The Building Envelope Authority

Metal Matters

Issue 9: Winter 2013/14

Tata proves to be an all-rounder at Edgbaston

The stunning £32 million Pavilion Stand at Edgbaston Cricket Ground elevates the famous Birmingham venue to England's second largest cricket stadium. Only Lord's is bigger.

This world-class facility includes a conference and 750-seater banqueting suite, improved visitor amenities and extended ground capacity to 25,000 spectators, seating 8,250, compared to the 5,000 accommodated in the previous stand.

The building's impressive curved external shell features over 4,000 square metres of Tata Steel 42/960 sinusoidal profile in a highly attractive Metallic Silver (RAL 9006) ARS-coated aluminium finish plus 0.4mm Tata Steel LP1000 Liner in Brilliant White, sandwiching a rock-fibre insulation layer to achieve current standards.

The Pavilion Stand's premium hospitality lounge is called the Jaguar Club, after the luxury car maker signed a new multi-year sponsorship agreement with Warwickshire County Cricket Club. The executive boxes, located on the third tier, offer superior viewing and private balcony seating.

The history of the ground is given great prominence, occupying the first floor of the stand with 14 zones for visitors replacing the club museum.

An impressive curved external shell, on the Edgbaston Road side of the ground, hangs over the entrance. This provides extra space for a re-vamped players' rooms and gym, a members' lounge and The 1882 Club, named after the year the club was formed.

Northampton-based installation contractor Deane Roofing & Cladding Limited carried out the relatively complex wall cladding installation on the Pavilion Stand.

The 42/960 sheets were supplied in a wide range of lengths, getting progressively wider towards the centre of the wall, to assist curving in sections. A series of secret gutters was positioned along each grid line, as part of a range of measures designed to ensure adequate rainwater drainage of the striking external facade.

Reflecting on the performance of Tata Steel 42/960 on the project, Paul Deane, of Deane Roofing & Cladding Limited, commented: "We found it to be a superb product. There was no variance in manufacturing quality and the profiles were extremely consistent. We were therefore easily able to achieve the critical overlapping of sheets on a very complex and ambitious wall cladding design."

New Leeds Arena design rocks the city

SFS intec's specialist fastening systems have been used to secure the striking new shingled, multi-coloured, metal façade on the First Direct Leeds Arena, resulting in significantly reduced fixing times, keeping the project on its critical time line.

The cladding of the newly completed venue comprises 6,000 square metres of aluminium shingles in five different colours, which was installed in layers onto stainless steel clips and held in place using 35,000 of SFS intec's aluminium bulb-tite rivets. In addition, 3,000 self-drilling, SL3/2 fasteners were supplied to fix the perforated, aluminium mesh rainscreen panels to the structural backing wall. Some 7,000 low profile, Irius fasteners were also used to fix Kalzip's system, Kal-Plank, at the rear of the building. The design and construction is targeting a BREEAM 'Very Good' rating.

Craig Winstanley, technical advisor at SFS intec, commented: "We specified our austenitic stainless steel SL3/2 fasteners, to fix top hats onto the outside of the structural backing wall. By not having to drill these panels for bulb-tite rivet application, the contractor saved considerable installation time. Furthermore, the SL3/2 fastener also provides the same pull out strength as our bulb-tite rivets, and will not strip out threads with the thin skin of the structural panels.

"A poor conductor of heat, austenitic stainless steel is also non-corrosive with aluminium, unlike many other steels – an aspect that was hugely important for guaranteeing a long-lasting, aesthetic finish of the facade."

Howard Preston, design manager at Lakesmere, said: "All systems specified for installation at the arena were chosen for their ability to be installed quickly, while guaranteeing a high performance fixing which is hard wearing against corrosion - essential when ensuring a long lasting, visual design. We specified the fasteners from SFS intec specifically for their durable qualities, ability to work harmoniously with the stainless steel clip and also for their low profile, discreet head designs."

The result provides a spectacular display surface for the coloured lighting which transforms the exterior façade at night by reflecting the mood of the concert within.

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.

Headed up by Leeds City Council, the £60 million project has been completed in 96 weeks. As well as improved job prospects, the City of Leeds anticipates an increased economy with the arena expected to bring in approximately £25.5 million annually.

Spanning the Thames

When specialist roofing services were required for the £550 million renovation of the historic Blackfriars Station, M.R. Site Services was called in to provide the highest quality in standing seam welding of the aluminium roof.

Blackfriars Station, boasting the largest solar array in London on its roof, has become a landmark for the city. The historic station, which is the only railway station to span the River Thames, has undergone a complete redevelopment to bring it to the forefront of sustainable buildings, and its roof now provides more than half of its energy requirements. M.R. Site Services brought water-tight welding and technical expertise to the innovative roof, which is designed especially to integrate with and support the photovoltaic panels.

