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2020



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Foreword

Barry Jackson, MCRMA chairman

The Metal Cladding and Roofing Manufacturers Association (MCRMA) was initially formed in 1990 by the leading pre-coated coil manufacturers, the profile roll formers and panel manufacturers who were operating in the emerging market for metal-based roofing and cladding products and systems.

As part of its continuing drive to raise standards and ensure compliance across the industry, MCRMA is now expanding its scope of operation to include those system installers who are involved in industrial, commercial and warehouse construction, together with the rural and agricultural building sectors.

This year, MCRMA is celebrating 30 years as the leading trade association in the metal building envelope sector and is proud to represent the companies involved in the manufacture and supply of products, components and systems for the industrial, commercial and warehouse sector and also those companies who are involved in inspection and support services.

Over the last 30 years the industry has changed dramatically with the emergence of coatings, products and systems with guarantees and warranties which were beyond comprehension during the early days. Roofing and cladding specifications have also changed radically during the period, with more emphasis being put on design, building physics, detailing and interfaces with contrasting and complementary materials and styles.

The changes are not only due to the inventive nature of the manufacturers, but also due to the growing demands of building owners and end users. The manufacturing process and the detail design of both large elements and the smallest components, which make up a complete roofing and cladding assembly, have played a major part in the use of metal-based roofing and cladding and also costs have been influenced by economies of scale.

Building owners and end users have also driven the technology through the need for more sustainable buildings, buildings which are specific for

the application and which have a larger footprint as well as, in many cases, having extended eaves heights. In addition, end users are also insisting that their buildings and places of work portray their company image through the use of corporate colours and modern styling.

We should also recognise that national and international standards and major changes to Building Regulations have influenced not only the manufacturing process and materials used in the construction, but also how the building is assembled and the long-term operational use of the building.

The first national standard, which was instigated by British Steel, was BS 5427 Code of practice for performance and loading criteria for profiled sheeting in building, which was published in 1976 and remained in use until it was reviewed and re-published in 1996 and then continued in use until BS 5427:2016+A1:2017 was published. The MCRMA was closely involved in the draft of both of the latter editions resulting in the latest edition titled Code of Practice for the

use of profiled sheet for roof and wall cladding on buildings.

Since 1976, BS 5427 has been regarded as the reference document for the industry. In support of BS 5427 the roofing and cladding industry should reference the MCRMA published guidance documents and also a portfolio of product standards, including those which are harmonised and form the basis for CE marking of products in the roofing and cladding industry.

It is true to say that MCRMA members have played a significant part in the success of the materials and products used across the sector, where the creation of imaginative and innovative building designs have driven the development of systems and components which offer aesthetically-pleasing, cost-effective and sustainable solutions for a range of building types and applications.

The industry has changed greatly in the last 30 years and without doubt will continue to change dramatically in the future as other manufacturers emerge and clients and end users demand more efficient and striking buildings. ■



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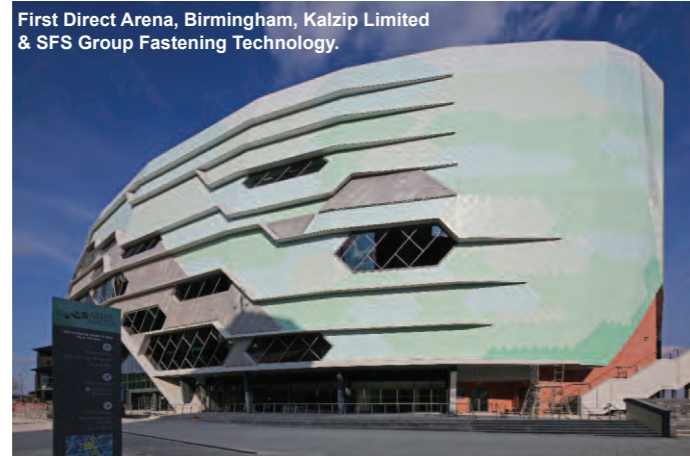
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Correct Specification Cannot Be Ignored

The Metal Cladding and Roofing Manufacturers Association (MCRMA) explains the importance of using approved roofing and cladding systems and the dangers of changing specifications when designing the building envelope.

Metal cladding systems provide efficient, aesthetically pleasing and sustainable solutions for a wide variety of external building envelopes.

