

Faberge egg is the inspiration for Russian ice dome

Over 22,000 square metres of tapered Kalzip aluminium standing seam sheets were used to create the weatherproof building envelope of the spectacular 12,000-seater Bolshoy Ice Dome that was used for the 2014 Winter Olympic Games at Sochi in Russia. Designed and built by SIC Mostovik, this giant domed structure has a maximum span of 193 metres, a height of 40 metres and a total surface area of nearly 32,000 square metres.

Located on the Imeretinskaya Plain which nestles between the Caucasus Mountains and the shores of the Black Sea, the Sochi Olympic Park comprises a coastal cluster of 11 new purpose-built venues specially constructed for the 2014 Winter Games. Created to host the ice hockey events, the Bolshoy Ice Dome is widely considered to be the most impressive and complex of these venues. After the Games, the arena now serves as an ultra-modern, world-class, multi-purpose sports and entertainment centre.

Inspired by the Russian's iconic Fabergé egg, the innovatively designed external envelope of the Bolshoy Ice Dome can change its colour like a chameleon. Although the Fabergé egg was the main creative criterion, the design concept of the dome also emulates a frozen water droplet, according to Alexander Knyazev from the Russian architect SIC Mostovik. He explains, "We decided on a clear elliptical basic form with a dome-shaped superstructure. The exterior design was to allow different plays of colour with the use of LED technology. Depending on needs, both Fabergé-like and arbitrary patterns can be generated. Of course, single-colour or white lights can also be projected, so that the building then appears very puristic and clean."

This ever-fascinating dome gains its spectacular appearance from the shape which is formed by the Kalzip aluminium roof which is overclad with pearl-

coloured aluminium composite panels studded with LEDs to produce a 'glowing' envelope that reflects both the environment and the continual changes of daylight.

Bolshoy Ice Dome's complex three-dimensional roof structure consists of multiple layers; firstly a sub-construction of perforated steel trapezoidal decking sheets mounted on steel girders. This was topped with a Kalzip VCL, two layers of Kalzip compressible mineral wool insulation and a tubular substructure of Kalzip Flexicon RR 80 onto which the Kalzip roofing sheets were affixed.

Kalzip senior engineer, Robert Thiebes explains, "This flexible tubular substructure is particularly suitable for accommodating tolerances and minor variations in the height of the supporting steel structure to ensure the required level of the Kalzip outer skin. With such a sophisticated building geometry as this structure, it's most important that the Kalzip system is mounted in the appropriate plane to achieve the dome's complex shape."

To ensure the complete integrity of the Kalzip roof, a great deal of intricate welding work was necessary at the sheet joints, particularly around the ridge area. A series of aluminium top hat section supports mounted on angle brackets were then attached to Kalzip FA seam clips fastened to the standing seam without penetrating the Kalzip. The aluminium composite panels with their integrated LED technology were then affixed to the network of T-section supports to complete the impressive rainscreen overcladding.

Employing this type of construction technique means that an infinite variety of creative design options are available to architects by using the Kalzip standing seam system to insulate and weatherproof the building envelope and carry virtually any type of rainscreen overcladding as an aesthetic façade.



And the winners are...



Many congratulations to Lakesmere, the specialist building envelope contractor who triumphed in two awards sponsored by MCRMA at this year's Roofing Awards held on Friday 16th May 2014; both winning projects feature MCRMA member companies' products. As part of the Association's support for the construction industry, MCRMA sponsors the National Association of Roofing Contractors (NFRC) Roof Sheetting award and the Cladding & Rainscreen award.

Cladding & Rainscreen Award

The winning project in the cladding and rainscreen category was the First Direct Arena in Leeds which is the UK's first purpose built 'fan-shaped' arena. Its unique honeycombed external façade incorporates a multi-skinned envelope that has been based on a mathematical diagram to create a pattern of varying cellular shapes which are further complemented by glazed panels and the use of coloured lights.

The 13,000 capacity concert venue features an impressive uninterrupted interior construction, designed to allow all seats perfect sight-lines to the stage. The complex 3,500 ton steel structure was topped out by a 45 metre long proscenium beam spanning the width of the building.

The relative simplicity of the products used belies the complex design of the façade. The design and installation achieved major savings on the final specification without compromising the aesthetic vision. Bespoke ancillaries were developed through the use of 3D design feeding into the main contractor's BIM model to check accuracy and positioning of individual elements. In addition, the First Direct Arena has achieved a 'very good' BREEAM rating making it the most sustainable arena in the UK.

Roof Sheetting Award

The winning project in the roof sheetting category was Heathrow Airport's Terminal 2 building where, working alongside its key supply chain partners and utilising the latest 3D design technology and logistical planning tools, Lakesmere's in-house design team developed a sophisticated technical solution for the unique 45,000 square metres 'eyebrow-shaped' roof.