The rebuilding scheme sees the improved interchange between National Rail and London underground services. The extension of the station concourse across the entire length of the bridge presented the opportunity to turn the new roof space into a source of energy for Network Rail. The roofing programme, which won a Kalzip award, was a complex and challenging project for contractor Prater, with much of the equipment having to be brought to site by barge from a nearby wharf. Stucco embossed aluminium sheets provided by Kalzip, with two penetrations in each, cover a total of 94 roof shells, ranged in parallel along the roof to span the Thames. M.R. Site Services was contracted to weld the individual roofing sheets of this standing seam roof as the installation of roof shells progressed.

The company overcame the challenges of the location and site access to create a strong, durable and corrosion-free welded roof to support the solar panels covering its surface. The specialist expertise and flexible working practices of M.R. Site Services were essential to completing over 1,300 metres of welding during the project despite logistical constraints. Usual welding vehicles had to be replaced by portable welding sets on Blackfriars Bridge, as access was only obtainable by using the horizontal scaffolding spanning scaffold towers at each end of the bridge. In addition, equipment had to be moved across the bridge which presented further difficulties.

M.R. Site Services are one of the leaders in specialist roofing services, providing the highest quality in permanent leak-free solutions on joints and sheet shape modifications. Over 25 years of innovation, experience and expertise has made the company name synonymous with on-site welding of thin gauge aluminium roofing systems.

Double success for Ash & Lacy in prestigious scottish awards

Ash & Lacy has been successful in two categories of the NFRC's Scottish Roofing Contractor of the Year Awards 2013. Ash & Lacy won The Supply Chain Award for work at St. Columba's High School in Gourock, installed by WG Walker Limited, and David Livingstone Memorial Primary School in Blantyre, installed by Cladding Services Limited.

The new St. Columba's High School has been built on the site of the former Gourock High School, which required extensive demolition, reclamation, refurbishment and modification of existing structures. Works included new roof coverings of membrane and AshZip™ standing seam throughout, with new glazing, insulated render and AshTech™ ACM rainscreen cladding to create a new learning environment. Ash & Lacy also supplied AshWall™ steel framing system, AshFlow™ rainwater systems, AshFab™ external fabrications and AshFix™ stainless steel fasteners throughout the project.

This was an extremely difficult project due to the retention of the original facades, which had to be linked to the new steelwork and concrete structures, whilst always working within a close residential community. The project is located high in the Inverclyde landscape with very little protection from the elements, which provided many interesting challenges, and often required accelerated completion of roofs to prevent water ingress throughout the stages of the build.

The central core of the building provided particularly challenging connections for the rainscreen mullion system which was required to bridge new hot rolled steel at the upper floors, lightweight cold rolled steel framing system in the mid-level and existing masonry connections at the base, whilst always maintaining a true and flat facade, which was completed with frequent and regular site support and testing from Ash & Lacy, WG Walker and the main contractor McLaughlin & Harvey - networking and communication at its best.

David Livingstone School is part of South Lanarkshire Council's strategy to improve every primary school within the region by 2016. Featuring 4,500 square metres of the AshZip™ standing seam roof system, together with AshFlow™ rainwater goods, AshFab™ polyester powder coated aluminium perimeter fabrications and AshFix™ stainless steel fasteners; this is the second South Lanarkshire Council project featuring a comprehensive package of Ash & Lacy building envelope solutions, following previous success at the Larkhall Nursery Project.

Ash & Lacy provided full design advice throughout the project and all calculations relevant to package installation.

Commenting on the work at St. Columba's High School, Iain Sweden, Contracts Director of WG Walker said: "Ash & Lacy attended almost every 'design meeting' on-site throughout the 60 week duration of this contract, constantly working with the site management team from McLaughlin & Harvey and our own designers at WG Walker to develop almost every detail, junction and interface from the roofing system to the rainscreen and on many occasions areas that would have probably otherwise not have concerned them.

"Similarly their technical support, design & calculation services, communication and delivery scheduling were excellent and adapted constantly to suit the various unexpected programme amendments, caused by secondary trade delays and regular inclement weather conditions.

"Undoubtedly one of the very best supply chain partners!"

Main image: David Livingstone School
Inset: St Columba's High School

BIM explained...

The acronym BIM which stands for Building Information Modelling has quickly entered the vocabulary of the construction industry but what exactly is BIM?