“Less reputable contractors will source materials and associated components from different manufacturers and then assemble them as a ‘cladding system’ when it is nothing of the sort.”



First Direct Arena, Birmingham, Kalzip Limited & SFS Group Fastening Technology.

However, the success of these systems can be compromised when specifications are changed under the guise of ‘value engineering’ by someone who, in looking to achieve the cheapest price or maximise profit, sources materials and associated components from companies which may not operate to the highest standards.

The current economic climate can make it tempting to cut

then assemble them as a ‘cladding system’ when it is nothing of the sort.

Unfortunately, this results in a system that has no approved design, no confirmation of performance and no third-party assessment. This raises serious issues for the structural integrity, thermal performance, fire performance and lifespan of the materials and has serious implications for the building owner; in the event of a problem there is no recourse

business costs. In an effort to achieve the lowest price, less reputable contractors will source materials and associated components from different manufacturers and

to a sole manufacturer and there is no system warranty

It is essential in each step of the materials selection process to understand that any one choice of a material type or component does not exist in isolation, and has potentially far-reaching implications for other aspects of the performance of the completed building envelope.

Specifiers will often spend time selecting the key items of roofing and cladding systems, for example a built-up roof or a composite panel system. However, the many products or components considered by some as the ‘bits and pieces’ can make a huge difference to the success or failure of a project if the specification is wrong. These include fasteners, sealants, spacers, insulation and flashings all of which have been known to contribute to failures and therefore costs, which can be significant.

Every item of the roof or wall, from the supporting steelwork to the smallest component, can have a massive impact on the success of or failure of a project. It is vital that all of the components are compatible

and able to perform adequately as a recognised system.

Commercial considerations are key factors in the decision-making process, sometimes at the expense of the project. How many specifiers are aware of the subtle differences in fasteners, sealants or spacers to be able to select them or do they leave that to others?

Manufacturing members of the MCRMA spend huge amounts of time and money on research and quality control which shows in the designs and durability of the products that they supply. The majority of problems and failures that arise on site are not product failures, but are caused to some extent by inappropriate design and, primarily, by site installation.

It is therefore essential that an experienced and reputable contractor is employed who understands that the selection of a material type or component does not exist in isolation and has potentially far-reaching implications on other aspects of the performance of the completed building envelope.

One of the issues associated with the specification/cost link is the term ‘equal or approved’. For those downstream of the initial design process it usually provides a loophole to initiate change and perhaps remove an element of cost, remove a degree of quality or improve margins.

Problems are likely to arise when components and materials are sourced from various different manufacturers, assembled and then passed off as a complete cladding system. This is commonly known as pick-n-mix and may be a conglomerate of incompatible products, brought together to form an assembly, but not a system.

Such design changes should not be made in isolation and any proposed change should involve the knowledge and agreement of those at the start of the design chain. Without their involvement or that of the client, a simple and perhaps misunderstood change can have serious consequences for the main contractor, roofing and cladding contractor, building owner and those involved with subsequent operation and maintenance.



Foyle Arena, Londonderry, Architectural Profiles Limited.

“Problems are likely to arise when components and materials are sourced from various different manufacturers, assembled and then passed off as a complete cladding system.”

Fusion Building, University of Bournemouth. 3A Composites GmbH. Image copyright: Paul Scott



Supply chain

The performance of metal systems in building applications cannot be underestimated and the responsibility for not only ensuring that appropriate materials are specified, but selected and used correctly, belongs to all parties within the supply chain. A change of specification, without reference back to the principal designer, by an individual or company along the supply chain will result in that person or company being regarded as part of the design team and as such taking on responsibility for any change.

These assemblies are put together without any consideration for design constraints, compatibility, long term performance and sustainability or health and safety issues. This has implications for those who

attempt to assemble the parts and those who ratify or condone their use, as subsequent failures will, without doubt, result in claims and may result in criminal proceedings if negligence is a factor.

All these problems can easily be avoided by specifying a fully designed and manufactured system from MCRMA members who understand the needs of the project and who can design a fully engineered system for a specific application. Choosing an MCRMA member comes with the reassurance of knowing that all member companies are carefully vetted to ensure that they have a good trading record, adequate levels of the relevant liability insurances, comply with health and safety legislation, and meet their responsibilities with regard to environmental issues. ■

Detailed information on all MCRMA member companies can be found on the MCRMA web site at www.mcrma.co.uk.