The striking multi-wave form roof meets the stringent acoustic, thermal and energy performance requirements demanded of the 180,000 square metre building sited alongside this major international runway. The airport remained operational throughout the construction programme and therefore health and safety was paramount. The

project set a new national record for hours worked without reportable incidents – five million RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences) free hours.

Formerly known as the NFRC Awards, the Roofing Awards have now entered their ninth year and have become an established industry-wide competition that recognise and reward outstanding standards of workmanship and safety within the roofing industry. The event attracts the key manufacturers, suppliers and contractors who service the roofing industry.

The awards were presented by Linda Barker, the former 'Changing Rooms' presenter at the Roofing Awards Congress Lunch held at the Hilton Metropole, London.

Poundstretcher Expands

Crown Crest's 470,000 square feet distribution centre in Kirby Muxloe, Leicestershire has been built to support the expansion of its nationwide Poundstretcher discount store chain. The £36 million investment replaces smaller units in Leicestershire and Nottinghamshire.

The roof features 50,000 square metres of 80mm thickness Tata Steel Trisomet® 333 System insulated panels in Colorcoat HPS200 Ultra® Olive Green finish. The walls have been constructed from 60mm thickness Trisomet® 333 System in Colorcoat HPS200 Ultra® Goosewing Grey.

The building envelope was installed by East Midlands-based contractor Cladcell Limited. Cladcell director Tony Seabridge said: "This was one of the biggest contracts we've ever undertaken and we were delighted to win it. The 14 degree roof pitch presented some access challenges, so we devised a flatbed trolley with a mechanical winch to safely position Trisomet® panels at critical areas"

Crown Crest currently runs more than 375 stores, with ambitious plans to open dozens more outlets in the near future. Beginning life as a cash and carry business, Crown Crest now has an annual turnover

of over £400 million and employs over 5,000 people in its combined businesses.

The Leicester-based company acquired the 36-acre Kirby Muxloe site in 2008. It was the location of the TI Tubes manufacturing plant and was last occupied by Timken Steel. They have been working with the long established Leicester-based construction company Hallam Contracts for a number of years now and selected them for this significant project because of their proven ability to deliver to a tight programme and within exacting financial constraints.

Trisomet® 333 System insulated panels are available in a wide range of Colorcoat® finishes and can be produced in lengths up to 20 metres, significantly

contributing to installation speed and site waste reduction. This is all achieved without any compromise.

Trisomet® 333 System provides optimised water drainage, strength and durability. Its autohesively-bonded polyisocyanurate (PIR) shallow insulation core uses the latest foam technology, providing exceptional thermal performance.

The system is manufactured in North Wales on one of Europe's longest, most efficient and sustainable insulated panel production lines. It is sited adjacent to the Colorcoat® line, for impressive embodied energy savings and a reduced carbon footprint through a variety of measures, including waste steam generation and recyclable packaging.



Innovative solutions are child's play for Ash & Lacy

A complete and highly innovative through-wall design by Ash & Lacy played a key role in the complete redevelopment of Christchurch Primary School in Burton-on-Trent.

The brand new school was built adjacent to the old infants' school which was demolished once the new building was completed and occupied.

Installed by Advanced Roofing Ltd for main contractor Seddon, the building's eye-catching façade comprises approximately 900 square metres of AshTech™ Simplicity 1 rainscreen cladding in a gold metallic Larson ACM finish. It also features a projective outer façade in an AshTech™ Lingrid 1 rainscreen in 3mm RAL 9006 white aluminium PPC with bespoke perforated patterns, meeting the requirements of client Staffordshire County Council's architects and incorporating the slogan 'Love to learn, Learn to Love', plus other graphic elements, including a clock face.

The Lingrid panel configuration required for this project was particularly noteworthy. Instead of deploying a more traditional vertical arrangement, panels had to be laid horizontally. To achieve this, Ash & Lacy implemented a thorough engineering review of the product, devising additional reinforcement brackets specifically for this application. This is an excellent example of the well-established Ash & Lacy philosophy of creating bespoke engineered solutions in response to individual client criteria.

The support system for the outer façade utilised the Ash & Lacy S150 mullion to a bespoke design to accommodate the large span requirements, manufactured in RAL 9006 PPC to produce the most complementary match to the perforated panels. The Ashwall™ SFS metal framing system was used as secondary steelwork support for the ACM inner façade.

The S150 horizontal support system was also designed in such a manner to reduce the visual impact of strengthening and stiffening elements behind the façade. Fixed to a series of unequally positioned hot rolled vertical posts, the mullions needed to span large distances without the use of anti-sag bars and keeping the connections as visually clean as possible.