It is a process of collaboration using computer models for a project in replace of separate drawings. Essentially there are two sides to BIM; 3D modelling and central information storage. Each product or system for the 3D model is referred to as an object; an insulation manufacturer for example, will have one object for each thickness of each product that they choose to include. These objects are then hosted on the web and allow designers to specify them in their models. Construction Operations Building Information Exchange (COBie) is a data format for storing information on products and systems. This is the heart of the concept allowing for all useful data on individual products, ranging from material thickness and fire rating to service intervals and replacement costs. This will allow designers to see the characteristics of the products that they are specifying along with assisting in the commissioning, operating and maintenance.

At present it has been predicted that less than 5% of construction projects have adopted BIM; however estimates believe that this figure will leap to 50% by 2016. The advantages of adopting BIM are cost savings through sharing resources, i.e. the building model, the identification of conflicts at design stage, reduction in wastage and, with a greater visual emphasis, it allows a much clearer walk through of the building prior to construction allowing design and site issues to be identified along with safety considerations. As with the adoption of any new technology there can be disadvantages; for example, the software and training costs in order to start working with BIM compliant software. There are also costs (financial and time) for both manufacturers and fabricators in order to produce BIM objects and COBie data for their products and systems.

BIM represents both an opportunity and a potential threat to how manufacturers sell their products. Manufacturers that do not embrace BIM risk not being considered or specified for projects where BIM collaboration is a must. Manufacturer data is also a key driver to the overall success of BIM; the success of the model is dependent on the quality of the input information. Companies who produce BIM objects containing useful product information will position themselves to work on BIM projects from an early stage.

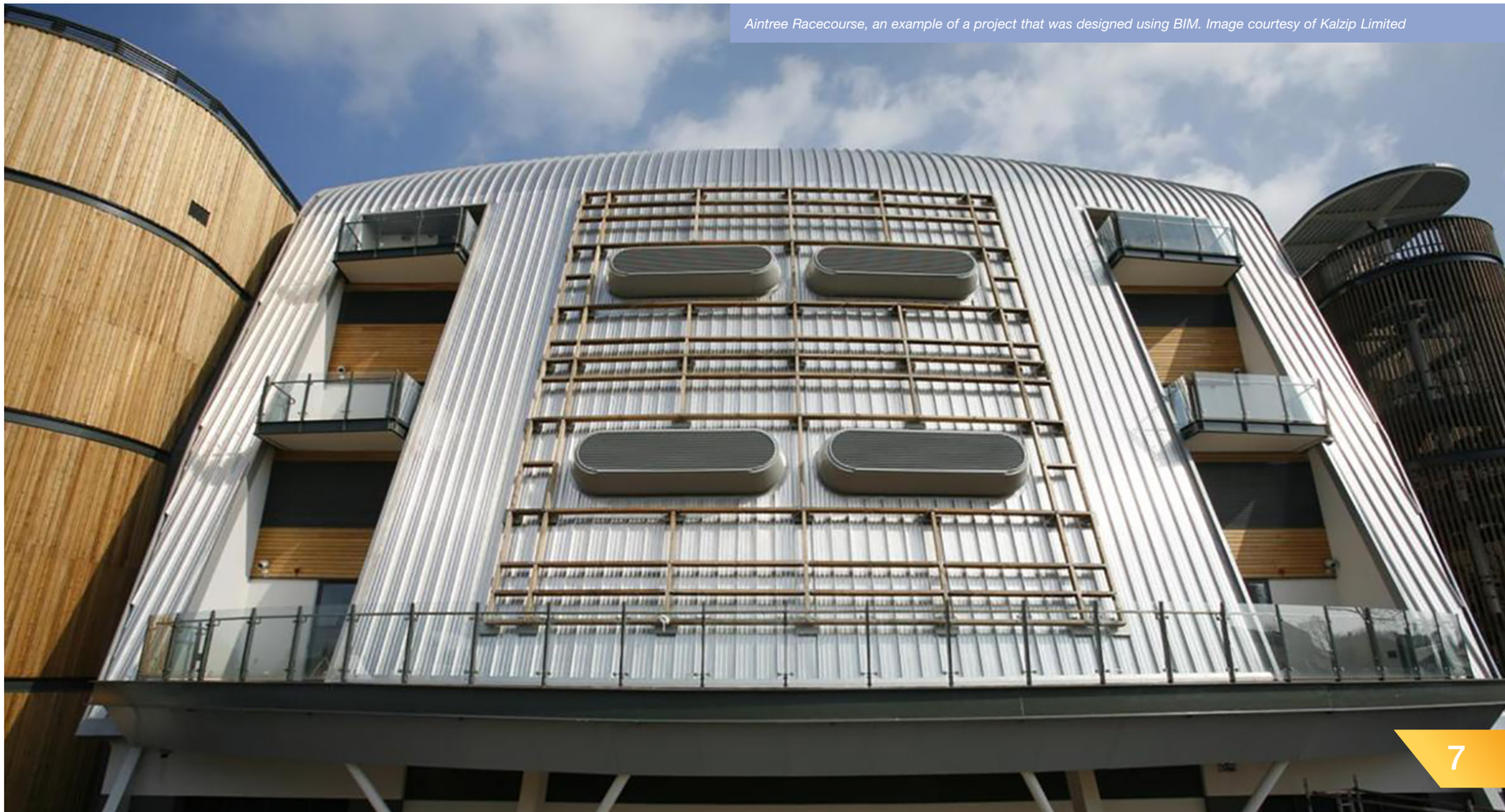
There are various challenges to producing objects that are of value to clients. Firstly, the most important consideration is what data to include with the object. The COBie sheet should contain relevant information for the product or system as too little data or unusable data will potentially put a product at a disadvantage.

