed interfaces during the construction phase.

The new Tain Community Campus will be the first Passivhaus Trust standard school in the Highlands and will include a nursery, primary school, high school, playgrounds and sports facilities. Stellan Brand architects are leading the design process and the development is being delivered by Kier Construction. The new two-storey campus will replace a number of existing schools and will feature wooden cladding and extensive landscaping.



# 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.”

## 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.”



“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.”

“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.”

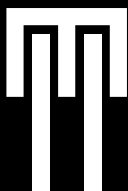
## Iain Loud

Senior Design Manager  
Roberston Construction  
Central East

## Alastair Drummond

Programme Manager  
School Replacement  
Programme | Fife Council





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