Ash & Lacy was able to give the school a façade that reflected the educational aspirations of the staff with the panels arranged randomly, using different perforation sizes to corners and elevations to create an effect that is particularly stunning at night time when back-lit.

The positioning and co-ordination of each panel required careful attention to ensure that the architect's aesthetic vision of the pattern flowed consistently and freely across panel joints whilst not obscuring the graphics or the window openings.



The Price Is Right For The National Grid

Glancy Nicholls Architects of Birmingham are favoured by National Grid for their ability to design buildings which have immense functionality, which look stunning, meet or exceed energy saving performance criteria.... and which come in on budget.

National Grid at Hitchen is one of several National Grid projects where Glancy Nicholls has specified Slimwall systems from Architectural Profiles Limited (APL) to meet the very exacting demands of their client.

An APL AP45HR (half round) cladding profile was specified for this project. It is the external face of a Slimwall Twinskin system into which matching AP70LCP HR (half round) live louvers are integrated. An interesting use of AP45HR half round cladding can be seen on a round services column at the rear of the building.

Internally Slimwall can be finished in whatever the client desires making this, and similar projects, proper 'Through-Wall Engineering' projects.

Fundamental to this type of system is not only the system's recurring ability to come in on budget, but also to provide energy saving statistics which are the envy of today's construction sector.

This is one of two projects to provide practical and class room training for new National Grid graduates. The accommodation includes reception, offices, ground floor workshops, and first floor classrooms arranged around a central atrium. These training centres are the first buildings within the company to have low carbon footprints, thanks to the design of the external fabric, orientation and the inclusion of renewable energy resources.

Shining A Light On Rotherham's New York Stadium

Central to any football club are the fans' match day experience and pitch quality, and it was with these factors in mind that the spectacular rooflight canopy of Rotherham United's £20 million New York Stadium was designed and built using over 4,800 square metres of Brett Martin's Marlon CS profiled polycarbonate sheet.

As it is totally enclosed, it was important that the roof design of the new 12,000-seater stadium allowed natural light to penetrate through both onto the pitch and the stands. This ensures fans are able to enjoy the sunshine and will cut Rotherham United FC's energy bill as artificial lighting will not be necessary during the day. Brett Martin's daylight solutions will also aid pitch maintenance, encouraging grass growth in warmer months, and defrosting the pitch in the winter.

The New York Stadium – named after its location in the area of Rotherham in which fire hydrants were

made for shipment to New York, USA – is the new long-term home for the Millers having played their home games in Sheffield since leaving Millmoor in 2008. Built to last, the panelling of clear Marlon CS Longlife polycarbonate is renowned for its durability, comes with a co-extruded UV protection layer, and carries a 10 year light transmission with a three year weather breakage warranty so it should be letting light onto their new home for years to come. Using the 2mm thick sheets as glazing to incorporate natural light into their design will help Rotherham United meet its sustainability targets as well as supplying home games with an exceptional appearance.

The project was managed by Gleeds and building was undertaken by GMI Construction in collaboration with roofing contractors, Roofdec.



Building On Partnerships For New Production Facility

There can be few companies that know more about the range of roofing profiles than Latchways, the leading fall protection systems provider. So when Latchways decided to build a new production facility on land adjoining their headquarters in Wiltshire, they looked to Kalzip to provide their roofing system, a company they have worked with for almost 20 years.

Latchways has worked closely with Kalzip, and other major roofing manufacturers, to ensure that their protection systems have approval for use on a wide range of roofing profiles, and that they do not compromise any roof manufacturer guarantees. Latchways and Kalzip also share a strong belief in rigorous independent testing to ensure their products not only meet, but in many cases exceed, the required standards.

Latchways' new production facility has a 3,000 square metre roof of naturally curved Kalzip aluminium standing seam roof sheets which were site rolled at eaves level, with the outer sheets spanning over 60 metres in a wave form. The roof also includes a number of in-plane GRP rooflights and photovoltaic panels. Covering the wall elevations is a combination of over 2,000 square metres of Tata Steel built up and composite wall cladding panels.

Local company Gaiger Brothers were the main contractors, with the roof construction and cladding sub-contracted to Birmingham-based Sky Green who are part of the Teamkal Network and approved to install the Kalzip range of products.

There was, inevitably, only one choice for a rooftop fall protection system. Designed by Latchways' in-house design and specification team, a 565 metre long series of Constant Force® post perimeter systems were installed, following Kalzip's approved procedures, by one of Latchways' registered installers, HCL Safety Ltd.

Building work started in February 2013 and has recently been completed. The new facility will bring all Latchways' operations, which were previously spread amongst other locations in Devizes and nearby Calne, onto the same site. The facility will also provide capacity for future business growth. One side of the building serves as a warehouse and holds the production lines for Latchways horizontal ManSafe®

systems, whilst the other side has office space, meeting rooms, a cafeteria and a new training centre for Latchways' training programmes.

