

# Building Envelope

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# SIG, THE SPECIALIST DISTRIBUTOR

Every specialist installer needs a distribution partner to offer a reliable service and expert knowledge to support them through all stages of their construction projects. At SIG, we pride ourselves on offering our customers this support in critical areas of build.

As one of the UK's market-leading specialist suppliers to the construction industry, you can trust the extensive product range and excellent service of SIG's specialist businesses to deliver what you need, when you need it.

# How SIG can support you

- ✓ We can offer you an extensive product range from leading manufacturers
- ✓ We provide technical support when you need it, including estimating, sample and matching services
- ✓ With a diverse fleet, we have the right vehicle to deliver the product to you on site
- Our nationwide branch network means we're never far away
- Our dedicated sales team are always on hand to support you



# **SIG** - WE UNDERSTAND YOUR NEEDS

# WANT TO KNOW MORE?

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Or visit **sigdistribution.co.uk/brochures** 



#### WHAT IS RAINSCREEN?

The building envelope can be made up from a variety of constructions be it traditional brick, curtain wall and rainscreen. A rainscreen provides architects, designers and builders numerous benefits in moisture management and energy efficiency. Offering a barrier support mechanism to keep moisture away from the wall assembly, it allows any escaped water to evaporate, preventing mould growth.

RAINSCREEN INSULATION

BREATHABLE MEMBRANE

(ENVELOPE SUPPORT)

SHEATHING BOARD

SFS INSULATION

VAPOUR CONTROL LAYER

INTERNAL LININGS

### **LEADING MANUFACTURERS**



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The building envelope is designed to protect the building components from the effects of fire. In the event of a fire, the reaction and resistance to fire of the building envelope can have a significant impact on the spread of fire and smoke to enable safe escape and allow the fire services to access and protect further damage to the building.

#### **REACTION TO FIRE**

The measurement of how a material or system will contribute to the fire development and spread, particularly in the very early stages of a fire when evacuation is crucial.

Reaction to fire is a classification of how much a material is contributing to the development of a fire in its early stage.

Recent changes in regulation require the use of materials in certain heights and building types with a reaction to fire of

either A1, or A2 to reduce the total combustible materials that would propagate fire development. A2 also taking into account smoke release and the creation of flaming droplets.

#### STAGES IN A COMPARTMENT FIRE

A fire strategy should include both Reaction to Fire and Fire Resistance.

Reaction to fire deals with the initial stages of a fire, ignition, and growth, to reduce the number of combustible solids (the fuel). Fire resistance deals with the latter stages, flash over and fully developed fire, to create compartments that contain the fire for a specified time eq. 60 minutes.

#### FIRE RESISTANCE

The measurement of the ability of a material or system to resist, and ideally prevent, the passage of flame and heat from one distinct area to another.

The definition provided in Approved Document B of the UK Building Regulations of Fire Resistance is the ability of a component or a building to satisfy, for a stated period of time, some or all of the appropriate criteria given in the relevant standard.

Expressed in time eg 30, 60, 90 or 120 minutes about the nominal fire curve

**REI** marking identifies the Fire Resistance rating of the structure.

**R = Load Bearing Stability**, the ability of a construction element to preserve its mechanical characteristics and the relevant load capacity during a normal fire.

**E = Integrity**, is defined as the building component's ability to withstand the fire on one side, without the fire passing throughout, due to the penetration of flames and hot gases.

**I = Insulation**, means that construction should limit the temperature rise on unexposed side so that it is at most 140°C on average and never above 180°C at one point.



#### THERMAL INSULATION

Thermal Conductivity is the measurement of a material's ability to transfer or conduct heat. It is sometimes known as K Value or Lambda Value and is expressed in W/mK. The lower the number, the less heat is transferred therefore the better it insulates. Mineral Wool Rainscreen Insulations commonly have a Thermal Conductivity of 0.032 - 0.035 W/mK.

When calculating the heat loss through an element, in this case a wall, we calculate a U Value. BR443 (2019 Edition) Conventions for U-value calculations sets out how we calculate this using the thermal properties of all the

elements in the buildup whilst also considering thermal bridges such as studs and fixings. However, in the case of a Rainscreen, bracketry is used which penetrates the insulation layer. The most common brackets are made from aluminium which has a Thermal Conductivity of 160 W/mK meaning circa 4500 times the amount of heat transfers across the bracket than across a similar area of insulation. In this case we use the methodology in BS EN ISO 10211 with a 3D geometrical model of the thermal bridge for the numerical calculation of heat flows and minimum surface temperatures.