The web site hosting of the BIM objects is also a consideration; NBS for example, has created the National BIM Library which ensures maximum exposure to the industry. Hosting on individual company websites will be considered by many; however, when objects get updated it is imperative that procedures are in place to ensure all copies of the specific object are updated. Otherwise this can leave customers working with inaccurate product data.

Another consideration is the software version(s) you wish to cater for. Objects produced in accordance with the Industry Foundation Class (IFC) are not software specific and therefore can be imported into all BIM software. However, this can lead to loss of functionality when compared to a BIM object that has been created specifically for a particular software package. Manufacturers need to be clear what software their customers use otherwise IFC files will be required if alternative software is used.

The UK government's binding commitment to adopt BIM means that BIM will signal a shift in working practices within the industry. The challenge will be for all areas of the industry to embrace this new approach whilst having to balance the financial and time commitments required for its implementation.

Written by Tim Vincent, senior technical consultant for ROCKWOOL® UK



Aintree Racecourse, an example of a project that was designed using BIM. Image courtesy of Kalzip Limited

Roodsafe scores in Jeddah

Roodsafe Limited has secured a contract to help construct the King Abdullah football stadium in Saudi Arabia. Roodsafe will install in excess of five kilometres of cable-based fall restraint systems on the stadium in Jeddah. The new stadium will be the Kingdom's first purpose-built FIFA standard football venue and the 60,000 seat venue will be home to Jeddah's two premier league clubs.

Managing director Simon Rood said "We are spending a great deal of time in Saudi Arabia to install the specially designed system. Our team of eight UK-based engineers is being supported by local labour and our duration on site will be three months in total."

Roodsafe's contract win was announced during UK Trade & Investment's (UKTI) 'Export Week' in November a campaign to encourage businesses to trade internationally. UKTI is a government department working with businesses based in the UK to ensure their success in international markets and encourage the best overseas companies to look at the UK as their global partner of choice.

In addition Roodsafe has secured other significant contracts in the United Arab Emirates; for example the installation of the safety system on Emirates Airlines new Sky Cargo facility in Dubai and an internal safety system at Dubai airport, for Execujet, to allow safe access for maintenance to the aircraft.

All change at Reading station

CA Building Products has completed work on the new Northern Entrance and Passenger Bridge at Reading Station - marking a critical phase in the £900 million Network Rail project to improve services for commuters travelling through one of the most overcrowded and congested stations on the network.

Lakesmere Building Envelope Specialists required CA Building Products to deliver the bespoke facade solution which covers the station's new platform canopies. Lakesmere has described the results as a shining example of British manufacturing in action.

Neil Alderson, Commercial Director for CA Building Products, explained: "Our main objective at Reading Station was to facilitate the installation processes of Lakesmere by delivering a reliable, quality product capable of being installed first time (each panel was manufactured to within 0.01mm) and delivering the appearance which had been promised, within a stringent time frame.

"The solution was devised together with Lakesmere and follows a sequential pattern that involves each component part being assembled according to its allocated position – a process which required meticulous planning and attention to detail, due to the fact that some elements were assembled on site and others were brought in, ready assembled, from an off-site facility in Dorset.

"In order to keep the installation flowing and minimise any risk of the panels being fitted incorrectly, the individual pieces were shipped and installed as soon as they rolled off the production line."

The combined project teams devised the solution using 3D modelling techniques which enabled them to achieve a complex geometrical design, to the highest quality standards. The installation features a combination of CA Building Product's rainscreen panels and its complex facade fabrications (including aluminium polyester powder coated fascias, galvanised and PPC aluminium pressings, soaker units, and pre-coated aluminium panels).

Mick Higgins, Senior Contracts Manager for Lakesmere, added: "The completion of the platform canopies has transformed the appearance of the station, giving a real indication of how the finished station will look and feel. We're proud to be able to say we worked with a British manufacturer on the project - the efforts and commitment of the team at CA Building Products were crucial in hitting this milestone."

