

# A very modern makeover...



# Guttercrest goes back to school

## A very modern makeover

In 2150 BC bluestones from the Preseli Mountains in South Wales were transported to the site of Stonehenge in west Amesbury near Salisbury nearly 240 miles away. It is thought these 82 stones, some weighing four tonnes each, were dragged on rollers and sledges and carried on rafts along the south coast of Wales and up the rivers Avon and Frome, before being dragged overland again to the site we now know as Stonehenge. More than 4,000 years later Euroclad products made a very similar journey from South Wales to Wiltshire for installation on the new visitor centre constructed by English Heritage - albeit this time it was via the M4 motorway.

The new visitor centre at Stonehenge thankfully did not take quite as long to construct as the ancient stone monument itself. In fact, the fast track installation offered by Euroclad products helped achieve the impressive design of the new building within a challenging timeframe.

The visitor centre is 1.5 miles west of the stone circle and its design combines modest aesthetics with excellent functionality in order to satisfy English Heritage's long-held desire to create a building with as little visual impact on the site as possible.

Zinc composite material (ZCM) was used to manufacture the soffits of the large canopy on the new environmentally sensitive visitor centre, with the same material used to clad the interior and exterior walls; all of which were installed by Massey Cladding

Solutions. The unique perforations of the ZCM panels were enabled by world-leading cutting and routing machines; these combine with the foremost design and manufacturing software to produce all of Euroclad's products that utilise composite materials, such as rainscreens, canopies and bullnoses.

Despite its low-key aesthetic, this building operates extremely well and the Euroclad-manufactured canopy creates an attractive transition from outside to in, dappling light through its routed perforations. The ZCM canopy and walls act not only to contribute to the overall effect of the building's architecture but also to achieve specific elements of the design.

Stonehenge is one of the wonders of the world and the best-known prehistoric monument in Europe. The new world-class visitor centre has transformed the visitor experience, providing museum-quality permanent and temporary exhibitions, plus a spacious shop and café.

Stonehenge and Avebury became a World Heritage Site (WHS) in 1986 for their outstanding prehistoric monuments which date from 3700 to 1600 BC. At Stonehenge, the unique lintelled stone circle is surrounded by a landscape containing more than 350 burial mounds and major prehistoric monuments such as the Stonehenge Avenue, the Cursus, Woodhenge and Durrington Walls.

**Architect: Denton Corker Marshall**

The Hammersmith Academy in London is a co-educational school and 6th form specialising in creative and digital media and information technology. The state-of-the-art four storey building boasts facilities including a theatre, sports hall, library, fitness suite and digital editing and IT suites.

The site chosen for the Academy was a challenging one as there was very limited external space other than a multi-use games area. Thus the Academy accommodation had to be housed on four floors – the sports hall is on the second – and the curriculum had to be designed in such a way to offset any shortcomings as a result of the lack of external recreation space.

Guttercrest Limited was involved from the conception stage of this building, working closely with the architects to design and engineer the complex bespoke aluminium cladding to the projecting eaves blades. Guttercrest devised a wraparound cladding solution, providing the eaves with bold symmetrical lines around the whole building and giving it an imposing feature.

Guttercrest also designed and manufactured the aluminium rectangular column casings which are all around the building, together with all the aluminium copings and the aluminium fascia soffits to high-level and walkway soffits; all of which were polyester powder coated to specification.

The architect was BHM Architects Limited and the main contractor was Wates Construction.



# The case for metal roofs

Metal roofing systems contribute significantly to the sustainable design concept thanks to their high recycled content, energy efficiency, low maintenance, durability and recyclability which have all helped to establish metal as the material of choice for both new and refurbishment roof construction.

Steel and aluminium offer a better life cycle return on investment than other materials. Today's metal construction products are protected by highly durable paints and coatings that ensure a service life in excess of 40 years. Steel construction is efficient and competitive; buildings can be rapidly constructed using steel-based primary and secondary components that are efficiently manufactured off-site and therefore are dimensionally accurate and of known quality.

Steel framing and metal cladding systems provide the scope, in association with other materials, to design buildings with low overall environmental impacts. Steel-based construction systems provide flexible spaces which have the potential to be easily modified and adapted so that the life of the building can be extended by accommodating changes in use, layout and size.

Both steel and aluminium can be reused or recycled repeatedly without losing their qualities as a building material. The recovery infrastructure for metal recycling is highly developed and highly efficient, and has been in place for decades. Current recovery rates from demolition sites in the UK are 99 per cent for structural steelwork and 94 per cent for all metal construction products – figures that far exceed those for any other construction material.

When metal is specified for a building, it is unlikely to become waste. Steel and aluminium always have a value and are only ever sent to landfill as a last resort. Waste generation is one of the least sustainable aspects of construction. Choosing a metal-framed building is the simplest and most effective way to reduce waste. Even during manufacture and fabrication, any swarf or offcuts are recovered and recycled back through the primary production process.

