1990 - 2010 CELEBRATING 20 YEARS

metal matters

issue5: summer2010

new stadium is in a league of its own

Clearly visible from the A12 on the northern outskirts of Colchester, the recently completed Weston Homes Community Stadium home of Colchester United FC, is a triumph of design which encapsulates all that is good in modern profile cladding for building envelopes.

Architectural Profiles Limited supplied the profiles for the roofs and the walls; the roofs were constructed using AP 31/1000 profile HPS scintilla, coated on both sides for maximum longevity and durability. The walls are also HPS scintilla coated both sides on AP50HR (half round) sinusoidal profiles – both roofs and walls are finished in goosewing grey. The decision to use a straightforward four stand design principle helped keep costs down and this ethic was further enhanced by the extensive use of galvanised steel throughout the project. The stadium was designed by Barr Technical Services and David Chalmers, project architect said "We were attracted by the aesthetics of APL's sinusoidal panel which we had used before at Southampton's stadium."

Consideration was also given to the specification of several environmentally friendly options for example, a rainwater harvesting scheme has been devised to re-use rainwater to irrigate the pitch. Translucent sheets have been used in the walls of the North, East and South stands to allow natural light in as opposed to using more artificial lighting. Insulated panels in the walls and roof of the West stand were specified to minimise heat loss and heating costs.

The stadium has a capacity of 10,000 with potential to increase this to 18,000 and the site contains more than 600 parking spaces and two synthetic football pitches for use by the Colchester United Community Sports Trust. The complex also encompasses a variety of sporting, leisure and business facilities, including hospitality suites.

APL profiles are part of a wide range of cladding profiles, products and patented systems, designed and manufactured by Architectural Profiles which address all the key construction issues of today, that is energy efficiency and thermal performance, construction time and building budget constraints, but, most of all, the aesthetics and the design options they generate.

contents

getting into shape at ravenscraig

Ravenscraig, the former home of Scottish steel making, is being transformed into the first new town the UK has seen for 40 years and a major part of this development is a new iconic steel framed sports centre. The town of Ravenscraig used to be home to western Europe's largest hot strip steel mill, so it is fitting that steel construction plays a pivotal role in the development of the new town.

Located on the outskirts of Motherwell, north Lanarkshire, the site covers an area of 4.5 square kilometres and has been described as one of the biggest regeneration projects in Europe. An entire new town and community is planned which, when complete, will include more than 3,000 homes, a new town centre with 84,000 square metres of retail and leisure space, up to 216,000 square metres of business and industrial space and a new transport network. A new home for Motherwell College has already been completed.

The second major part of the town's redevelopment - Ravenscraig Regional Sports Facility - is rapidly taking shape. This new, state-of-the-art sports facility will be one of the largest of its kind in the UK, and will comprise an indoor football pitch, a sports hall, gymnasium, an athletics hall and outdoor football pitches. Construction work on the indoor sports centre began early in 2009 and the project team is working towards a 2010 completion date. One of the primary aims of the facility is to become a key training ground for Scottish sportsmen and women bidding to take part in the London 2012 Olympics and Glasgow's Commonwealth Games in 2014.

With such high hopes for the sports centre, housing all of these indoor and outdoor facilities, required a unique structure – and so project architect Populous (formerly HOK International) came up with a bold design, consisting of three separate structures, all interlinked around a fourth central spine building which houses changing rooms, offices, a café and the centre's main entrance.

The design uses sloping profiled cladding (provided by Corus Colors supply chain partner, Euroclad, using Colorcoat® pre-finished steel) which wraps around the roof in segments defined by a stepped roof profile. Achieving the desired profile and cladding aesthetics presented challenges in terms of the structural design. It was vital that the structural engineer on the project, Buro Happold, worked closely with the architect, cladding sub-contractor and steelwork contractor to develop the most appropriate and economically viable solution.

The final result was a design which involved fixing cladding sheets on to the skew of the building to give a sloping appearance. The primary steelwork was located and sized for maximum efficiency, and the secondary steelwork was built out to form the cladding profiles.

In order to create a unique exterior appearance for the building all of the main halls have profiled metal cladding on purlins, with clear polycarbonate used for the north lights and the north elevations. The metallic exterior of the sports centre reflects the steelwork inside, and will also serve as a lasting legacy on a site where steel continues to play a significant role.