Neil concluded: "Our work, in partnership with Lakesmere at Reading Station, showcases the fact that British manufacturers like CA Group, who have invested in the right equipment and have lean processes, can deliver complex designs on time, on budget and to an extremely high standard. We would like to thank everyone involved for allowing us to demonstrate our capability, and look forward to seeing the project through to completion".

The remaining work at Reading Station is expected to be completed by summer 2015.

A smart look for new materials recycling facility

Euroclad has manufactured and supplied a total of 12,900 square metres of roof and wall profiles for a large scale industrial unit developed in Avonmouth to house a new Materials Recycling Facility. The Sargasso blue roof and combination of Merlin grey, Goosewing grey and Sargasso blue walls form a functional building whilst providing a suitable aesthetic that is industrial yet smart.

The Materials Recycling Facility will sort and separate large volumes of recyclable material, including plastic bottles, paper, cardboard, glass and cans, ready for processing into new products.

The pre-finished steel used to manufacture the roof and wall cladding protects the building from the external environment and the profiles applied to the roof and walls are ideal for this type of construction. Large buildings of this kind have seen resurgence in recent years, driven by the number of waste treatment and recycling plants being built.

Honiton-based specialist contractor MA Witcombe Ltd installed the roofing and cladding. Operations Manager Martin Bristow commented: "This project was one of the largest seen in our region in recent years. When tackling projects of this scale, a robust supply-chain is paramount. Our level of trust in Euroclad, built up through a trading history and a close understanding, meant we were able to fully commit to the tight site programme and were even able to apply additional pressure and complete the works ahead of schedule without fear of being let down by a manufacturing or delivery failure. We have total confidence in the quality, performance and delivery of their products."

Knauf Insulation helps CA Group deliver BREEAM excellent building

Building envelope specialist CA Group has incorporated Knauf Insulation's Earthwool® glass mineral wool insulation into its innovative curved roofing solution for Prologis and BMW, at the car manufacturer's 43,600 square metres distribution facility in Northampton. The aesthetically pleasing design offers a curved profile without the significant price tag normally associated with this type of structure.

Sustainability was high on the list of priorities for Prologis and BMW and this is reflected in the design of the roof, which was created using CA Group's Twin-Therm® technology, a fully-walkable cost effective solution that provides a high degree of flexibility and exceptional air tightness levels.

The choice of insulation used on the project was critical. CA Group selected Knauf Insulation's Earthwool® glass mineral wool for its excellent environmental credentials, acoustic properties and thermal performance. The combined result is an efficient, highly sustainable distribution centre, which has been rated Excellent by BREEAM.

Earthwool is manufactured with the revolutionary ECOSE® Technology, which uses a formaldehyde-free binder that is free from phenols, acrylics and blowing agents; with no artificial colours, bleach or dyes added.

Furthermore, ECOSE Technology is up to 70 per cent less energy intensive than traditional binders, delivering superior environmental sustainability - as well as producing a 'super-soft' and easier to handle wool, with a natural brown colour. Earthwool products are also non-combustible, which mitigates fire risk and limits the spread of fire, as well as the spread of toxic and damaging smoke.

Brian Watson, Group Development Director at CA Group commented: "Choosing to incorporate a product that we know has been sustainably produced – using high levels of recycled material and an innovative binding technology – means we can continue to demonstrate our own commitment to sustainability. Not only this, it helps us to maintain our high standards of construction quality and thermal efficiency."

Other sustainability measures include the reduction of wasted space in the roof cavity, thanks to the curved design, and the introduction of eaves to eaves roof lights, which make the most of natural daylight, minimising shadows and reducing the need for artificial lighting.

Mr Watson continued: "Roofing innovations don't come more exciting than this. The benefits of curved roofs have long been recognised but, in the past, the associated price tag has prevented widespread adoption of the solution. We have used modern technology to reduce cost while delivering all the benefits one would expect from an innovative design solution.

"Incorporating Knauf Insulation's glass mineral wool insulation into our system has certainly helped make this possible. It's easy to handle and install, as it adapts to and follows the curvature of the roof, with no air gaps. On the roof this has helped us achieve a U-value of 0.23, together with a Sound Reduction Index (SRI) of 42 db-Rw, and on the walls the U-value is 0.35 with an SRI of 39 db-Rw, which is a great result."

Retrofit building delivers energy efficiency

Wiltshire County Council's workplace transformation scheme has seen Trowbridge County Hall redeveloped with the specific aim of reducing energy consumption by 40 per cent. "We started by looking at the building envelope first, improving insulation and air-tightness to reduce the energy demand of the building" says engineering consultants WSP project manager Andrew Selway.

The 40 per cent reduction in carbon emissions was achieved by thermal upgrades to the walls and roof, replacement glazing and a comprehensive services overhaul. A BREEAM 'Excellent' rating is also anticipated which would be a significant achievement for a refurbishment scheme.