Upcycling Buildings – the way to recycle, reuse and upcycle through the building envelope

Simon Fielden, Sales Director at SFS, explains why upcycling is *en vogue* in construction, and how building envelopes can give old buildings a new lease of life.



“Collaboration between manufacturers and contractors is the key to success. By understanding the project programme, just-in-time deliveries can be implemented, products get to site when needed, and building handover stays on time.”

Recycle; refit; refurb; reuse; upcycle - often these are words seen around trendy topics like interiors, furniture, and sustainability. Indeed, this has been a growing theme globally - reducing waste, making good of what we've got, and applying some reimagination and ingenuity.



the exteriors of buildings, it really pays to know the environment and the purpose of the building. While the bulk of the design work will be done by the principal architect, it is here where building envelope specialists can help realise the architect's vision.

environment or to make a bold statement.

To ensure that the envelope looks as true to the architect's vision as possible, it is best practice to collaborate with all key stakeholders in supply, design and delivery at an early stage which should include manufacturers of building envelope materials and fixings.

specified, and the bracket and component mix needed to secure the panels.

Calculations only take one working day too. Thus, specifiers can quickly and easily get an indication of horizontal and vertical centres for each bracket and the number of components required for the job.

Here, collaboration between manufacturers and contractors is the key to success. By understanding the project programme, just-in-time deliveries can be implemented, products get to site when needed, and building handover stays on time.

Not just this, but when it comes to installation, having a partner who can assist with technical queries and best practice prevents mistakes on site. This is particularly important when it comes to working with older buildings, as no two buildings will be the same. To overcome this challenge, SFS provides

need demolishing and rebuilding from the ground up, and that the complications are not worth the hassle. However, if the fundamental foundations are solid, then buildings can easily be reinvented.

There are a host of different cladding and rainscreen

“While working out all the calculations and variables may sound like a daunting, time-consuming and costly task, this couldn't be further from the truth.”

Calculated to the nth degree

While working out all the calculations and variables may sound like a daunting, time-consuming and costly task, this couldn't be further from the truth. Thanks to the overarching objective to move construction into the digital age, Project Builder, for NVELOPE rainscreen bracket and rail systems, is one of SFS's key initiatives.

Project Builder can run static calculations completely free of charge and determine the specific requirements of the façades. This includes looking at the physical factors of the building, including location and height of the building as well as local wind loads.

The tool also considers the type and weight of façade that is prospectively being

Delivering the Goods

Another area to always bear in mind is the logistics and management side of the project.

Typically, with high-rise buildings in cities, projects are released by elevation, i.e. by each side of the building, north, east, south or west, or by floor level. This is done so that local disruption is minimised, and the building scheme can be completed in phases.

Logistically though, this puts pressure on site managers with deliveries and materials, as there is often little storage space. If materials are delivered to site, they can then go missing, and thus cause delays and rises in capital costs.

Technically Sound

A final consideration for specifiers and contractors is understanding the warranties and approvals for the system.

To ensure a meaningful warranty the contractor needs to ensure that the brackets, rail and fixings are covered by a common warranty. Often this is overlooked, and brackets supplied from one manufacturer secured with fixings from another manufacturer have different warranty periods which may not cover or deliver the required protection, thus leading to potential conflicts on site.

Always look for products that are BBA certified too. BBA certification is recognised throughout the construction industry as a symbol of quality and reassurance.



on-site support where required, and in turn, the project can be delivered much more efficiently and cost-effectively.

options available to architects to achieve the desired aesthetic.

By working with building envelope manufacturers early in the process, issues can be foreseen, and processes can become smoother. ■

One person's trash is another person's treasure

It can be quite easy to dismiss old buildings and say that they

For more about SFS, please visit www.sfsintec.co.uk.



The same thinking should now be applied on a larger scale to our buildings. Drive into any big city around the UK and you'll likely be greeted with tower blocks and buildings created two, even three generations ago, which are no longer in keeping with modern aesthetics.

Yet, demolishing is often not easy, nor the right answer. This is where the building envelope can work wonders to modernise older buildings and is much easier to create than one might think.