#### ACOUSTIC INSULATION

Light Steel Frame Constructions can offer little resistance to the passage of sound.

Mineral Fibre Insulation when fitted between the SFS and the external cavity, enhances the acoustic performance of a wall as Mineral Fibre insulation is an excellent sound absorber of medium to high frequencies.

Plasterboard on the inner face can then provide a sound absorber for lower frequencies.

#### **WATER RESISTANCE**

Rainscreen cladding itself is designed to protect a building's external walls from rain damage; the purpose of rainscreen is to allow for the proper drainage of rain and prevent it from soaking into the building and causing lasting problems.

Rainscreen Insulations placed against this cavity typically have water repelling agents to give improved resistance to rain ingress during construction.

Since the tragedy at Grenfell the UK government has enacted changes to construction legislation. Primarily aimed at higher-risk (18m / 7-storeys containing two residential units or more) buildings and relevant (11m / 5-storeys containing two dwellings) buildings the Reaction to Fire requirements for external walling in Approved Document B of The Building Regulations have been raised requiring Class A2-s1,d0 or better. These changes are reflected in the Building Safety Act 2022 which introduces the role of a Building Safety Regulator, oversight of construction products by the Office for Product Safety & Standards along with defined responsibilities for Duty Holders, the introduction of planning Gateways and creation of an Accountable Person to oversee provision of a Golden Thread of information. This Golden Thread concerning the materials of actual construction is the backbone of information the accountable person must make available in a secure information box under requirements specified in The Fire Safety (England) Regulations 2022 for "high-rise residential buildings".

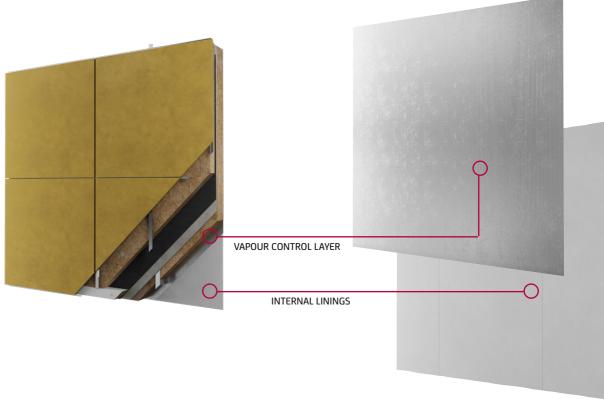
"A cultural and behavioural change of similar magnitude is now required across the whole sector to deliver an effective system that ensures complex buildings are built and maintained so that they are safe for people to live in for many years after the original construction. The mindset of doing things as cheaply as possible and passing on responsibility for problems and shortcomings to others must stop"

Dame Judith Hackitt



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# INTERNAL LININGS

Internal linings such as plaster boards are an essential element of any construction project, providing functional benefits while protecting walls with thermal insulation.

To inhibit the spread of fire within the building, the internal linings shall adequately resist the spread of flame over their surfaces; and have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.

LEADING MANUFACTURERS









# VAPOUR CONTROL LAYER

The vapour control layer is used to prevent the movement of water vapour through the building envelope, which can cause problems such as condensation and mould growth and are typically made from materials such as polyethylene, polypropylene, or aluminium foil.

Installed on the warm side of the building envelope to help keep warm, moist air from penetrating the insulation and reaching the cold surfaces where it could condense. Proper installation is crucial for their effectiveness and installed with no gaps or punctures and sealed tightly around any penetrations such as pipes or electrical boxes.

LEADING MANUFACTURERS

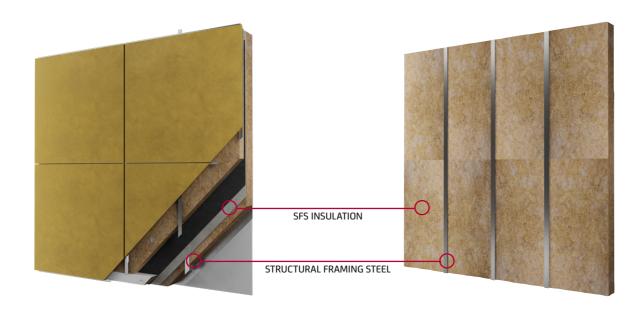












# STRUCTURAL FRAMING STEEL (SFS)

Steel Framing Systems are one of the many preferred systems for construction projects due to their durability, strength, and versatility. These systems use steel beams and columns to create a framework for buildings, which can be clad with a variety of materials such as glass, brick, or metal panels.