Metal has much to offer in the areas of green technology and sustainability and MCRMA members are at the forefront of developing innovative solutions for example, green roofing systems that can improve the thermal performance of a building by providing protection against heat loss in the winter and heat gain in the summer.

Sheet metal systems coated with highly reflective surfaces and designed with insulation and ventilation can provide considerable cost savings for heating and cooling. Innovative cool roof coatings are now available which have moderate to highly reflective surfaces over a range of colours and some engineered coatings can increase the emissivity of the metal roof surface to allow solar energy and heat to dissipate quickly.

Metal roofing has been used successfully for many years on industrial and commercial buildings but the demands put on it by modern architecture and sustainability requirements have set new challenges. The roof profile, whether it is made from steel or aluminium, not only has to provide a weatherproof skin but it also has to provide structural strength to accommodate imposed and service loads throughout the construction phase and operational phase. Increasingly it has to serve as a working platform or access way for maintenance of photovoltaic (PV) arrays. The aesthetic service life of the profiled metal sheeting has also got to be considered at the design phase because it can have a strategic effect on the in-service life of the system and the long term sustainable solutions.

Environmental challenges to reduce our carbon footprint have resulted in the need for integrated triple skin rooflights and the requirement to specify highly thermal efficient insulation. These elements together with the internal and external skin of the cladding must be designed as an integrated assembly to achieve the thermal requirements as set out in the Building Regulations. The design must also recognise the need for thermal isolation between the inner and outer skins plus thermal continuity at junctions and intersections.

The design phase calculations for thermal performance using the National Calculation Methodology which uses the SBEM software provides the designer with an opportunity to accept general psi and alpha values for the construction detail or enhanced values which are system specific. These system specific values are available from the individual profiler or system supplier but the on-site construction must reflect the design assumptions. Design detailing is also important to minimise air permeability at junctions between elevations and intersection with other materials or systems. This should form part of the overall design philosophy and should not be subject to compromise at the design, installation or commissioning phase.



# MCRMA Presents...

# The Architectural Award

For the second year running, MCRMA presented the Clifford Dyer Memorial Award to a team of Year 4 students from the School of Architecture, the University of Liverpool at the 2014 Degree Show.

The award was presented to William Negus, Myles Reece and George Richardson who, in the opinion of the judges, were able to demonstrate the best response to the architectural and environmental needs of the building envelope using metal and showing how their chosen design concept could be translated into built form that is, show competency

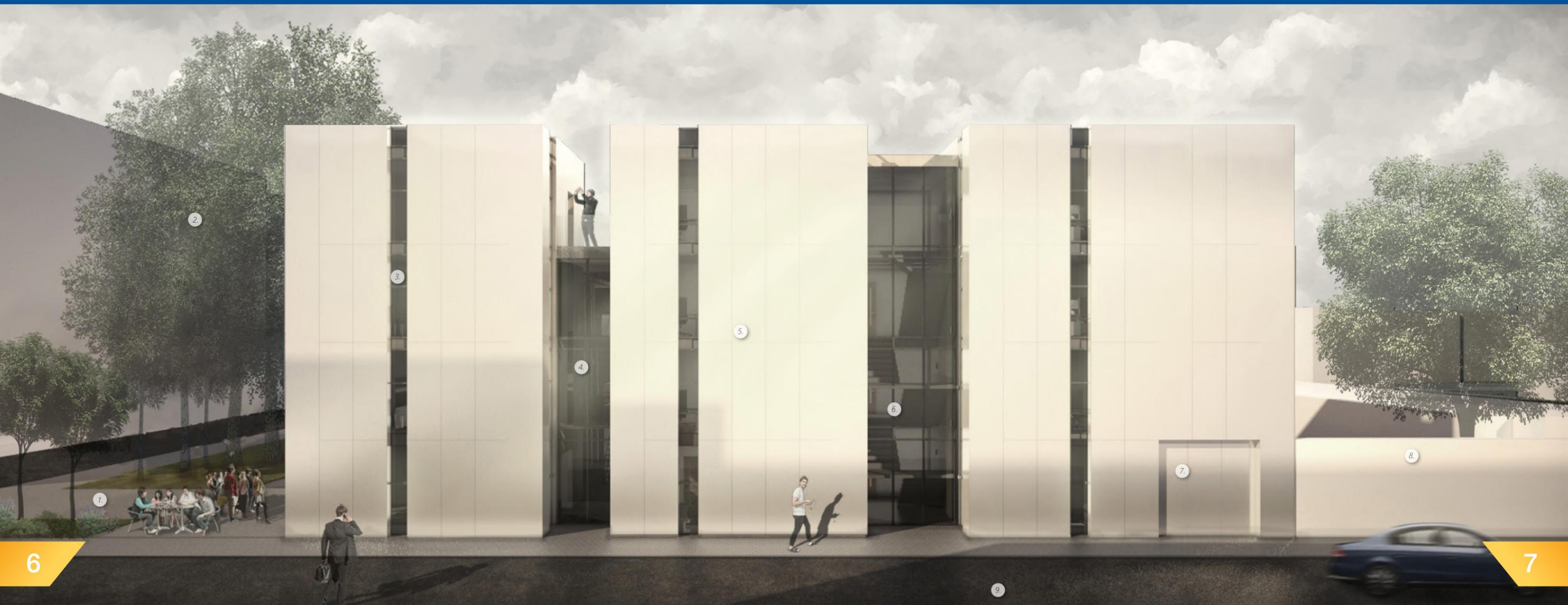
in structural, environmental, thermal, service distribution, material strategies and inhabited space.