Stuart Pearson, commercial manager at Latchways, commented "The project exemplifies what can be achieved through good working relationships between the manufacturer, and approved contractors and installers - a principle that Latchways retain as core throughout our fall protection business. We are delighted with the finished building, which was achieved within a strict budget and time frame. The result is an extremely attractive building which is an asset to the infrastructure of the Hopton Park industrial estate."



The shape of things to come

The new Marks and Spencer flagship store in Cheshire Oaks is the greenest M&S store to date using the latest innovations to reduce environmental impact, including the Euroclad Elite 4.17 roof system. It is the third Sustainable Learning Store (SLS), which is part of the retail giant's commitment to build a strong bank of knowledge and experience in sustainable building practices and embed successes into future specifications.

The store features an attractive timber structure that is visible from inside the building and has been carefully selected to reduce energy consumption and environmental impact. This is the first retail construction using a roof structure made of FSC-certified glulam timber (engineered softwood) and wall panels that are made from a lime based binder and hemp, which deliver a U-value of 0.12W/m²K. Hemp absorbs CO₂ from the atmosphere during growth, reducing the embodied carbon footprint, whilst the panels provide a more stable internal temperature and lower energy use.

The varied green wall system that has been installed on some areas not only looks attractive but will also

help protect the car park from the elements, trap particulates from car exhausts, give thermal and acoustic insulation and provide a natural habitat for birds and other wildlife. The four living walls cover 300 square metres in total and include 30 plant species, which are watered automatically through a rain water harvesting system. A steel mesh system and ropes provide a suitable structure for plants to climb up and cover around 300 square metres.

The roof is a Euroclad Elite 4.17 system for minimal environmental impact and impressive looks. It is comprised of 11,000 square metres of multi-waveform standing seam roof, glass wool insulation (which helps achieve the 0.17 U-value) and curved liner sheet. The aluminium roof reflects excess heat and 100 per cent of the aluminium is from a recycled source. As well as providing a major visual element of the design it also helps to achieve an outstanding air tightness in the store of less than three (3 m³/hr/m² @ 50 pascals). The original specification for lamb's wool roof insulation was changed in order to achieve higher BREEAM points and the insulation used contains recycled post-consumer waste (bottle glass) along with recycled glass wool.

The consideration of the local environment as well as the wider environmental impact has relevant links with the visual design and construction process; good community engagement was integral, given the close proximity to neighbours and businesses. The store employs nearly 500 people with 400 new positions created and the pride that employees and the local community take in the impressive yet sympathetic design of the new building is an important aspect of the store's success. Cheshire Oaks represents the desire to create a positive store environment which not only improves sustainability but can improve the health and well-being of staff, customers and the society in which the company operates.

This is the most carbon efficient, bio diverse and materially innovative store which has engaged the community at every step. The store has achieved a BREEAM excellent rating, an industry recognised environmental assessment of buildings. Operational energy is predicted to be 30 per cent lower and carbon 35 per cent lower than a peer store. Natural light has been maximised and 70 per cent of heating is provided by biomass and heat reclaim from food refrigeration.

The need to make new buildings as energy efficient and environmentally sympathetic as possible, whilst delivering impressive levels of form and visual impact is increasing; driven at a base level by ever more stringent Building Regulations but also championed by the ethical commitment of forward-looking companies such as Marks & Spencer that puts corporate and social responsibility and the environmental impact of their activities at the heart of what they do.

Euroclad shares this ethos; working to BSI audited quality and environmental management systems and partnering closely with material suppliers to minimise the environmental impact of all products and processes. Elite Systems maximise the use of recycled materials and can help deliver a building envelope with outstanding thermal efficiency for a lower carbon footprint. ElitePlus systems offer a guarantee of 25 years with external material guarantees of up to 40 years and there are proven routes for refurbishment, recycling, reuse and removal at the end of the system's useful life.



Keeping the river flowing

CA Group worked alongside FK Construction in the installation of its Prime VII rainscreen system, incorporating the Cupral Orange aluminium composite material (ACM) box facade on this £220 million project upgrade at Crossness Sewage Treatment Works in London. This treatment works is part of a network of interconnecting sewers which run parallel to the Thames, diverting the capital's effluent and is the largest sewage works in Europe serving two million people.