One of the main advantages of Steel Framing Systems is their resistance to fire and mould.

### LEADING MANUFACTURERS





# **SFS INSULATION**

SFS Insulation is the insulant material placed in the gaps between the framing components and the inner/outer skin. Depending upon envelope design material is typically a slab or board aiding installation.

Mineral Wool (MW - rock/stone/Glass Fibre) products are typically Euroclass A1 Reaction to Fire making them suitable for Higher Risk Residential or Relevant buildings.

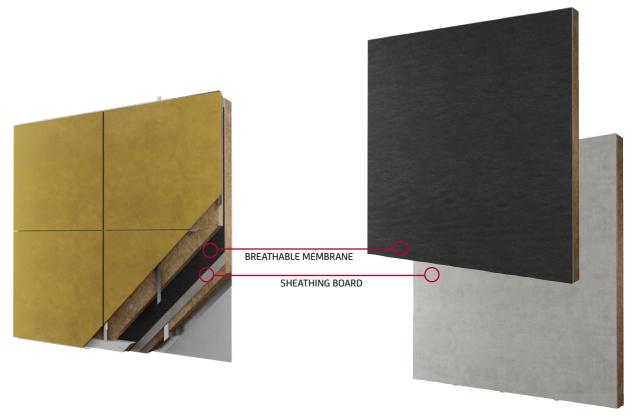
### **LEADING MANUFACTURERS**











# **SHEATHING BOARDS**

Sheathing boards provide an extra layer of protection against the elements and help to strengthen the overall structure. Typically made from materials such as Gypsum, Cement Bonded Particle and Fibre Cement or composite panels, one of the main benefits of using sheathing boards is that they can help to improve the energy efficiency of a building whilst providing a barrier against moisture.

When choosing sheathing boards, it's important to consider the specific needs of your building project; if you are building in an area with high winds or heavy rainfall, you may want to choose a thicker, more durable sheathing board as some types of sheathing boards may be better suited for certain types of insulation or siding materials.

### **LEADING MANUFACTURERS**









# **BREATHABLE MEMBRANE**

Breather membrane, also known as breathable membrane, is used to provide a barrier against moisture and air while allowing for ventilation. It is typically installed on the exterior of the building, underneath the outer cladding or roofing, or on the interior of the building, behind the insulation.

Breather membrane helps to prevent the accumulation of moisture within the walls, which can lead to structural damage and mould growth. Additionally, it can improve the energy efficiency of a building by reducing heat loss through the walls and allowing for better air circulation.

### **LEADING MANUFACTURERS**













# **FIRE BARRIERS**

Fire barriers are designed to prevent the spread of fire and smoke throughout a structure, minimising damage to the building.

Made from fire resistant materials and are designed to withstand high temperatures and flames for a specified period of time. Fire barriers must be installed in accordance

with supplier instructions and maintained to be effective and building codes and regulations dictate the required fire rating for different types of structures and occupancy types.

SIG can provide a range of vertical and horizontal fire barriers that help prevent the spread of fire and smoke and maintain the fire compartmentation.

#### **LEADING MANUFACTURERS**









# **RAINSCREEN INSULATION**

Rainscreen insulation is a method of protecting buildings from moisture damage, by adding a layer of insulation between the exterior wall and the cladding system, creating a gap for air flow.

This gap allows any moisture that penetrates the cladding to dry out, preventing damage to the insulation and the building itself. There are several types of materials that can be used for rainscreen insulation, including stonewool and glasswool.

The choice of material will depend on factors such as the climate, building codes, and budget.

Rainscreen insulation can provide many benefits, including improving energy efficiency and reducing the risk of mould and mildew.

It is important to work with a qualified professional to ensure that the installation is done correctly and meets all building codes and regulations.