The project involved the development of a nursery and innovation centre on a site in Liverpool city centre. As part of the development the students proposed panels of anodised aluminium to reflect the leafy surroundings of the nursery and to act as a hall of mirrors for playing children. In addition, the nursery features a sedum green roof which includes a rolled aluminium parapet cap and rigid insulation.

Carlton Jones, director of MCRMA, commented "The judging panel spent some considerable time looking over the entries. We felt that the nursery and convention centre provided a workable solution which offered a visually exciting and stimulating environment and a building which fitted in well with the surroundings. The entry also demonstrated an understanding of the detail associated with the method of construction".

MCRMA established the Clifford Dyer Memorial Award to commemorate the life and work of Clifford Dyer who died in 2012. Clifford Dyer was the founder and director of MCRMA which brings together the UK's leading roofing and cladding systems providers supplying built up systems, insulated panels, rainscreens, drainage systems and structural deck systems.

The award has been created in association with the School of Architecture at the University of Liverpool in recognition of Clifford Dyer's contribution to the metal cladding industry.



## New ventilation and sun control solution debuts on major town centre development

AshTech™ DucoSun Cubic 200 solar shading blades and Aztec panels have been installed by GM Services Ltd as part of a ventilation and sun control system on the initial phase of Telford's Southwater town centre development.

The project is the first joint venture between Ash and Lacy and Belgian company Duco, as part of a partnership to introduce a full ventilation and sun control solution to the UK market.

The AshTech DucoSun blades are made from polyester powder coated aluminium in a RAL 9007 grey aluminium finish. Ash & Lacy's renowned in-house aluminum fabrication skills were deployed to weld cut to length Duco blades to form a curvature.

Rigorous in-house testing was also conducted to ensure the specialist welding was to a sufficiently high standard whereby cyclic loads could be absorbed.

A total of over 750 blades were welded to meet tight deadlines, representing approximately 300 hours of Ash & Lacy craftsmanship. Linishing techniques were used to create exceptional flatness. Linishing is a type of finishing technique used to smooth or flatten metal objects. This process is similar to sanding, but differs in key ways, including how it influences the appearance of the metal. Linishing is not only used to smooth and polish an item, but also to improve overall flatness and create a level, even surface.

The project also features Aztec panels in 3mm polyester powder coated aluminium in a RAL 1035 pearl beige finish. Ash and Lacy experts carried out engineering assessments to ensure the integrity of attaching Aztec panels to the AshTech DucoSun blades - the very first time this has been attempted.

Intended to transform the centre of Telford Phase One of Southwater will include an 11 screen cinema, a hotel, bars and restaurants, an energy centre and the refurbishment and extension of an ice rink.

## All airtight for Airbus

SFS intec supplied its high performance range of 316 grade stainless steel fasteners, to provide a reliable and secure fix to the new Airbus 166 building in Broughton, Chester. Following the application of the 60,000 fasteners, the building has achieved an outstanding air test of 1.68 m<sup>3</sup>.h.m<sup>2</sup> @ 50 Pa.

Suitable for even the most stringent environments, SFS intec's fasteners were able to guarantee superior airtightness and water tightness for the sensitive surroundings in building 166. Used to assemble Airbus aircraft wings, the building needed an environment which ensured resistance to wind load and provided optimum security, as laid out in the specification.

Steve Lester, director from Lester Fabrications and Cladding Limited adds, "Every detail of the build had to be taken into careful consideration. Even the smallest components such as fasteners are vital to avoid potential risk. We had to specify solutions

that were able to cater to the high standard required and easily met the brief. Air tightness values are significant for the safety of a building's roof, and with the average result coming out at approximately 5.0 m<sup>3</sup>.h.m<sup>2</sup> @ 50 Pa; the reading of 1.68 m<sup>3</sup>.h.m<sup>2</sup> @ 50 Pa was outstanding.

"The powder coated, 316 grade austenitic stainless steel fasteners not only guarantee a long-lasting fix but reflect the same quality and performance to meet that of the Airbus plane wings which are being manufactured within the building."

SFS intec supplied meaningful warranties of 40 years for its 316 grade stainless steel fasteners; this also provides a full colour stability warranty on the powder coating for 12 years. In addition, the unique design benefits of the spin free zone, specific drill points and softer EPDM washer helped to secure the build and consequently assisted in achieving the all important air test result.