The challenge was to provide a cladding system that would meet the demands set by the building designers and help to create a distinctive, bold building, which will form a key part of the regeneration of Ravenscraig town. For this reason, Corus worked alongside Euroclad to specify the use of 15,000 square metres of Elite 2 (Acoustic) and Colorcoat HPS200 Ultra® in Sirius for the roof of the building, and 6,000 square metres of Elite 55, Elite 57 and Colorcoat Prisma® in Metallic Silver for the walls. These are pre-finished steel cladding systems which offer outstanding performance with unrivalled reliability and impressive sustainability credentials including full traceability and responsible sourcing.

Made in the UK for a lower carbon footprint, both of these systems come with the market leading Confidex® Guarantee, which offers the most comprehensive guarantee for pre-finished steel products in Europe and provides piece of mind for the whole building envelope for up to 40 years. Colorcoat HPS200 Ultra® and Colorcoat Prisma® were chosen for their excellent appearance and durability, as well as for performance under the Confidex® Guarantee. They facilitate a highly streamlined construction process due to their flexibility and ease of handling. When in use at Ravenscraig Regional Sports Centre, these pre-finished steel products will help to ensure the delivery of a truly sustainable building.

landmark roof rolls into place

Modern energy technologies such as producing energy from waste are an important part of society's increasing evolution towards a sustainable future and this new state-of-the-art Lakeside Energy from Waste plant is a landmark building near Heathrow, highly visible from the M4 and M25. The plant, a joint venture between Grundon Waste Management and Viridor Waste Management, is the major part of a £160 million redevelopment of an existing waste processing facility.

The plant, which is being delivered in conjunction with contractor BAM Nuttall, will be able to incinerate 400,000 tonnes of waste per annum and generate 38 megawatts of energy for the National Grid, equivalent to the energy requirements of a town the size of Aylesbury. The plant also includes a materials recovery facility which will be able to process 40,000 tonnes of recyclables from domestic and industrial sources.

The modern looking building features a sleek design and a distinctive arched roof which was created using 9,200 square metres of Euroclad's standing seam roofing system, Euroseam. The stucco embossed aluminium roof features self-curved sheets which are separated by gutters.

The roofing sheets were rolled on-site to create the bespoke design and one of the main advantages to on-site roll-forming is the speed of construction as contractors do not have to contend with extended lead times due to transport permits. Long, continuous sheets of metal can be crafted to achieve a unique finish which is not possible if shorter sheets are fixed together in stages. A single sheet has less chance of being compromised than several smaller sheets, has less chance of becoming damaged and failing once installed and does not have to be fastened in as many places. The Euroseam roofing system also eliminates the requirement for sheet endlap details, therefore reducing the risk from water ingress.

The lightweight and versatile sheets are usually supplied in 0.9mm aluminium and can be used to achieve a wide range of convex, concave and multiform curves. Thermal movement is accommodated by a simple halter clip system. The clip is attached to the roof structure, and then the standing seam sheet is hooked over the top of the clip. The overlap of the sheet is then placed over the underlap and mechanically zipped up for attachment.

The importance placed on technologies which help to deliver a more sustainable future will continue to grow and the buildings which house these industries need to provide a lasting aesthetic that will continue for years to come, while also addressing sustainability in materials and systems used. These requirements, together with Euroclad's dedicated environmental management system, make Euroseam the perfect choice for a project such as this.

ca group delivers energy savings at royal mail

A new carbon neutral Royal Mail distribution hub has recently been completed in Swan Valley, Northamptonshire. The new building features an 800 square metre SolarWall® from CA Group, which helps the building to achieve an overall reduction in operational carbon emissions of 66 percent (The SolarWall® contributes to a total of 59 tonnes of CO_2 savings per annum.)

The SolarWall® perforated Transpired Solar Collector (pTSC) is an innovative solar air heating system that utilises solar radiation to deliver naturally warmed fresh air into the Royal Mail building providing a renewable heat energy source. SolarWall® has been supplied by CA Group, in conjunction with Corus, specifically for the UK market. With its proven heating cost reductions of up to 50 percent, SolarWall® easily exceeds the Merton Rule requirement for renewable energy, whilst also offering the usual paybacks through energy savings of as little as three years for new build and seven years for refurbishment projects.

Fully funded by Aviva Investors, the building has achieved BREEAM 'Excellent' accreditation with a score of 76.76% and an Energy Performance (EPC) 'A' rating (CO_2 index 21). The building was designed and developed by ProLogis to function passively with the most energy efficient plant available specified for essential energy usage.

Brian Watson, Commercial Director, CA Group said: "It was a privilege to be involved in such a pioneering project in terms of ecological building. The Royal Mail distribution hub is a shining example of how simple but intelligent building technologies can be deployed in such a way as to drastically reduce operational energy use.