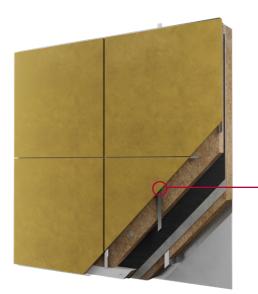
### LEADING MANUFACTURERS















# **BRACKETRY (ENVELOPE SUPPORT)**

A rainscreen subframe system is a series of components that provides support for an external facade (or rainscreen), usually in the form of cladding panels. Subframe systems must be capable of resisting loads imposed on them, including wind loads acting on the building and the weight of the cladding itself.

The Bracketry system can be fixed to masonry systems and both systems must be capable of accommodating thermal insulation and providing a ventilated cavity behind the cladding.

### **LEADING MANUFACTURERS**







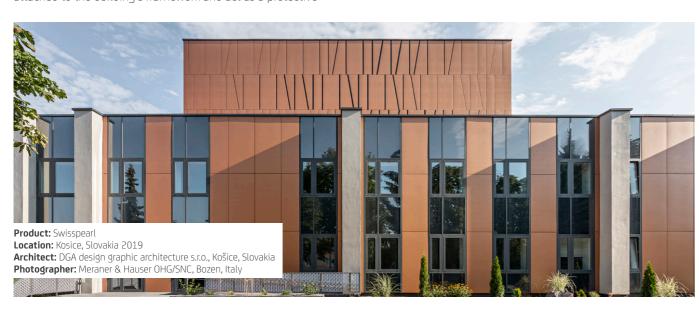
SIG offer a **full range of fixings** for all applications within the building envelope system. We are here to support you at any stage of your project, by working with a range of supplier partners to offer the right fixing solution.



# **CLADDING PANELS**.

Cladding panels are exterior finishing materials that are used to cover the external walls of a building. They serve both an aesthetic and functional purpose. We offer a range of Cladding panels made from fibre cement and rockfibre. The panels are attached to the building's framework and act as a protective

layer against weather, moisture, and other environmental elements. They are available in a wide variety of colours and textures including sustainable facades which can offer insulation and solar shading solutions.





### **LEADING MANUFACTURERS –**











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# WEATHERBOARD

Weatherboard low maintenance shiplap cladding is a wood effect fibre cement weatherboard cladding system which can include A2-s1,d0 versions. Applied in the principles of a ventilated rainscreen, Weatherboard is designed for external applications where superb durability and performance is required.

# **FEATURES & BENEFITS**

- ✓ Natural timber look with random embossed grain
- ✓ Durable for exterior use
- ✓ Wide range of RAL colours
- ✓ Low maintenance
- Comprehensive range of colour matched profiles and trims available





### LEADING MANUFACTURERS







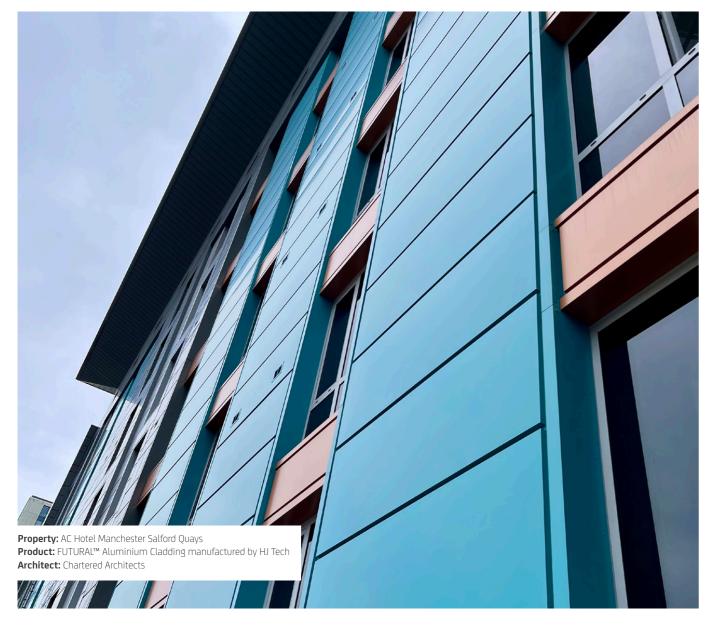
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# **ALUMINIUM**

Aluminium cladding is a popular choice for both residential and commercial buildings due to its durability, being lightweight, and having low maintenance requirements. Among the different aluminium cladding options, A1 PVDF (polyvinylidene fluoride) and A2 PPC (polyester powder coating) are two of the most commonly used. While both offer fire resistance,

A1 aluminium cladding has a higher level of fire safety due to its non-combustible properties. This makes it a preferred option for high-rise buildings and other structures with the relevant structure requirements of Approved Document B.