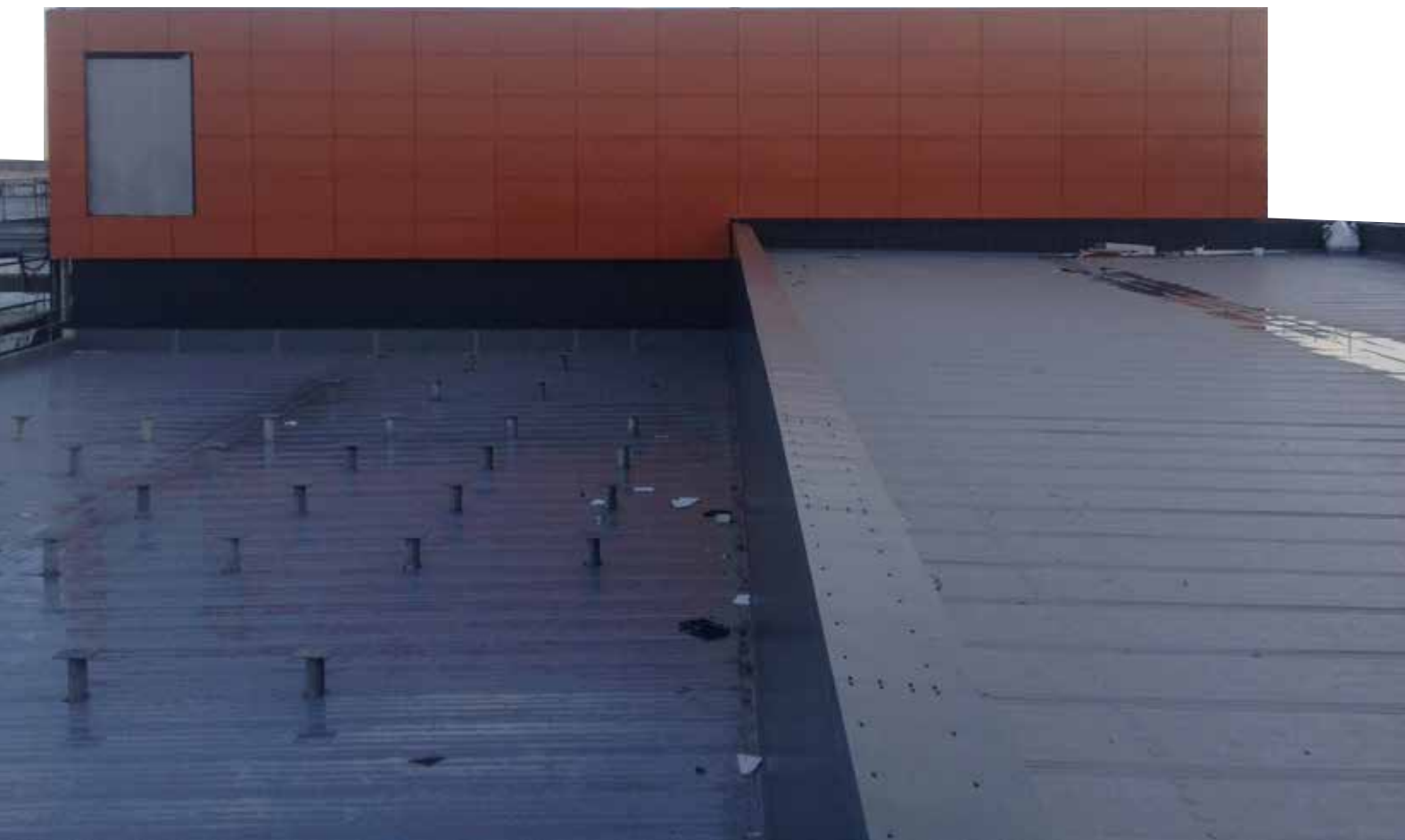
This was the first time that FK Construction had worked with the Prime VII rainscreen system which is manufactured and supplied by CA Group. With this in mind the CA specialist rainscreen team worked alongside FK Construction from initial design through to installation to achieve an outstanding finish.

The Prime VII Rainscreen system which has full Centre for Window & Cladding Technology (CWCT) certification was installed with ease. The accurate

setting out of the carrier system enabled an overall speedy installation of the rainscreen panels. Trim details were used to complement the panels and overcome a robust canvas enhancing the longevity of the installation's aesthetics. The simple, systemised approach of the PRIME VII rainscreen system utilises panels which are hooked into place and then mechanically locked, resulted in excellent feedback from all parties involved.

Work at Crossness is ongoing and future improvements to the treatment works will include a 35 metre high tower/chimney which will be clad in the same Prime VII rainscreen system installed by FK Construction.

When completed these improvements will enable 44 per cent more sewage to be processed and reduce the amount of storm sewage that overflows into the tidal River Thames after heavy rain which in turn will prevent more homes from being flooded in London.



Extended building life for corrosive environment

Filon's chemical resistant Citadel GRP profiled sheets were specified for this new factory unit in Widnes, Cheshire to withstand corrosion attack from chemicals used in the manufacturing process housed within the building.

Building owner Saffil Ltd, part of the global Unifrax Corporation, manufactures highly engineered polycrystalline wool products. These specialised materials offer high temperature solutions for a wide spectrum of applications and markets.