Thanks to the forward thinking of the ProLogis team, we have another great example of how SolarWall® is delivering outstanding results for customers who are committed to reducing their carbon footprint. In addition to Royal Mail, companies such as Jaguar Land Rover and Sainsbury's are already enjoying measurable benefits following the installation of SolarWall® on their buildings; proving that it is the most viable renewable technology available in the UK today."

Not wanting to compromise the look of the building, CA Group used the Arc 50 profile and the sheets were laid horizontally to enhance the aesthetics of the building. The SolarWall® at the Royal Mail hub is used with Corus Colorcoat® Prisma (Zeus) which comes with the Corus Confidex® Guarantee which is maintenance and inspection free for up to 25 years. The carbon footprint of the CA roof and wall cladding systems and SolarWall® was assessed under Corus Confidex Sustain® and offset to provide a carbon neutral building envelope.

The 18,000 square metre roof is built using the Twin-Therm® system, also from CA Group. The Twin-Therm® system has been specifically developed to minimise the number of components, reducing the potential for installation error.

roofs get the green light

Green roofs are moving fast up the political agenda. National planning guidance states that local authorities should promote energy efficient buildings, encourage the sustainable use of water resources, and increase the use of sustainable drainage systems in the management of run-off. Green roofs can help to achieve all these objectives. In addition, government is encouraging local authorities to promote a greener residential environment, and stipulates that development should be sustainable, by ensuring that biological and geological diversity are conserved and enhanced for example, the *Living Roofs and Walls* technical report within the London Plan states that 'boroughs should also encourage the use of living roofs in smaller developments and extensions…' and, from 2010, Sheffield City Council's planning department will require 'all new medium to large developments (over 1000 square metres or more than 10 dwellings) to have 80 percent vegetated cover.'

Despite this positive trend, the UK has no recognised guidance on green or vegetated roofs. This results in many green roofs being designed, installed and maintained without any formal direction; increasing the possibility of under-performance. The production of guidance for a niche activity - whose audience ranges from commercial developer to DIY enthusiast - is not straightforward. There is a wide range of products and systems on the market all proclaiming to be the 'most sustainable' and 'appropriate' solution. In a bid to bring clarity to the market place, Groundwork Sheffield, together with Livingroofs.org and the University of Sheffield, has secured Life+ funding from the European Commission to enable them to establish a UK Code of Best Practice for the design and installation of green roofs.

A first draft of The Green Roof Code has been produced and initial consultations were invited following the Code's launch at the Ecobuild event in March. A further round of consultation will take place in October and a final version of the Code will be available online from 2011.

The recently formed GRO (Green Roof Organisation) panel is a response by the UK green roof industry to bring together key players to lobby and guide the development of green roofs in the UK. GRO is made up of leading green roof suppliers and installers, and also has representatives from every roofing association in the country, in addition to organisations such as the Home and Communities Agency (formerly English Partnership), BALI (British Association of Landscape Installers) and the Environment Agency.

GRO is committed to supporting The Green Roof Code and has created a technical task force to input to The Code's production. This support from GRO enhances The Code's credibility and will hopefully accelerate its adoption by the construction industry.

During the consultation phase any comments will be welcomed; if you would like to be part of that consultation process, please register your details at **www.thegreenroofcentre.co.uk**.

In addition Groundwork Sheffield has recently launched a new website at **www.greenroofstoday.co.uk** which keeps users up to date with green roof news and events as well as providing access to green roof professionals and supplies through the online green roof directory.

copper kalzip is pure poetry

Client: **East Ayrshire Council Asset Improvement Service**
Main contractor: **Hunter Clarke Limited**
Teamkal contractor: **CDW Ltd**

Over 800 square metres of straight and tapered copper Kalzip sheets have been installed on the complex roof of the impressive new Burns Monument Centre in Kay Park, Kilmarnock. The Centre, built around the iconic W G Stevenson statue of Robert Burns, underwent an extensive cleaning and restoration programme before being returned to its sandstone surroundings and new courtyard settings to form the centrepiece of the Burns Monument Centre - copper Kalzip was specified as it would blend in well with the Centre's natural stonework.

Kalzip's fabrications department manufactured and supplied a wide variety of bespoke copper flashings including the bull-nosed fascias and specially designed louvres. The company also supplied the roof liner and structural decking sheets and manufactured the membrane gutters, some of which were extensively facetted to suit the Centre's tightly curved wall areas.

Copper Kalzip is an exceptionally strong, anti-corrosive and virtually maintenance-free material with the added benefit of low costs over its lifespan. As well as being extremely durable, copper Kalzip also possesses a unique aesthetic appeal which sees the material's weather face oxidise gradually over time from an initial bright appearance through subtle tones of mellow bronze to anthracite brown in vertical cladding and a rich green patina in roofing.