# LEADING MANUFACTURERS —





# & ENGINEERED STONE

Glass Reinforced Concrete (GRC) and Engineered Stone are created by incorporating glass fibre reinforcement to natural products such as stone, marble, cement, sand, and water. These fine strands of glass, meticulously distributed throughout the mixture, enhances the composite's structural integrity and tensile strength while reducing its weight. The result is a material that combines concrete with the added flexibility and

resilience of glass fibres. It is weather resistant, yet just like natural stone, it matures over time, giving character and depth to any architectural scheme. These materials offer a solution for architects, engineers, and designers seeking versatility, strength, and aesthetic appeal.



Image courtesy of: Petrarch

# LEADING MANUFACTURERS





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# INDUSTRIAL CLADDING \_\_\_\_\_

Insulated composite panels, also known as sandwich panels, are construction materials that consist of two metal layers sandwiched together with either PIR insulation or other mineral based insulation materials. These panels are suitable for various applications and can be applied to either the roof or wall.

The core material in these panels provides insulation with thermal resistance. Common core materials include expanded polystyrene (EPS), polyurethane (PUR), polyisocyanurate (PIR), and mineral wool. These materials help in reducing heat transfer and maintaining comfortable indoor temperatures, thereby enhancing energy efficiency in buildings.

The outer layers of insulated composite panels are often made of metal and offer design versatility, with a range of colours, finishes, and profiles available to meet different architectural requirements. These outer layers provide structural support, protection against weather elements, and contribute to the overall durability of the panels.

The panels are prefabricated off-site, allowing for faster construction times and reduced labour costs. Composite panels can be used on various types of new build and refurbishment projects including commercial buildings, industrial facilities, cold storage warehouses, agricultural structures, and residential buildings. They are commonly used in projects where insulation, speed of construction, and energy efficiency are important considerations.



Image courtesy of: Kingspan

LEADING MANUFACTURERS —











# BRICKSLIP \_\_\_\_\_

Brick cladding offers a traditional brick construction appearance to the exterior wall of the building. The cladding comprises a thin veneer that is attached to a support system, creating the appearance of a solid brick wall. It is a popular choice for both residential and commercial buildings.

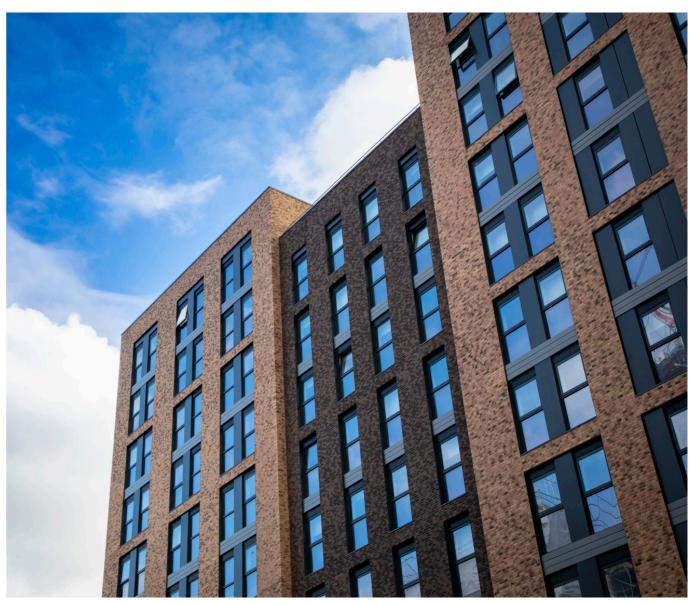


Image Credit: Ibstock / GX Forest

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# **COPPER & ZINC.**

Zinc and Copper cladding materials are available in made to measure sizes to your project. There are a range of products and systems available to suit your aesthetic and durability needs. These include:

- Façade panels in zinc, copper, and aluminium
- A wide offering of installation techniques including shingles, flat lock panels, Interlocking panels and rainscreen panels
- Cladding systems and ancillaries
- Specialist architectural fabrications

Zinc is known for its durability and natural ageing process, copper is valued for its unique looking aesthetic qualities and corrosion resistance, while is recognised for its flexibility. These materials can be used to create a variety of aesthetic styles and add a modern, industrial look to buildings.