# New generation warehouse makes waves...

'Quantum' curved built-up metal roof and PRIME V cladding from CA Group Limited have been installed at the Blackburn Trading Estate in Heathrow as part of development work for Canmore Developments, creating a more aesthetically pleasing structure.

The scheme, which encompasses a number of combined warehouse and office blocks, was delivered together with Winvic Construction and features a combination of 'Quantum', CA Group's curved built-up metal roof, and PRIME V, a product from the company's rainscreen portfolio.

David Johnson, project development engineer for CA Building Products, commented: "The developer had a clear vision for this scheme from the outset. We were tasked with delivering a look and feel which was far removed from the conventional warehouse, creating instead an aesthetically pleasing structure more readily associated with the office side of the build.

"We worked closely with the architects, Michael Sparks Associates, and other team members to develop a solution which not only exceeded expectations, from an aesthetic perspective, but also incorporated a number of sustainable features which will reduce the building's running costs, as well as its emissions."

According to Johnson, many of the cost saving features on the project were achieved through the introduction of CA Group's 'Quantum' curved roof, which has a proven track record among planning teams and local residents due to its reduced height and streamlined form. This reduced height translates into a reduction in internal air volume and the operational costs associated with the heating and chilling of large structures.

Rooflights were installed over the apex of the roof to distribute a more balanced distribution of natural daylight, reducing internal shadows and lighting costs, together with the associated CO<sub>2</sub> emissions. The reduced height of 'Quantum' lowers the internal air volume and the operational costs associated with the heating and chilling of a large structure. The building also achieved a high level of air tightness with an air-permeability rating of 1.75m<sup>3</sup>.h.m<sup>2</sup> @ 50 Pa.

The cladding featured on the office walls was chosen from the PRIME portfolio, developed by CA Building Products. Johnson explained: "PRIME represents the unification of CA's rainscreen offer. We have taken our extensive know-how in this area and developed a suite of products suitable for a range of applications. The systems have been fully tested by the Centre for Window and Cladding Technology and are backed by meaningful guarantees."

The issue of end of life disposal costs, associated with some blown foam insulations on the market, has been avoided through the use of fibre insulation throughout the building. The use of fibre insulation also ensures that, in the event of a fire, the building itself does not add to the fire load and toxic smoke emissions are also dramatically reduced.

Leaks on the project have been avoided by the elimination of through fixings, the biggest cause of water ingress in a building of this type. Issues associated with gutter design have also been addressed with the requisite thickness of 1.2mm being applied to both the steel and membrane coating, minimising any damage caused by foot traffic. The final roof assembly has been categorised as Class B (non-fragile) in accordance with the HSE Advisory Committee for Roofwork (ACR) guidance documentation.

Neville Campbell of Michael Sparks Associates, added: "In our opinion the successful end result is due to the performance, attention to detail and installation of the system by all involved in the development. Michael Sparks Associates and CA Group have worked together for many years with many hundreds of thousands of metres of cladding installed, with very few problems. Early design discussions between the two of us have been essential in the production of successful, high quality and aesthetically pleasing buildings."



# A cheerier exterior

Knauf Insulation's ThermoShell® External Wall Insulation (EWI) rock system has helped to transform four residential blocks at Peregrine Road in Spelthorne, Surrey, as part of a £1.7 million scheme undertaken by housing association, A2 Dominion. The EWI system has improved not only the energy efficiency of the 34 homes; it has also saved money on the residents' energy bills and enhanced the appearance of the area.

Laura Donovan, project manager at A2 Dominion commented: "Over the past few years we have decided to embrace the challenge of improving the energy efficiency of our housing stock and so we chose to tackle our properties in Spelthorne. Throughout the project we had a working partnership between the residents, suppliers and contractors. This ultimately made the renovation process easier for everyone working on site and those living in the homes.

"Although we were ineligible for the Energy Companies Obligation (ECO) funding having already received support under the Carbon Emissions Reduction Target (CERT) scheme, we still chose to install EWI to the residential blocks as it offered a range of attractive solutions, including the energy performance of the system and the ability to upgrade the aesthetics of a property."

Knauf Insulation's ThermoShell EWI system using rock mineral wool insulation was installed to the four residential blocks and rendered using a combination of colours: blue and white – which were chosen by the residents from an engagement programme organised by A2 Dominion at the beginning of the project.

Johan Van Zyl, regional operations manager at Mitie, the main contractor for the programme, said: "Due to the concrete beam construction, the buildings were facing problems of cold bridging causing damp spots. Finding a solution to the cold bridging was a starting point of the project and originally we thought of installing an Internal Wall Insulation (IWI) system. However, after meetings with A2 Dominion we came to the conclusion that the building itself needed a facelift and so we decided that an EWI system would be a better option. We therefore opted to install Knauf Insulation's ThermoShell system and we already had an existing relationship with the company."

The ThermoShell EWI rock system is a cost effective solid wall insulation solution, designed for the lifetime of a property. The system shields the existing exterior façade, whether brick, stonework, concrete or clay blockwork, from the effects of weathering – extending

the longevity of the building but also providing the opportunity to enhance and upgrade the appearance of the building.