Knowing what you want

It might sound simple, but when looking at redesigning

Rainscreen facades come in an array of options, including zinc, stainless steel, aluminium, natural stone, high pressure laminates and fibre cement, to name a few. This variety means the architect now has a plethora of design options which can be sympathetic to the local

Why a Calculated Approach Will Pay Off

“The snow loading calculated for the design of the frame may ignore high local forces experienced by small areas of the building envelope, such as those areas of roof under the deepest snow drift.”



“While positive wind pressure is transferred through direct bearing between the cladding and its support, resistance to wind suction depends on the method of attachment and the correct installation of an appropriate number of fasteners.”

When it comes to modern building design in the United Kingdom, the issue of weather is always high on the agenda. There are multiple factors that might influence the way in which a building reacts in adverse weather. Not only is each building on any given site different but individual buildings themselves vary between points on the building envelope in their ability to withstand the effects of wind, rain and snow.

purpose and will continue to endure as the British weather becomes more and more extreme.

In order to be able to better understand the risks, the design team must first understand the building's strengths and weaknesses and the ways in which factors such as height and shape, as well as location, will have a bearing on its ability to withstand the forces of nature.

Snow loads and snow drift

Snow loads are calculated based on snow falling uniformly on a roof. The weight is evenly distributed and a calculation is made based on the transference of weight safely to the building foundations through the cladding, secondary steelwork and primary frames.

Snow drift, on the other hand, is caused by snowfall building up against parapets and other obstructions, this leads to localised high snow loads well in excess of the uniform snow load and must be calculated as a separate figure as areas prone to snow drift may require additional strengthening of the roof structure (cladding and/or purlins).

While it is common practice for the structural engineer, with overall responsibility for the building design, to calculate the building snow loads as part of the structural design process, the snow loading calculated for the design of the frame may ignore high local forces experienced by small areas of the building envelope, such as those areas of roof under the deepest snow drift.

Where buildings of different heights are situated adjacent to one another, designers should also allow for the possibility of snow falling off the higher roof onto the lower building causing local overloading of the roof cladding and supporting structure.

Metal cladding that has been specified as self-supporting must be capable of supporting its own weight plus any additional load applied to it, whether it is access for maintenance, wind and snow loading, and snow drift, not to mention the addition of sustainable technology such as photovoltaic arrays (PVs). Specifiers, contractors and structural engineers need to work in close collaboration to ensure design integrity.

Wind

Of all the loading that a building is likely to encounter over its life, the wind has the greatest potential to cause damage to the cladding and even to the building structure. However, with the correct design and specification of the roof and wall cladding systems and their fasteners, it should be possible to ensure that no new or refurbished building in the UK suffers such damage.

Wind loading is site and building specific due to the many factors that influence the wind speed at a given location. The calculation of wind loading is complicated and requires the services of a qualified engineer or the use of software by an appropriately experienced person. It is essential that the wind loads are calculated for each and every building; since if not designed for, the force of the wind can cause failure of the cladding, secondary components or even the building structure.

It is therefore necessary to perform wind loading calculations specifically for the building envelope in addition to those undertaken by the structural engineer for the structural frame. In the event where a structural engineer is not involved in the cladding

design process, or when the roofing/cladding systems have been specified by a contractor or architect, it is essential that structural calculations for the specified systems are carried out and this is often the responsibility of the installer or specialist subcontractor. A range of weather calculation tools is available on the website at <https://mcrma.co.uk/wind-loadings-guidance/>

Ideally, the main contractor will demand provision of calculations for the roof sheeting and wall cladding and these will be reviewed and/or approved by the structural engineer. In these situations, it is vital that the contractor or specialist subcontractor has the knowledge and ability to perform the calculations and certainly identify and assess potential difficulties and issues before problems and costly complications occur.

As is the case with snow, all of the loading applied to the building envelope must ultimately be transferred to the foundations via the main building structure. While positive wind pressure is transferred through direct bearing between the cladding and its support, resistance to wind suction depends on the method of attachment and the



correct installation of an appropriate number of fasteners. It is therefore essential that the cladding, fasteners and supporting structure are all specified to resist the design wind loading on the building.