# LEADING MANUFACTURERS -







# CILLS, FLASHINGS \_\_\_\_\_\_ & PARAPETS

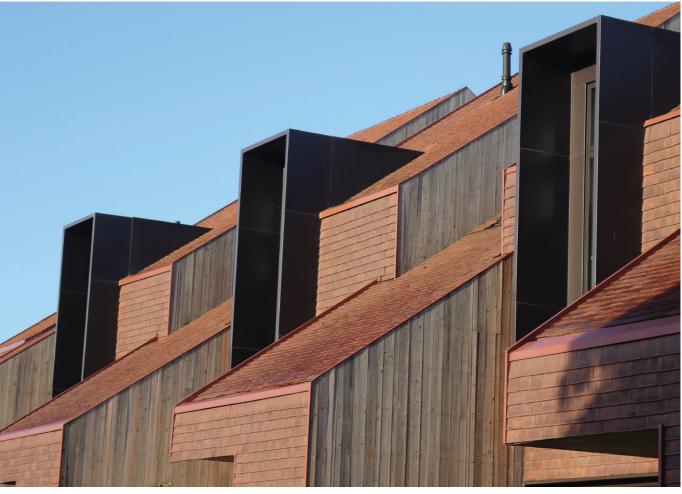


Image Credit: Finish Facades

# **CILLS**

Cills are building components that play a role in protecting built structures from water infiltration, associated moisture damage, and air leakage around opening for windows and doors. They provide a barrier that keeps rainwater from entering the building. Aluminium cills can have different finishes, including anodized, powder-coated, or Mill finish. These finishes can enhance the appearance and can be customised to match the building's colour scheme or design preferences.

### **LEADING MANUFACTURERS -**



# **FLASHINGS**

Aluminium flashings are used in construction and roofing to protect from water intrusion and associated moisture-related issues. Aluminium flashings may come with various finishes, including mill finish (natural Aluminium), Polyester powder coated & anodised with protective finishes.

# **COPINGS**

Copings are building elements that protect walls and parapets from moisture damage. Copings contribute to the visual appeal of a building and can be designed to complement the architectural style. They may have various textures, finishes, and colours to harmonise with the overall design.

# SPECIALIST SUPPORT



# Building Envelope Team

Our building envelope team provide a consultative approach to the external envelope, we engage with clients from design stage to completion. We take a holistic approach to identify the best through wall solution for the project, and to provide a range of options that suit the required performance and aesthetic:

- ✓ Design stage support
- ✓ Material selection support
- ✓ Fabrication
- ✓ SIG Assured competent staff

#### CONTACT INFORMATION:

be@sigplc.com



# SIG360 Technical Centre

Supporting you on your projects with impartial product advice, the SIG360 Technical Centre offers customers an invaluable service in the selection of energy saving construction products.

Specialising in Thermal, Acoustic, Fire Protection, the SIG360 Technical Centre has access to an extensive range ensuring your project has the right combination of products to deliver the optimum building performance whilst understanding current legislation:

- ✓ Unbiased access to market leading products
- ✓ Knowledge of product performance
- ✓ Guidance on building regulation compliance

### **CONTACT INFORMATION:**

technical@sigplc.com



# Masonry Support Team

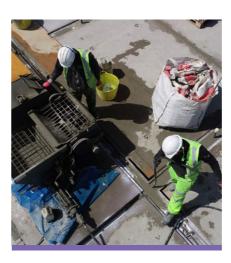
The SIG Masonry team will work with you to identify your project requirements, understanding and establishing any restrictions, regulations, and legislation applicable to your build. Providing impartial design advice taking in account all budgets and timelines and can recommend the different masonry facades options available.

Early engagement with the team can help to provide you with a range of options and solutions for your project:

- ✓ U Value calculations
- Technical and specification advice
- ✓ Design input
- ✓ Continues support through all stages of the build

#### CONTACT INFORMATION:

masonry@sigplc.com



# SIG Design & Technology

Our technical team work closely with our customers to understand their needs and provide a unique, tailormade solution for their project.