Architects Stride Treglown specified the products and systems of Architectural Profiles Limited to provide a retrofit building envelope, which could achieve the dramatic visual impact that they needed whilst also delivering the energy efficiencies the client imposed upon the project.

The system specified was APL Slimwall CPS aluminium rainscreen system with 20mm wide reveal joints to all sides and all hung on an APL Tritherm support grid. Additional insulation was introduced into the cavity. The rainscreen and specialist fabrications were all polyester powder coated in RAL 7012 slate grey.

APL provides a portfolio of products and systems for the whole building envelope, including roofs, for both retrofit refurbishment and new build applications.

High performance assembly for new Jaguar Landrover build …on every level

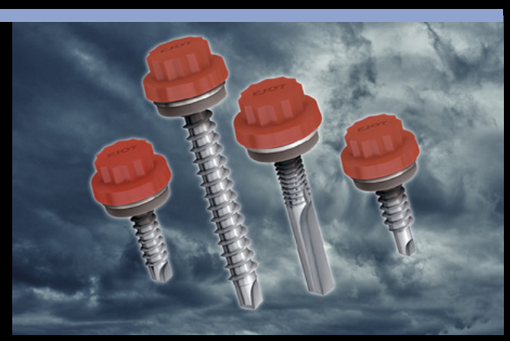
Following a major sales boom over the last two years, Jaguar Landrover (JLR) has now publicly announced expansion plans that will create over 1,700 new frontline jobs and countless supply chain opportunities, at its West Midlands manufacturing plants in Solihull and Castle Bromwich.

JLR's owners, Tata Motors are investing over £1.5billion as part of an overall strategy to increase its product range and global market share. This high profile success has proved to be significant to fastener manufacturer, EJOT UK, on two levels!

Not only has EJOT's Building and Construction division won sole supply orders for both of the build projects that will house the new 'Body-In-White' assembly plants, but EJOT's Engineering Division will see its highly specialist range of industrial fastenings specified into what is being seen as ground breaking 'all-aluminium' light weight vehicle architecture, developed by JLR.

'Body-In-White' refers to the area of manufacturing where the pressed metal panels are assembled to form the main frame and body of the car. Though the building projects to house this assembly were geographically less than ten miles apart, two separate roofing contractors were appointed - with Hathaway Roofing winning the business at the Solihull plant, and Roofdec at Castle Bromwich.

Management at Jaguar Landrover underlined the fact that they wanted to have 'quality buildings to protect the new assembly lines long term', so this was clearly a case



for high specification fasteners on the roof as well as within the vehicles.

Though perhaps tenuous, the link with the Tata Group remains significant as both roofing contractors approached EJOT's Construction Team, due to the fact that the company's relevant roofing products are Tata approved. Both Hathaway and Roofdec specified fasteners from EJOT's Colorfast self drilling range, and the specification called for variations using both 304 and 316 grades of steel – variations that did not present any significant challenge for EJOT's technical team to adapt the product specification to.

The Colorfast fastener incorporates EJOT's unique coloured nylon head designed specifically for use in fixing profiled metal roofing and cladding sheets. Both contractors recognised the performance benefits of the product against those of powder coated metal headed fasteners.

The structure of the Colorfast nylon head means there can be no inversion of the washer on installation. With metal headed fasteners, the washers are unsupported on the facing side which means that over-zealous installation can result in a buckling of the washer creating a gap for water to ingress the join. The nylon head also means there can be no degradation of colour long term – in short, high performance, longevity of performance – maintaining the integrity of the seal.

Work at Solihull's new 600,000 square feet single storey plant has now been completed, whilst work at Castle Bromwich is currently getting underway.

New roof brings B&Q brighter benefits

The B&Q warehouse in Bridgend had seen better days and was badly in need of refurbishment. The interior was suffering from severe water ingress from the dilapidated, leaking roof and both employee and customer safety was at risk where pools of water were forming in wet weather conditions. The natural light into the building was hindered because the aged rooflights were covered in moss and fungi, and were tarnished due to years of weathering. This meant the warehouse required artificial light, adding to the energy consumption of the building and in addition, the lack of insulation in the roof also added to energy running costs.

Hambleside Danelaw was specified for this project by B&Q due to its environmentally positive approach to business and worked alongside B&Q's approved contractors, Group Tegula. The original roof, consisting of fibre cement sheets, remained in place to act as the liner panel for this over-roof project.

The aged and failing rooflights were removed and new 2.44kg/m^2 Class 1 Contour liner panels were installed in their place. A metal spacer system was then installed to create a cavity of 80mm depth and the roof was completed with profiled metal cladding and weather sheets. The cavity was insulated with ROCKWOOL® to further improve the U value of the building.