The MCRMA online CPD programme includes two accredited CPD modules

covering wind loadings and snow loadings respectively. The modules also offer members of professional institutions an opportunity to earn credit towards their annual CPD requirement. The course material can be studied offline and has an online assessment component to verify knowledge. ■

Detailed information on the MCRMA online CPDs is available at

<https://mcrma.co.uk/online-cpds/>



In the drive to improve sustainability, Hambleside Danelaw's Zenon brand has an unrivalled set of benefits to enable rooflights to play a bigger part in delivering an environmentally-friendly metal roofed building.

"It is human nature to stick with what we know," observes William McDowell, National Product Development Manager- Zenon. "But, as demonstrated in the various political manifestos in the election, the environment is figuring more highly on people's agendas. We all therefore have to move on from the familiar, and learn about new options."

Zenon is the only GRP rooflight that can, via an independently



Zenon Helps Support 'Break Out' into Sustainable Solutions

accredited Environmental Product Declaration (EPD), bring a tangible, quantifiable 1.5 points towards BREEAM in any new build, fit-out or refurbishment project. The points are achieved in BREEAM Materials (Mat 02) category, when Zenon is used as part of a metal roof system, and are in addition to any BREEAM points associated with the metal roof system.

High strength Zenon Evolution GRP sheets are manufactured using a mesh made from continuous glass filaments which gives greater strength than conventional GRP and, as importantly, has 40% less embodied carbon as a result. To achieve optimum performance, Hambleside Danelaw's unique Insulator core, manufactured from cellulose acetate, delivers more light than multiwall polycarbonate for the same U value. Zenon Evolution and Insulator can attain a U value as low as 0.9W/m²K, with light transmission of around 50% and embodied carbon as low as 13 kgCO₂/m².

"The combination of Zenon Evolution GRP and Insulator core gives the optimum combination of light transmission, U value, low embodied carbon, longevity and safety available in a composite rooflight," says William McDowell.

The product benefits are enhanced by the back-up. Zenon is the only major brand of GRP linear rooflight to offer an online configurator tool, which gives the architect and contractor the basic detail in terms of light transmission, solar gain, thermal performance and embodied carbon. Further, the Zenon support team is fast building a reputation as the best available within the market, in terms of its service, speed of response and depth of knowledge.

The benefits of the overall package are apparent in the upgrade of a 25+ years-old industrial building for international motorcycle marque Harley Davidson, by Davis Roofing. Key elements of the specification for the



project was improved natural light within, and enhanced thermal performance.

Davis Roofing over-clad the outer roof skin with new Omnis Exteriors 32/167/1000 profile sheeting. Replacement of the original rooflights was achieved by site-assembled Zenon rooflights. The Hambleside Danelaw team advised Zenon Pro formed to mirror the Omnis profile created the outer layer, with a 4mm twin wall polycarbonate providing insulation between the Zenon

Pro liner to the existing PMFR35 profile of the roof's original skin. This achieved current Building Regulations, with a light transmission of 53% and U value of just 1.7W/m²K.

Joe Robbins, commercial manager at Davis Roofing explained, "The service we receive, and quality of product, from Hambleside Danelaw means we have a good relationship. Wherever possible we specify Zenon rooflights on our projects."

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MCRMA Membership Now Open to System Installers



As part of its continuing drive to raise standards and ensure compliance across the industry, the MCRMA is now expanding its scope of operation to include those system installers who are involved in industrial, commercial and warehouse construction, together with the rural and agricultural building sectors.

“It is essential that MCRMA members are kept fully up to date with the latest requirements of legislation and industry standards; for example, Building Regulations, CE marking, the Simplified Building Model (SBEM) and non-fragility testing.”

The Metal Cladding and Roofing Manufacturers Association (MCRMA) was initially formed in 1990 to support the manufacturers in the emerging market for metal based roofing and cladding products and systems. Over the years, the association has expanded to encompass the needs of component manufacturers and suppliers and now incorporates independent inspectors and industry support services.

The contribution that system installers can deliver during the specification, design and construction of industrial, commercial and warehouse building has long been recognised by the MCRMA. From its inception, it has always been the aim of MCRMA to provide practical guidance to those who are actively involved in the construction process as a vital group in getting a building from design concept through to operational use. In the past, this working relationship has

been both informal and on a contractual basis between individuals and member companies.

The construction sector has recently come under heightened scrutiny. It is fair to say that improved technical and commercial communication across those who work in the industry - linked with formal training, qualifications and quality assurance, at all levels - is now high on the agenda from government, control bodies, third party assessors and businesses involved from the initial design stage to operational use for all building types and sectors.