Small quantities of hydrochloric acid generated in their manufacturing process can escape and condense on interior building surfaces and these can have a corrosive effect on many traditional materials. For this reason, Filon Citadel profiled GRP sheets were specified for the project to provide an extended guarantee on the structure.

Design and specification of the plant was undertaken as a fast track project by structural and civil engineers R&M Bolton Ltd, of Leigh in Lancashire.

Richard Bolton, managing director of R&M Bolton, said: "Filon Citadel was the obvious solution for the cladding and roofing on this project. We've worked

with Filon Products over a number of years and were aware that their Citadel sheets can be formulated to provide high levels of resistance to specific chemicals."

Filon Citadel sheets are supplied in one of two double reinforced (DR) weights, or triple reinforced (Supasafe). The Filon Citadel DR wall sheets provide excellent durability, resistance to the local environment and wind loads. The Filon Citadel Supasafe roof sheets provide optimum levels of safety and load resistance in the very long term. All of the Filon Citadel sheeting used is compliant with the Building Regulations for fire safety.

The almost 4,000 square metre roof comprised opaque sheets to a light grey internally and externally. The building also benefits from the inclusion of approximately 10 per cent rooflights providing a pleasant naturally lit working area due to the highly diffusing properties of Filon rooflights.

The 2,000 square metre wall areas were also clad with light grey opaque sheets and the system was finished with purpose made flashings, louvered ventilators and curved eaves sheets providing an elegant and seamless transition from roof to wall.



Bespoke insulation for Aston University

“BREEAM ‘excellent’ rating was a key requirement for this project.”

Knauf Insulation has been involved in the design and supply of a bespoke insulation product for the ambitious construction of the low energy and sustainably managed, European Bioenergy Research Institute (EBRI) at Aston University in Birmingham.

The University's new £16.5million EBRI building is funded by the European Regional Development Fund. This European Centre of Excellence in bio-energy provides new 'topic' laboratory research facilities, as well as a 0.4MWel (electric megawatt) small scale industrial power plant that will extract energy from multiple low-grade bio-wastes and acts as a demonstrator of EBRI's innovative bio-energy technologies. The scheme incorporates the existing portico of the Art Centre building, retaining the original 1920s façade and combining it with new modern facilities constructed at the rear.

Alan Miller, architectural assistant at Associated Architects comments: “The project is largely new build on the site of a previous building. The retained frontage of the historic building has been used to form the primary entrance for the semi public areas. The new laboratories and office accommodation are housed beyond, within the new build areas.

“BREEAM ‘excellent’ rating was a key requirement for this project. As a European centre for bioenergy research, Aston University was keen to maintain the sustainable ethos of EBRI within the building itself and make improvements wherever they could be accommodated.”

During the early stages of the project, Knauf Insulation worked closely with Associated Architects to specify the correct rainscreen insulation product to meet the necessary requirements for a large glazed façade wrapping round the first floor. The insulation layer is a fundamental component of any successful rainscreen cladding system and rock mineral wool insulation delivers a number of advantages over rigid foam boards in this type of application, so Knauf Insulation's Earthwool RainScreen HD Slab in a bespoke 120mm size was ideal for the project, delivering exceptional thermal, fire and acoustic performance.

On the design of the façade, Alan continues: “Due to its visibility through the glazing, a lot of attention was paid to the appearance of the insulation and its fixings. To successfully mitigate the differing dimensions of the constituent elements of glass channel, blockwork substrate and insulation, the insulation was specified with the help of Knauf Insulation's regional specification manager and Technical Advice and Support Centre (TASC), to match the module of the glass channels. This resulted in a smaller than standard slab size, allowing for the edge of the slabs to align behind the joints in the glazed façade, providing not only the thermal performance required, but also an aesthetically pleasing appearance.”

The early involvement of the regional specification manager in the project and their relationship with the architects and client at the concept stage made for a very smooth delivery and ensured the required U-value of 0.22W/m²K would be achieved without the need to re-design elements later in the project.

In addition, all of Knauf Insulation's Earthwool rock mineral wool products deliver exceptional environmental performance and are manufactured using the innovative ECOSE® Technology - a revolutionary, bio-based, formaldehyde-free binder technology that is based on rapidly renewable materials, rather than petro-based chemicals. This was a key reason that the insulation was specified for this exceptionally sustainable project.

“The visible insulation has attracted a lot of attention to the project. The involvement of Knauf Insulation at a personal level and as a company helped to maintain the intention from design through to execution,” comments Alan Miller.