The new roofing system and rooflights have transformed a once fragile roof into one that is non-fragile and has improved the thermal performance of the building envelope. The heat retention and the increased natural daylight through the rooflights have also reduced the energy running costs. Dave Murray of Group Tegula commented, "This project has vastly improved the overall experience of visiting the store. The building is now warm and dry and well lit by natural light rather than artificial lighting, giving a much better environment for customers and staff."

Copper coloured Kalzip enhances Mansfield bus station

Over 1,800 square metres of Kalzip aluminium standing seam and a similar quantity of Kalzip liner and decking sheets have been installed on Mansfield's impressive new bus station and link-bridge. The Kalzip roofing sheets (PVF² 3-coat to Pearl Copper, RAL 8029) together with Kalzip planking for the soffits and an array of bespoke Kalzip aluminium fabrications (powder coated to RAL 8029) were all installed by Teamkal contractor, Met-Clad Contracts Ltd.

Designed by Nottinghamshire County Council's in-house engineering and architectural teams, this state of the art bus station was built by Kier Construction. The Kalzip-covered main terminal building and its adjoining footbridge link neatly to the nearby railway station creating a convenient new integrated public transport interchange for the Mansfield area as well as contributing towards a package of improvements designed to deliver swifter, greener travel in Nottinghamshire.

Mansfield Bus Station's light and airy airport style concourse has been achieved by the use of architectural steel columns located around the building's perimeter that provide an abundance of open space internally which is further enhanced by large areas of floor to ceiling glazing. Varying in heights of up to eight metres, these bespoke steel columns are intended to resemble the trees of the nearby Sherwood Forest - each trunk is topped with a splay of six tubular steel branches of differing lengths and angles to structurally support the 'floating' Kalzip roof that gently curves and undulates in three directions.

Nottinghamshire County Council's designers have created a contemporary building structure with a natural feel by using local Peak District stone to blend with the copper coloured Kalzip standing seam sheets used for the roofs of the main terminal building and 16 triangular departure bays. The same applies to the copper coloured aluminium Kalzip planking used for the soffits and all the complex aluminium flashings and fabrications that were designed and manufactured by Kalzip using the latest 3D CAD techniques.

Peter Horn, Nottinghamshire County Council's project manager for the scheme says, "The roof's appearance was always going to be a key feature of the bus station as it sits adjacent to the listed stone railway viaduct offering elevated views to passengers on passing trains. It was something we just had to get right and I'm pleased to say that the Kalzip roof looks excellent with the copper coloured effect working particularly well in the sunshine."

Mansfield's new bus terminal is a fully enclosed building that provides complete protection against the weather - and for customer safety, boarding is controlled by automatic doors that only open when the bus / coach is ready to accept passengers. The terminal boasts a café, shop, toilets and travel information centre which, combined with comfortable seating, sustainable under floor heating, electronic information displays and 24 hour CCTV surveillance, provide a relaxed, functional and safe waiting environment.

MCRMA membership

Full members

A Steadman & Son
Architectural Profiles Ltd
Ash & Lacy Building Systems Ltd
C A Building Products
Euroclad Ltd
Kalzip Ltd
SpeedDeck Building Systems Ltd
Tata Steel Building Systems

Associate members

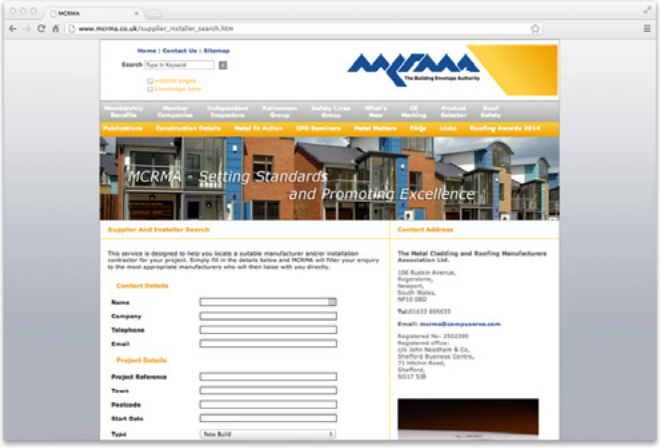
Brett Martin Daylight Systems Ltd
Capital Safety Group
EJOT UK Ltd
Filon Products Ltd
Fixing Point Ltd
Guttercrest Ltd
Hambleside Danelaw Ltd
HS Butyl Ltd
Knauf Insulation Ltd
Latchways plc
MR (Site Services) Ltd
Premier Sealant Systems Ltd
Rockwool Ltd
Roodsafe Ltd
SFS intec Ltd
Tata Steel