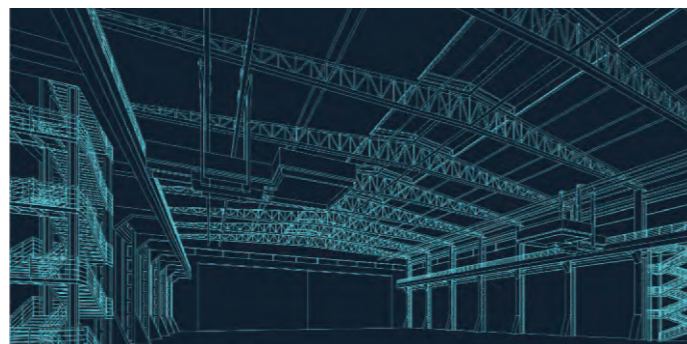
Membership offer

To achieve this, MCRMA now wishes to offer annual membership to systems installers which will allow them to integrate into the leading trade association. MCRMA provides a forum for discussion about significant industry

issues, input into key industry matters such as development of regulations and standards, participation in the improvement of the supply chain and provides an opportunity for networking at corporate and management level.

Benefits of membership will include use of the MCRMA logo; an individually tailored business profile on the MCRMA web site; participation in specific promotional programmes and involvement in quarterly and sector specific meetings. The Association holds quarterly members' meeting and a range of special technical meetings focused on topics, which feature high on the national and international agenda covering new developments, regulations and standards.

MCRMA is a member of the Construction Products Association (CPA) which will allow system installer members to receive first-hand knowledge



and offer input into the Ministry of Housing, Communities and Local Government (MHCLG) and the associated links with BuildUK and the Construction Industry Council. The CPA also has direct links with NHBC, BRAC, BRE and NBS and others who are involved with the construction industry and the development of projects covering BIM, smart technology etc. The CPA also provides industry with the opportunity for input/output on matters such as sustainability and industry led economic forecasts. MCRMA is also a member of the Advisory Committee for Roof Safety (ACR) which includes other key construction industry associations and the Health and Safety Executive (HSE). This forum is a body dedicated to making working on roofs safer.

Training

As the trade association that represents the leading manufacturers of metal roof and wall cladding systems, it is not surprising that MCRMA places considerable emphasis on training. MCRMA has always taken a pro-active stance towards good design and workmanship and runs regular training courses for its members' employees.

The pace of change within the construction industry is

relentless; materials, manufacturing processes and installation techniques are being constantly revised and updated. It is therefore essential that MCRMA members are kept fully up to date with the latest requirements of legislation and industry standards; for example, Building Regulations, CE marking, the Simplified Building Model (SBEM) and non-fragility testing.

MCRMA maintains that having appropriately trained and qualified staff ensures

Membership charter

MCRMA membership is open only to those system installer companies who operate and comply with the requirements of the MCRMA membership charter. This robust and demanding membership charter reflects a wide range of industry concerns with particular reference to health and safety and environmental issues. In the Charter, the MCRMA ensures that its members undertake all work in accordance with relevant

implementation) and waste disposal and members are committed to using /their best endeavours to minimise adverse environmental impact in the provision of their products and/or services.

The charter requires companies to be accredited to EN ISO 9001 and also requires members to maintain insurance appropriate to their business including Product Liability insurance, Professional Indemnity insurance cover, or similar.



“MCRMA and its member companies recognise the contribution that system installers can deliver during the specification, design and construction of industrial, commercial and warehouse buildings.”

commitment to the industry and people we serve during the supply and installation process. To this end, the MCRMA developed an initial three-day training programme covering theory and practice for new and developing staff members. System installer members will also have access to supported NVQ training at Dudley College of Technology and its associated site at Waltham Forest. To this end, MCRMA supports the availability of level 2 NVQ diploma in roofing sheeting and cladding and level 2 NVQ in cladding occupations.

health and safety legislation and have a health and safety policy which they uphold both in principle and practice.