Johan continued: "As we had never used Knauf Insulation's ThermoShell EWI system before, we sent our team to its training centre in Cheltenham to learn how to install the products and to learn about the theory behind it. The training offered our colleagues confidence in both the product and their own ability to undertake the project.

The innovative system has also achieved a British Board of Agrément (BBA) certificate, which provides contractors and specifiers with peace of mind that the system is under full guarantee and warranty.

Before



After



# Lighting up the Sir Chris Hoy velodrome

The new Sir Chris Hoy Velodrome which featured in the 2014 Commonwealth Games was able to harness the power of natural light - bringing life to the cycling arena and reducing its reliance on artificial lighting – thanks to Multivault GRP rooflights supplied by Brett Martin Daylight Systems Limited.

Forming a showpiece for the games, the iconic new £100 million Emirates Arena incorporates the 2,000 seat Sir Chris Hoy Velodrome, an 8,500 seat sports arena and a community sports hall - designed by architects 3DReid and built by construction company Sir Robert McAlpine. Brett Martin's Multivault GRP rooflights – significantly lighter than glass and offering exceptional impact resistance for safety – were installed in three areas including the velodrome and sports hall.

Ensuring contemporary stadia and sports venues meet the growing aesthetic demands of architects and building owners alike, GRP allows a more even spread of daylight, illuminating the velodrome while eliminating the risk of hot spots and solar glare which could disturb sporting activities.

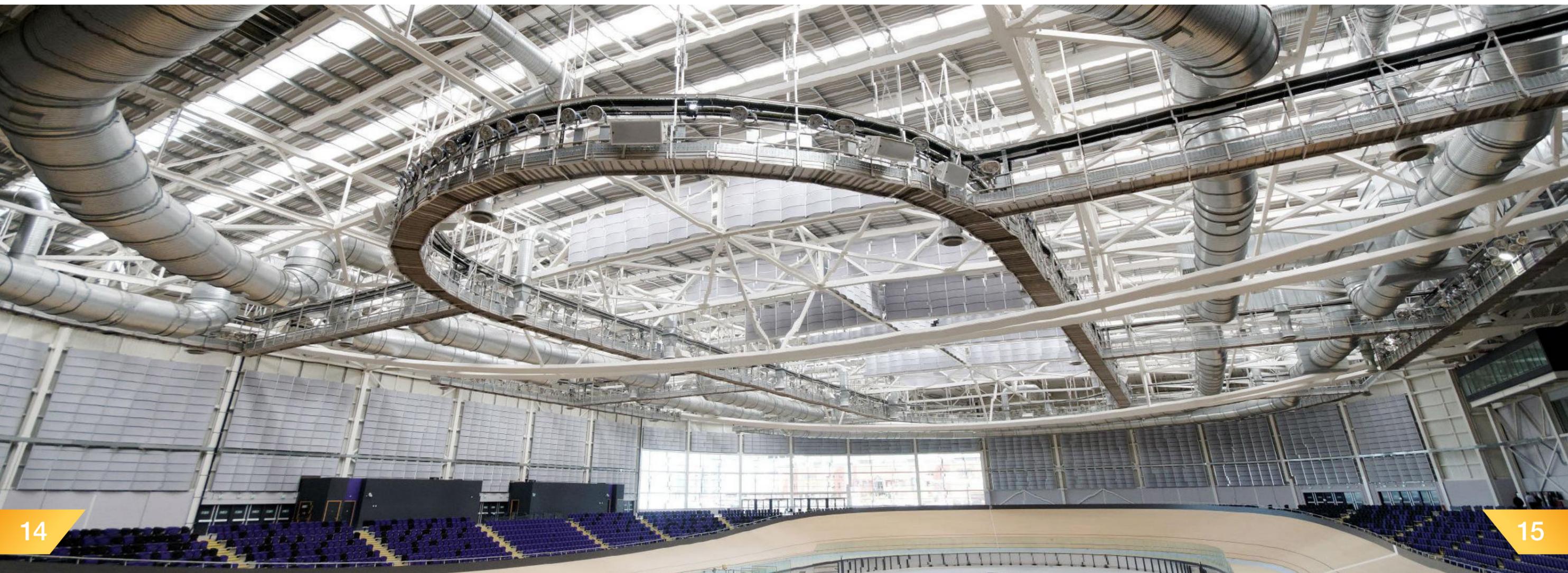
Roofing contractor Graingers installed the 2,700 square metres Multivault GRP barrel vaults, covering approximately 15 percent of the total roof area. Despite being placed above two kilometres of gantries and several kilometres of ventilation ductwork as well as lighting, PA, fire systems and radiant heating panels, the rooflights provide a diffuse light transfusion of 65-70 percent and create an attractive, bright environment within the arena.