Independent consultants

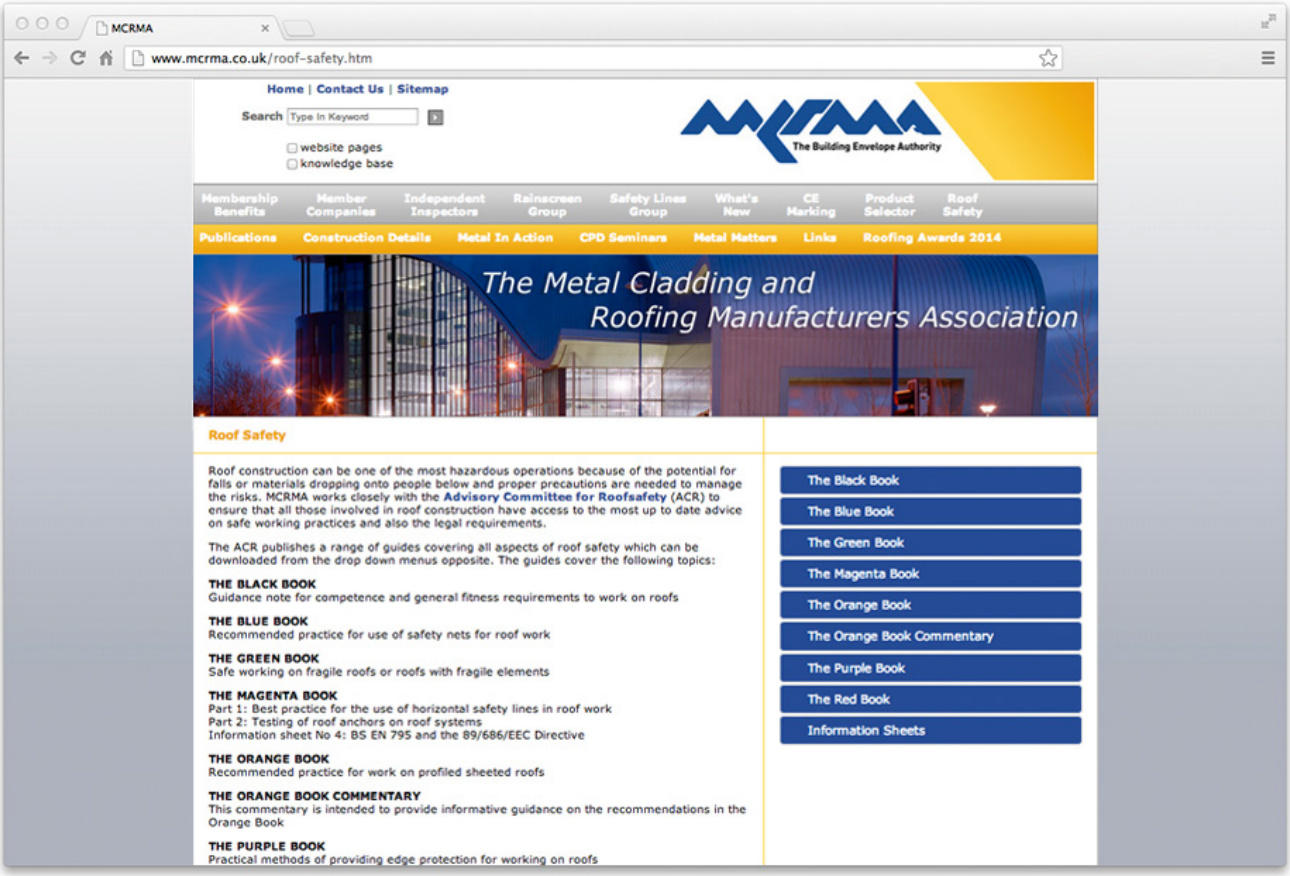
A P Williamson Consultants Ltd
Barry Jackson Associates
Building Sciences Ltd
David Hicks Consultants
Keith Kendal Consultants
Michael Kilbey Associates Ltd
Roofconsult Ltd

Webwise

A new feature on the web site is the supplier/ installer search button. This service is designed to help users locate a suitable manufacturer and/or installation contractor for their project. Simply fill in the details and MCRMA will filter the enquiry to the most appropriate manufacturers who will then liaise with the user directly. **http://www.mcrma.co.uk/ supplier_installer_search.htm**



Roof safety now has its own dedicated page on the web page to ensure that all those involved in roof construction have access to the most up to date advice on safe working practices and also the legal requirements. A range of guides produced by the Advisory Committee for Roofsafety (ACR) covering all aspects of roof safety can be downloaded from the MCRMA web site.
http://www.mcrma.co.uk/roof-safety.htm



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The Building Envelope Authority