Alan Charters, executive director of capital development at Aston University, said: “Sustainability is at the very heart of all we do at Aston University. Through our research, institutional environmental performance, and through our graduates we are working to develop the technologies and the people to lead the delivery of the low carbon economy for the West Midlands region, the UK and beyond. The new EBRI building will enable the team to expand their research as well as supporting businesses within the region and beyond. We are delighted with the results: an iconic building that conducts sustainable research in a truly sustainable environment.”



Safari so good for elephant house

Materials made by leading one-stop-shop building products manufacturer Steadmans have been used to build a new elephant house at Blair Drummond Safari & Adventure Park, near Stirling.

The house is a key part of the new elephant habitat which accommodates three elderly female elephants and its completion marks the end of a five-year redevelopment of their enclosure, with the construction phase having taken more than 18 months. Steadmans has previously provided materials for accommodation at the park housing giraffes, chimpanzees, lemurs, bears and rhinoceroses.

The new elephant house features 1,000 linear metres of Steadmans' AS35 100mm insulated panels; vital for ensuring its temperature does not dip below the minimum permissible 16 degrees Celsius. In addition, Steadmans supplied 1,000 linear metres of zed purlins, 200 linear metres of eaves beams and 225 linear metres of cee sections for the structure.

Steadmans also provided 240 linear metres of rooflights, plus sag bars, eaves and knee braces, side rail struts, diagonal wires, cleats, fixings and flashings for the elephant house.

Gary Gilmour, general manager, Blair Drummond Safari & Adventure Park, said: "Our relationship with Steadmans goes back more than 20 years. For the elephant house, we needed a professional company which would give us good advice and deliver on time. Steadmans again displayed first-class knowledge about the materials we needed and delivered a quality service. There were no hold-ups in the materials being delivered and everything arrived on time. We'll definitely use the company for future projects too."

Comprising two outer steel skins with an integral PIR insulation core, Steadmans' AS35 insulated panels are available in a wide range of colours and complement their broad variety of pre-engineered construction products, such as gutters, rooflights and doors.

AS35 panels are manufactured in a quality process certified to ISO 9001:2008, using non-ozone depleting technology. This provides designers with an environmentally-responsible product, with excellent thermal performance and a predicted service life of 40 years. Available in a range of thicknesses, the panels can be specified to achieve insulation U-values, aiding compliance with the latest L2 regulations. The panels are also Loss Prevention Certification Board approved.

Blair Drummond Safari & Adventure Park, occupying 120 acres, opened to the public in 1970. The site has several drive-through reserves and a boat safari for visitors; other animals resident at the park include camels, tigers and zebras. Blair Drummond keeps several exotic and endangered animals in its collection and takes part in captive breeding and research programmes for endangered species.

Rolls Royce Blades To Be Cast In Natural Light

Based at the Advanced Manufacturing Park in Rotherham is the new Rolls Royce Advanced Blade Casting Facility. Currently under construction, the facility is expected to produce its first blades in late 2014, with the capability of manufacturing 100,000 aerospace blades per year when fully operational.

Designed by Bond Bryan Partnership in Sheffield, the building features a 1,300 square metre metal standing seam roofing system; Hambleside Danelaw's triple skin barrel vaulted rooflights were selected for the project as they are ideal for standing seam system roofs.

The triple skin rooflights are comprised of Lo Carbon StepSafe liner panels which are manufactured from high grade glass reinforced materials. This reduces the amount of resin required in their production, considerably improving their strength and reducing the embodied carbon. The outer 2.165kg Archlight weather sheets make up the curved layers, which are placed on an upstand that curves to the roof. These 100 metre long barrel vault rooflights have been applied downslope from the ridge and continue down to the eaves. This minimises the number of metal/translucent junctions and eliminates rooflight end laps to improve reliability and servicing.

The U value of the rooflights is calculated at 1.7W/m²k which indicates high levels of insulation and complies with European Standards. The liner panels meet the highest fire grade of SAA0, higher than the typical requirement for liner panels in a double skin assembly. The Archlight weather sheets are grade SAA1. Robert Baines of Northern Cladding, who were contracted to the project by BAM Construction, commented, "The technical specification for the fire performance of the rooflights was a big driver for choosing Hambleside Danelaw's product. As the structure of the roof was standing seam, the barrel vaulted rooflight option fitted perfectly. BAM Construction has said they are delighted with the result."

Rolls Royce will benefit greatly from the installation of these rooflights as people respond better to working in natural light conditions, benefitting their own performance. In addition, less dependency upon artificial light reduces energy consumption and costs, as well as impacting upon the building's overall carbon footprint.



Fixing the face of Tesco

SFS intec has supplied a range of high performance fastenings to securely and aesthetically fix the rainscreen facade onto the newly built Tesco Extra store in Woolwich, London.