'The key considerations in our selection process were to find rooflights which provide an even spread of internal illumination, achieve a good level of thermal insulation at a reasonable cost rate, while providing the highest levels of health and safety,' commented Gordon McGhie, director of 3DReid. 'The Multivault GRP barrel vault meets all of these requirements and is easily and quickly installed which provided construction programme benefits.'

The Multivault GRP barrel vault is ideal for flat and low pitched roof types. It is designed to be installed without fixings penetrating the roof covering, guaranteeing the roof remains watertight. They also offer an attractive style and robust performance with a life expectancy of up to 30 years, making them perfect for projects where long term performance and durability is a must.

The Multivault GRP rooflights were also specified with a Cleartherm insulating layer - an option that can achieve a U-value below 1.0W/m<sup>2</sup>K - ensuring all of the light transmission and thermal insulation values required were met.

Rooflights offer an attractive solution to daylighting requirements whilst also providing the required insulation values which allow buildings to meet their energy saving targets and reduce their running costs. Available for use by the public and by professional sports organisations, Brett Martin has ensured that all those who visit the Sir Chris Hoy Velodrome enjoy natural light while also helping to reduce the carbon footprint of the Commonwealth Games.



# Steadmans provide a one stop-shop solution

Leading one-stop-shop building products manufacturer Steadmans has supplied materials for three new buildings for TIS Cumbria, West Cumbria's fabrication, welding and non-destructive testing specialists.

TIS Cumbria services the nuclear, industrial process and petrochemical, oil and gas sectors across the globe. Three new buildings, totalling 1,400 square metres in floor size, have been completed at the organisation's existing site in Workington. The company has plans to double its workforce to 120 and has set up a number of apprenticeships.

Steadmans, a principal UK manufacturer of building materials for the steel building sector, supplied in excess of 5,600 square metres of AS35 100mm composite panels in a combination of goosewing grey and ocean blue and 100 square metres of triple skin rooflights. TIS Cumbria also utilised approximately 2,300 linear metres of flashings, including ridge, barge, and trimline gutters and

112 linear metres of zed purlins all of which were manufactured at Steadmans' site in Cumbria.

The buildings required 31,000 fixings and 14 fire escape doors all of which were supplied by Steadmans, highlighting that they offer a true one stop-shop solution.

Tony O'Pray, managing director, TIS Cumbria, said: "We have been very impressed with Steadmans' level of service and the excellent products they have supplied. It has also been a beneficial relationship, with Steadmans being based in Cumbria. We try and work with local suppliers so that money goes back in to the region."

Two of the new buildings will be used to manufacture TIS Cumbria's products, which range from basic carbon and stainless steel welded fabrications to high integrity pipe work and pressure vessels. The third building will be used as a testing facility for the company's kit.

# Natural light a boost for new manufacturing facility

AkzoNobel is one of the world's leading industrial companies with businesses trading in decorative paints, performance coatings and specialty chemicals. Works on a new £100 million manufacturing plant in Ashington, Northumbria got underway at the end of June last year and will become the heart of AkzoNobel's UK decorative paints operations.

The new site encompasses a filling and production hall and a containers inward building. It will halve AkzoNobel's environmental impact in the North-East, reducing energy consumption per litre of paint produced by 60 per cent. This will be achieved by employing cutting-edge manufacturing technology and the latest in building design.

Hambleside Danelaw's eco-friendly, factory assembled rooflights were chosen by contractors Hathaway Roofing. The roof consists of Tata Steel

Trisomet panels which include 796 square metres of rooflights, manufactured to match, using high performance triple skin at 120mm depth. This included a 40mm Insu1ator™ core and a Lo Carbon StepSafe external skin.

The Insu1ator™ core and StepSafe external skin were ideal for AkzoNobel's environmental needs. The honeycomb core reduces carbon emissions without decreasing light transmission and gives enhanced light diffusion. By maximising the use of natural daylight, the need for artificial light is reduced and energy costs are lowered. StepSafe products are manufactured from high grade glass reinforced materials which reduces the amount of resin required in production, with the result that the embodied carbon element is reduced.

The new site is due to commence operations in late 2014.



# Sounds perfect at the SSE Hydro

Kalzip's aluminium standing seam system with a weighted Sound Reduction Index (SRI) figure of 53 decibels was specified by Foster + Partners for the 125 metre span roof of The SSE Hydro in Glasgow. This impressive, imaginatively designed and flexible 13,000 capacity live entertainment venue was built for the Scottish Exhibition Centre Ltd by Lend Lease and the shallow domed Kalzip roof was installed by Martifer UK.

Elliptical on plan and angled in profile, The SSE Hydro's domed roof comprises over 12,750 square metres of naturally curved tapered Kalzip sheets in lengths of up to 25 metres installed in six concentric, almost circular bands. The facade of this amphitheatre-inspired building is 15 metres high at the rear rising to 33 metres at the south-facing front elevation with the central apex of the roof being 45 metres above ground level.