With expert knowledge of legislation and understanding of structural design, they create innovative solutions. We partner with industry manufacturers to offer an unrivaled range of fully tested and compatible materials, products and components. The team help architects and contractors make roofs that last, save energy with the roofs they deserve:

- Knowledge of legislation and understanding of structural design
- ✓ Partner with industry manufacturers
- ✓ Support for architects and contractors

#### **CONTACT INFORMATION:**

info@singleply.co.uk



# Fire Protection Team

Our specialist Fire protection
Team are IFE level 3 qualified in
passive fire protection and have
experience working on housing,
commercial, education, health, major
infrastructure projects and bring
extensive knowledge and expertise in
every field from insulation, interiors
and construction accessories to fire
protection and HVAC.

We offer expert advice and guidance from the:

- ✓ Initial design meeting to project completion
- ✓ Support with on-site visits
- Assist in building regulation and compliance

### **CONTACT INFORMATION:**

fireprotection@sigplc.com



# Construction Accessories Team

Construction Accessories is a specialist distributor of products for Masonry, Groundworks, Geotechnical, Waterproofing, Concrete Repair and Technical fixings. The team is made up of knowledgeable professionals who can offer solutions for a range of customer projects. Working closely with architects and design teams in the early stages of projects, to provide value engineered solutions which consider application, sustainability, and commercial viability:

- ✓ Structural Waterproofing
- ✓ Groundwork Engineering
- ✓ Geotechnical
- ✓ Concrete Repair & Protection
- ✓ Reinforcement & Formwork
- ✓ Onsite Support

#### CONTACT INFORMATION:

info@sigplc.co.uk or 0161 836 4442

# **SUSTAINABILITY**

We're committed to building modern, sustainable, and safe living and working environments in the communities in which we operate, while also doing what we can to influence the industry to take meaningful environmental action.

As we respond to climate change and rising energy costs, addressing our own carbon footprint is crucial. We also want to play an influential leadership role in the transition to sustainable construction through our central position in the building materials supply chain.

We say that SIG was born green because since we were founded, we have supported the drive for better energy efficiency standards and greater protection for the environment. Our five group-wide sustainability commitments, launched in 2022, support our renewed focus.



#### NET 7FRO CARBON BY 2035

We have committed to net zero carbon in SIG's operations by 2035 at the latest and as stated in 2021, we aim to achieve this target by meeting the following secondary goals:

- 80% reduction against total Scope 1, 2 and business travel emissions by 2035 (using 2021 emissions as a base year) and offsetting any residual emissions;
- cars and forklifts ("FLTs") to be 100% electric by 2030; and
- commercial vehicles to be 100% electric, hydrogen, or lower-carbon alternative by 2035 (although this continues to be dependent on the pace of progress in the development of external technology, especially for HGVs).



### PARTNER WITH MANUFACTURERS AND CUSTOMERS TO REDUCE CARBON AND WASTE ACROSS THE **SUPPLY CHAIN**

Our commitment is to partner with manufacturers and customers to reduce carbon and waste across the supply chain.

As a specialist distributor of products central to building energy efficiency, SIG is at the heart of the supply chain, uniquely placed to help suppliers and customers meet their own sustainable construction ambitions.

SIG's role is to provide choice, data transparency and expertise on regulatory compliance. We are working to identify and promote more sustainable products from new and existing suppliers.



### ZERO SIG WASTE TO LANDFILL BY 2025

Our commitment is for zero SIG waste to landfill by 2025. Our primary responsibility is the SIG waste that we directly control, including monitoring and validating third-party waste contracts for our sites. This will be achieved by waste segregation, reuse of packaging and paperless processes.

However, the nature of our role as a distributor in the middle of the supply chain, handling logistics between customers and suppliers, means we are already coordinating complex logistics and breaking bulk, which helps reduce on-site waste (both materials and labour) in construction. We are also well placed to support a circular economy by recycling and repurposing materials to reduce waste and raw materials extraction

Read more at www.sigplc.com/sustainability



### **HEALTH AND SAFETY**

We are committed to being a health and safety leader in building materials distribution and to providing workplaces that assure the safety, health and wellbeing of our employees, contractors, and stakeholders.



### **OUR PEOPLE**

Our commitment to our people is to make sure they feel safe, proud, and valued. Their health and wellbeing are integral to this. Now more than ever, we will do what we can to support, educate and provide opportunities for our people to stay happy and healthy at work





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