Standing at 17 storeys high, the development features approximately 7,000 square metres of cladding panels, designed to create an attractive and colourful finish. Using over 500,000 of SFS intec's fastenings and fixings, the zinc rainscreen panels have been held in place using New Generation SX stainless steel fasteners to secure the rail bracket to the rail system; MDH and MIDsR insulation fastenings for fixing the insulation through to concrete; and TU-S rivets to enable an aesthetically superior blind fix of the high pressure laminate element of the rainscreen cladding.

Nathan Atkins, buyer for Prater, contractor of design and installation services for the complete building envelope, commented: "This high-profile construction is part of a major scheme to regenerate Woolwich town centre, so it was important that the final building looked impressive and welcoming to the general public. As such, it was vital that we sourced a manufacturer whose products would facilitate an efficient installation of the facade, without issue or concern for the building's aesthetics."

SFS intec's TU-S rivets hide neatly behind the panel and as they cannot be overdriven, there was no risk of the panel dimpling.

Mick Steeples, key account manager (South East) at SFS intec, commented: "Though only a small element of the overall build, we carefully considered the most suitable fastening solutions for the installation of the rainscreen. The rivets used expand radially, meaning that they do not place any pressure on the front of the panel like more conventional screw fasteners. Being hollow, the rivets allow moisture to escape from the rear of the panel instead of through the face which can cause unsightly dimples and blisters.

"We took a holistic view of the building's aesthetics, natural movement, performance and the relationships between each component within the envelope to ensure that the products supplied would provide a striking and secure finish for years to come."

Sitting securely behind the panel, the TU-S rivet allows for natural expansion and contraction of the panels, ensuring that they remain securely in place and minimising the potential of panel deformation. Similarly, the stainless steel SX fastener with EPDM washer ensures a secure, unrivalled pull-out performance. The stronger fastener has up to 75 per cent improved pull-out resistance and offers a genuine 25-year structural warranty.

The mixed-use development includes an 8,000 square metre Tesco Extra store, seven additional retail units, a car park, a police station and 259 apartments. The new build is expected to bring increased inward investment to Woolwich and new jobs.



Metal for the long term

Metal roofing and cladding systems and their associated components contribute significantly to the sustainable design concept thanks to their high recycled content, recyclability and energy efficiency.

MCRMA members offer total sustainable building solutions thanks to a range of complementary components which include flexible solar PV fastening systems; sustainable high performance insulation products, for example the use of recycled glass in glass wool insulation and stone mineral wool sourced from naturally replenishing rock; and daylight options to maximise the transmission of natural light into buildings.



Metal has many attributes which makes it the material of choice for both new and refurbishment construction:

- Energy efficiency
- Low maintenance
- Durability
- Striking beauty, clean appearance and versatility
- Choice of steel or aluminium substrate which can be linked with a range of colours, shapes, panel sizes, finishes, profiles and vertical and horizontal applications.

Metal has much to offer in the areas of green technology and sustainability, 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.
- Metal solar cladding systems that enable buildings to generate their own electricity or deliver naturally warmed fresh air into the building. MCRMA members have developed functional coated steel products based on renewable energy for use in the roofs and walls of buildings.
- Innovative cool roof coatings for metal roofs 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.

Visit the sustainability section on the MCRMA web site to find out how MCRMA members are providing sustainable solutions across a range of sectors including education, industry, leisure, retail and commercial.

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
Capital Safety Group
EJOT UK Limited
Filon Products Limited
Fixing Point Limited
Guttercrest Limited
Hambleside Danelaw Limited
HS Butyl Limited
Kalzip Limited
Knauf Insulation Limited
Latchways plc
M.R. (Site Services) Limited
Premier Sealant Systems Limited
Rockwool Limited
SFS intec Limited
Tata Steel

Independent consultants

A P Williamson Consultants Limited
Barry Jackson Associates
Building Sciences Limited
Michael Kilbey Associates Limited
Roofconsult Limited

New to Download

Fastener specification guidance

This document gives best practice advice on the life expectancies of fasteners across a range of applications, the importance of the total connection (the most critical aspect of the fastener) and provides a checklist of points to take into account when considering a guarantee or warranty. The document is available here

Non fragility of roofs: a checklist

This guidance document emphasises the importance of adhering to good safety standards; buildings must be designed with safety in mind, not only for the construction period itself but also throughout the normal life of the building. The guidance document addresses the issue of roof fragility and gives detailed advice for anyone who has to access a roof. The document is available here

New BIM page

The new BIM page is now live on the web site at <http://www.mcrma.co.uk/BIM/>

This is very much a starting point; the web page will expand over the coming months as MCRMA develops attribute sets, formats and levels of definition for metal roofing and cladding BIM models.

Member companies provide backing for BIM-based design projects and provide expert advice about the specification of CE marked products. In support of these activities, the MCRMA's independent roofing and cladding inspectors group provide professional advice about the building envelope during the design, assembly and operating phase of construction.