The tapered Kalzip sheet-ends were welded to their counterparts on the adjoining roof bands as part of the installation process and any exposed raised seam ends carefully sealed to ensure the roof's integrity. The roof sheets were affixed to a Kalzip structural deck system supported on a diagonally latticed steel framework and the decking sheets pre-coated black on the underside to improve the experience within the auditorium.

In order to achieve the roof's aesthetic symmetry and maintain the continuity of the standing seam sightlines, complex geometric calculations were undertaken by Kalzip to ensure the roof sheets were manufactured to the correct length and taper and the 25,000 Kalzip thermally broken halter clips were individually set-out with precision accuracy.

Kalzip manufactured the tapered sheets on site for reasons of speed, economy and efficiency - this involved a two phase mobile production process within a tightly confined area of the site. Kalzip aluminium coils were precision cut into appropriately wedge-shaped flat sheets of the required length and then roll-formed into tapered standing seam sheets before being craned up to roof level in challenging, blustery conditions when required for installation.

With a wealth of experience in the technical design, manufacture and application of standing seam roofing, Kalzip was able to assure Foster + Partners about the company's ability to deal with the detailed geometry required to produce The SSE Hydro's roof. Kalzip also went to great lengths to demonstrate their ability to achieve the stringent acoustic performance criteria needed for the roof through a series of rigorous pre-testing processes.

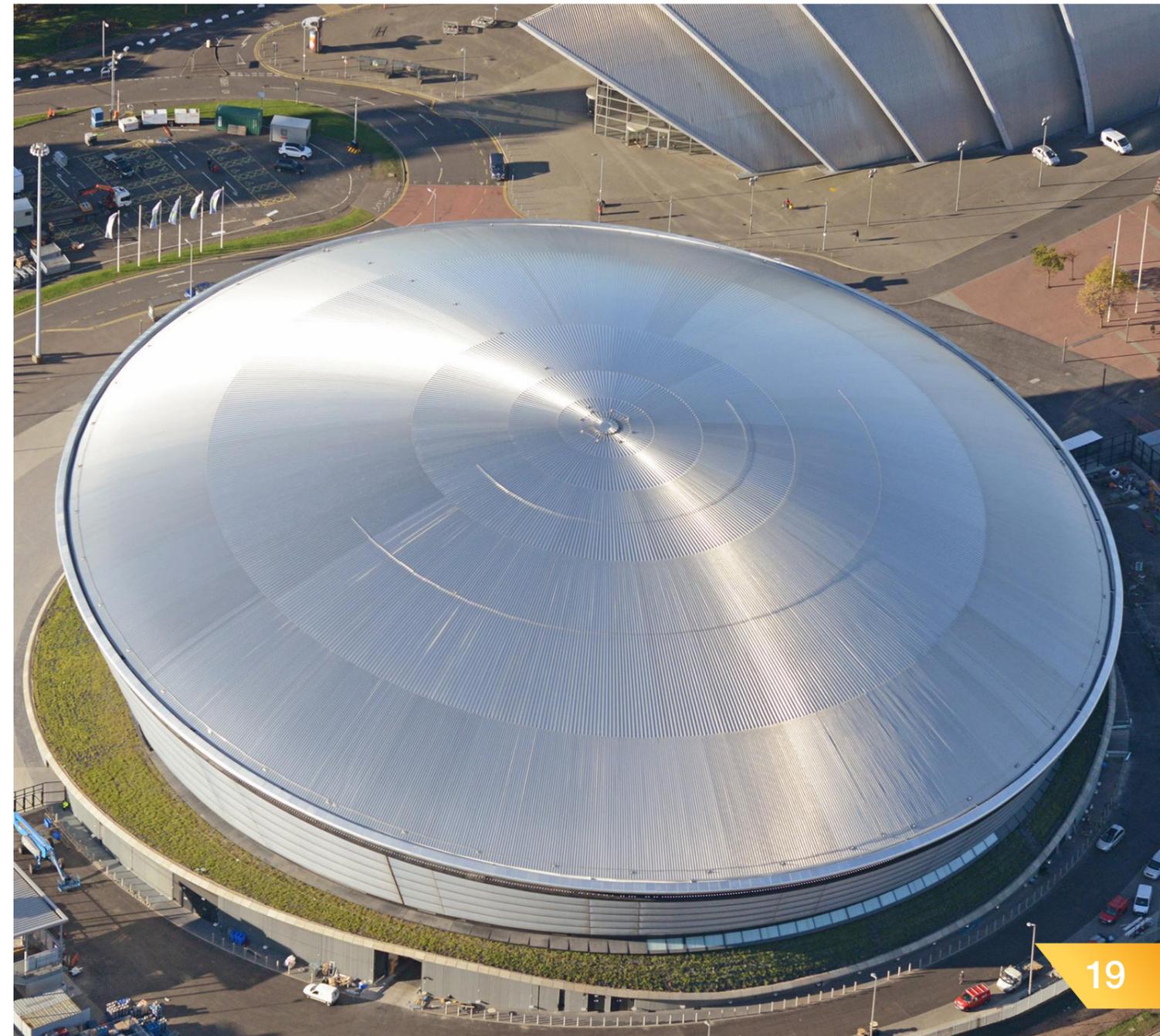
To meet the performance criteria specified by Foster + Partners, the resulting multi-layer acoustic Kalzip roof build-up achieves a U-value of 0.20 W/m<sup>2</sup>K, a weighted Sound Reduction Index of 53 decibels and a sound absorption performance of Class A.