In addition, members are required to have due regard for environmental issues during procurement, delivery (including installation

MCRMA and its member companies recognise the contribution that system installers can deliver during the specification, design and construction of industrial, commercial and warehouse buildings and will be delighted to welcome their application for membership. ■

Find out more about the benefits of becoming a member of the MCRMA
<https://mcrma.co.uk/system-installers/>





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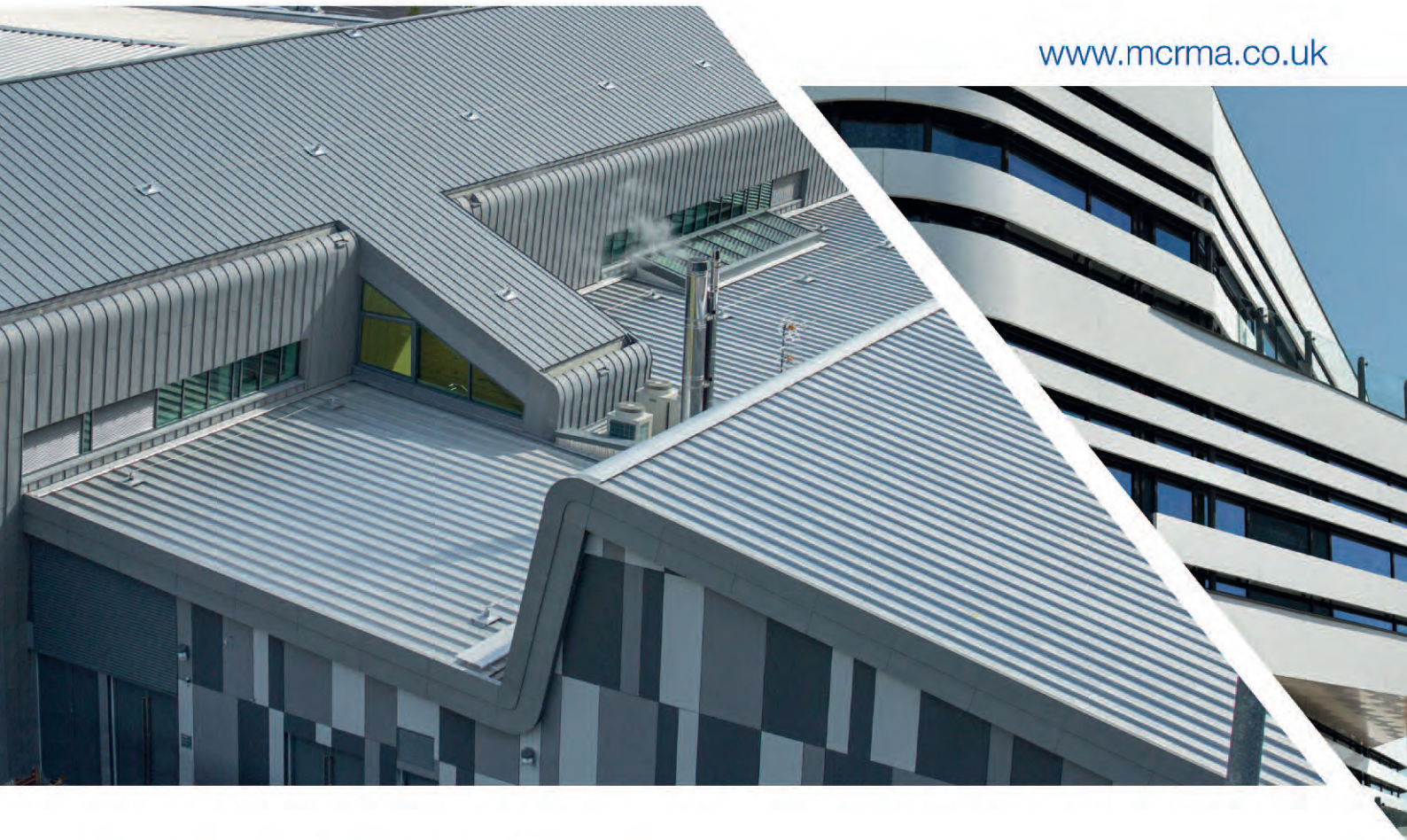
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Representing, Promoting and Supporting

- Systems manufacturers
 - Component manufacturers
 - Independent roofing and cladding inspectors
 - Industry support service providers
-

Visit www.mcrma.co.uk

to find out more about the MCRMA and its members.



The Building Envelope Authority