Opened in 1879, the original Burns Monument building had gradually fallen into disrepair and was subjected to a serious arson attack in 2004. Only the monument statue and its protecting canopy survived the attack and East Ayrshire Council decided to build a stylish new Centre around the remains. The new Centre houses a state of the art archive store, family and local history research room, a spectacular conference and ceremony suite as well as being the venue for Kilmarnock's registration services.

flying high at air show

Roofing, cladding and structural products company Steadmans has manufactured a total building envelope solution for a striking modular structure that will be used by US aircraft manufacturer Textron to promote its aircraft at this year's Farnborough Air Show. It is the third time that this unique demountable building has been used; the structure first appeared at the 2009 Farnborough Air Show and then at the Paris Air Show.

Textron required an impressive stand that would reflect its position as a global market leading business and also promote Bell helicopters and Cessna aeroplanes. Ron Cousins, director, Town & Country Bespoke Buildings, said: "This was a very prestigious project which required an outstanding building to create an excellent sales and entertainment environment. In addition, it needed to be demountable so that it could be used on three important occasions over three years"

The proposed design was assessed by Town & Country Bespoke Buildings, a Capital Steel Buildings distributor, in conjunction with Perthshire structural engineers, Alexander Scott, to consider how best to construct the building. As a key partner of Capital Steel Buildings, Steadmans was involved in this assessment process and advised Town & Country Bespoke Buildings on the building envelope, which included the design of unique tooling to create special brackets for the mono pitched roof.

Following approval of the building's design, Steadmans manufactured structural components for the framework followed by the roofing and cladding elements of the building. This included 3,000 lineal metres of cold rolled steel 'Z' purlins and 'C' sections, 1,200 metres of Steadmans AS35/1000 60mm thick insulated roof and wall panels, 800 metres of profiled roof and wall sheets plus all associated flashings and fixings.

MCRMA membership

Full members

A Steadman & Son
Architectural Profiles Limited
Ash & Lacy Building Systems Limited
C A Group Limited
Corus Colors
Corus Panels & Profiles
Euroclad Limited
Kalzip Limited
Quedron Limited
SpeedDeck Building Systems Limited

Associate members

Brett Martin Daylight Systems Limited
EJOT UK Limited
Filon Products Limited
Fixing Point Limited
Hambleside Danelaw Limited
Hilti (GB) Limited
Hodgson Sealants Limited
Knauf Insulation Limited
Latchways plc
Premier Sealants Systems Limited
Rockwool Limited
SFS intec Limited
Tegral Metal Forming

Floor/deck group

Corus Panels & Profile
Kingspan Limited
Richard Lees Steel Decking Limited
Structural Metal Decks Limited
Tegral Metal Forming

Floor/deck contractor group

Metaldeck Limited
MSW Structural Floors
Richard Lees Steel Decking Limited
Structural Metal Decks Limited
Studwelders Limited

update

new decking guidelines

The MCRMA floor/deck group has added a number of publications to its portfolio to assist specifiers in getting the best out of metal.

Composite slabs and beams using steel decking: best practice for design and construction has been revised and updated to reflect the latest guidelines for good practice and gives design information in relation to the Eurocodes and BS 5950.

In addition, a series of best practice data sheets has been produced to advise contractors on the correct method of handling decking materials on site. The advice includes guidelines on material loading out and positioning, system edge protection, concrete pouring onto steel floor decking and propping steel floor decking.

All these publications can be downloaded from the web site at **www.mcrma.co.uk**

web wise

Stay in touch with the latest developments in metal cladding by visiting the MCRMA web site. New innovations include a knowledge base – a facility that can examine all documents on the web site through a simple keyword search, enabling the user to find relevant information quickly and easily. The web site also incorporates a news feed which provides a forum for members to post company news, in addition to general industry news.

The web site hosts a comprehensive range of 3D interactive constructional diagrams with details for both composite panels and built-up systems that can be downloaded in both CAD and pdf file formats. The constructional details are supported by the full range of MCRMA technical design guides – all available from **www.mcrma.co.uk**.

THE METAL CLADDING & ROOFING MANUFACTURERS ASSOCIATION LIMITED

18 Mere Farm Road · Prenton · Wirral · Cheshire CH43 9TT

Telephone: 0151 652 3846 · Facsimile: 0151 653 4080
mcrma@compuserve.com · www.mcrma.co.uk

1990 - 2010 CELEBRATING 20 YEARS