The specified build-up includes a trough and web perforated structural deck with acoustic lags to the troughs of the deck profile, an acoustic membrane sandwiched between layers of acoustic boards and a layer of high density rockfibre insulation topped with a layer of Kalzip Plus 37 quilt insulation.

Located on the north bank of the river Clyde, The SSE Hydro sits next to the Scottish Exhibition & Conference Centre and Kalzip-clad Clyde Auditorium (Armadillo) which was also designed by Foster + Partners and opened to much acclaim in 1997.

The SSE Hydro's bowl-shaped central structure rises majestically from its surrounding lower plinth area which houses the entrances, concourse and accesses to the main auditorium. The façade of the main bowl is wrapped in a continuous translucent envelope of pneumatic ETFE cushions which enables natural daylight in to illuminate the foyers during the day and allows the building to 'glow' from inside at night.

As well as hosting around 140 events attracting an audience of one million people each year, The SSE Hydro is the largest purpose-built concert venue in the UK and will host the 20th annual MTV Europe Music Awards in November 2014.



# Profile sheds light on research centre

Architectural Profiles' Perfo 65 zip seam roofing profile has been used in the cladding of the Nuclear Advanced Manufacturing and Research Centre (Nuclear AMRC) in Sheffield.

Pictured to the right is one of the exterior stair pods at the Nuclear AMRC where natural light was considered an essential requirement for both the building users and for emergency applications. The Perfo 65 profile used here is laid horizontally and perforated for both light ingress and ventilation and has a stucco embossed metallic silver finish.

The Nuclear AMRC is based around an open-plan 5,000 square metre workshop, containing a range of state-of-the-art manufacturing equipment tailored for nuclear industry applications. The building also features accommodation over three storeys, including laboratory and technical support space, an immersive virtual reality room for assembly research and training, office space and secure meeting rooms. Work at the Nuclear AMRC focuses on metals engineering and does not involve nuclear critical aspects such as fuels or other radioactive materials.

The building was designed by Bond Bryan Architects to 'Excellent' BREAAAM environmental standards. Power and heating is provided by a 99 metre wind turbine rated at 900kW and ground source heat pumps with 320kW capacity.

Nuclear AMRC, managed by the University of Sheffield with support from the University of Manchester Dalton Nuclear Institute, combines academic innovation with industry expertise to help UK manufacturers seize the opportunities of new investment in nuclear power and other innovative energy technologies.

The development of the Nuclear AMRC has been funded by the UK government and the European Regional Development Fund. The Nuclear AMRC is part of the High Value Manufacturing Catapult, a new national network of research centres supported by the Technology Strategy Board, the UK's innovation agency.



## MCRMA membership

### Full members

A Steadman & Son  
Architectural Profiles Limited  
Ash & Lacy Building Systems Limited  
C A Building Products  
Euroclad Limited  
Omnis Industries Limited (SpeedDeck)  
Tata Steel Building Systems

### Associate members

Brett Martin Daylight Systems Limited  
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EJOT UK Limited  
Filon Products Limited  
Fixing Point Limited  
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Kalzip Limited  
Knauf Insulation Limited  
Latchways plc  
MAGE Fasteners Limited  
M.R. (Site Services) Limited  
Premier Sealant Systems Limited  
Rockwool Limited  
SFS intec Limited  
Tata Steel

### Independent consultants

A P Williamson Consultants Limited  
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Building Sciences Limited  
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Roofconsult Limited

# A new lease of life for council depot

In a project recently commissioned by South Ribble Borough Council Filon's lightweight GRP over-roofing system was used to refurbish their Moss Side depot in Leyland, Lancashire.

The existing asbestos cement roof had started to fail, allowing water ingress into some areas of the building.

A survey confirmed that the 2,000 square metre roof was in very poor condition and also revealed that the supporting structure was not strong enough to support the steel profiled roof that had originally been considered by the client. Having had prior experience of Filon's over-roofing system, the selected roofing contractor recognised that this was the ideal solution for the project. A spokesman for the contract team

said: "Filon over-roofing is strong and durable, yet very light, so it can be used to overlay existing failing roof finishes without the need for additional structural supports."

This method of roof refurbishment created additional advantages for the Moss Side depot. By removing the need to strip the existing roof sheets, time on-site was minimised and the whole operation was carried out with minimal disruption to building occupants.

Filon over-roofing eliminated the requirement for asbestos handling or disposal, creating further savings and avoiding potential health and safety issues. The insulation was also upgraded as part of the over-roofing project – another benefit of this method of refurbishment.

## Before



## After

