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V&A MUSEUM OF DESIGN, DUNDEE
Scotland's cutting-edge yet organic new landmark
by Kengo Kuma & Associates

ROYAL PORTFOLIO HOTEL, CAPE TOWN
Thomas Heatherwick carves a hotel and museum
out of a historic former grain silo

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FROM THE EDITOR



Why can't we build the public housing we need in the UK? While the higher-end homes sector continues to boom (despite a slight downturn in London), the solutions for achieving our dreams of tackling the crisis at the other end, mired in current thinking as they are, don't feel fit for purpose.

Jeremy Corbyn, possibly the first 70-something Prime Minister for a while, recently announced at his party's conference that, steeled by the horror of Grenfell, Labour would initiate a major review of social housing, including rent controls. However this doesn't seem to touch on the nuts and bolts of building the half a million social homes that Labour has promised.

With council rent incomes being slashed as the Right to Buy continues to be offered to housing association tenants, those local authorities being asked to build thousands of new homes are strapped for investment cash. Surely a more fundamental, less piecemeal central taxation-based approach needs to be explored, if the country is going to seriously embark on a project to meet the housing need with new build.

Sometimes you need to look back to look forward, and Sweden is an interesting case in point, although a comparison between their tax levels and ours would probably have to be made to consider it as a model. Between 1965 and 1974, under the Million Programme the Swedish Government built a grand total of 1,006,000 homes. They weren't messing about – most of the outdated existing stock was demolished at the same time, and the net addition of 650,000 homes to the nation's housing stock provided affordable housing for the future.

More importantly, these were good quality buildings – often three-storey blocks with standard three-room apartments for families of four, surrounded by amenities such as schools and libraries. The government paid 66 per cent of the initial costs and this would be repaid by poorer residents over 30 years. The state also gave subsidies to builders for homes for demographics including blue collar workers and students.

Has the horse already bolted for such an initiative to be considered in the UK to accelerate our lagging social housing and ensure that it is of the right standard? I'd like to think not, however it requires a big effort of will on the part of the people as well as politicians to find the taxes required, in what could be an increasingly tough financial environment. This is what's known as investing in the future.

James Parker
Editor

**ON THE COVER...**

The V&A Museum of Design in Dundee by Kengo Kuma & Associates is a cutting-edge design landmark with an organic feel.

For more information go to page 32.

© Ross Fraser McLean



Silver House – © David Schnabel



Houseboat – Rory Gardiner



Wolfson Tree Management Centre © Andy Matthews

AWARD

Stephen Lawrence Prize shortlist revealed

A converted factory art venue, a house mimicking an upturned ship hull, and a forestry centre built from timber grown on-site are among the shortlisted schemes for the 2017 RIBA Stephen Lawrence Prize.

Six schemes have been shortlisted for the award, which recognises the best examples of projects with a construction budget of less than £1m.

Now in its 20th year, the prize is named after Stephen Lawrence, a London teenager who aspired to be an architect, but was murdered in 1993.

The 2017 shortlist for the Stephen Lawrence Prize is as follows:

- The Compound, Birmingham, BPN Architects – former textile factory turned into an art venue, a workshop and a client's home

- Fallahogey Studio, Kilrea, Northern Ireland by McGarry-Moon Architects – studio space set within the garden of the architects' award winning house
- Houseboat, Poole, Dorset by Mole Architects with Rebecca Granger Architects – a new nautical-inspired house overlooking Poole harbour
- Peacock House, Aldeburgh, Suffolk by BHSF Architekten with Studio-P – suburban courtyard home complete with studio space for a private art collection
- Silver House, Swansea, Wales by Hyde + Hyde Architects – a concrete, timber and steel layered family home overlooking the Bristol Channel
- Wolfson Tree Management Centre, Tetbury, Gloucestershire by Invisible

Studio – twin timber buildings to house equipment and staff facilities at the National Arboretum.

The winner of the 2017 Stephen Lawrence Prize will be announced at the RIBA Stirling Prize party on 31 October at the Roundhouse in Camden, London.

The panel of judges for the 2017 prize include the following names: Marco Goldschmied, RIBA past president and Founder of the Marco Goldschmied Foundation; Baroness Lawrence of Clarendon, Doreen Lawrence CBE, mother of Stephen Lawrence; Taro Tsurata, Tsurata Architects, who won the 2016 Stephen Lawrence Prize; and Stephen Lawrence Scholarship recipient Stephanie Edwards, of Barton Willmore.

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EVENTS

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10 October, Oxford

www.architecture.com/whats-on

RIBA Annual Lecture – Eric Parry

10 October, Bath

www.architecture.com/whats-on

RIBA Stirling Stories

10 October, Bath

www.architecture.com/whats-on

TRADE SHOWS

Healthcare Estates

10-11 October, Manchester

www.healthcare-estates.com

UK Construction Week

10-12 October, Birmingham

www.ukconstructionweek.com/

Surface Materials Show

10-12 October, Birmingham

www.ukconstructionweek.com/

Smart Buildings Show

10-12 October, Birmingham

www.ukconstructionweek.com/

Timber Expo

10-12 October, Birmingham

www.ukconstructionweek.com/

Sleep

21-22 November, London

www.thesleepevent.com



AUSTRALIA

ZHA reveals complex yet cost-effective design for Melbourne tower

Zaha Hadid Architects has revealed images of a 19-storey tower in Melbourne, Australia, whose parametric design will enable a complex facade to be produced cost-effectively, the firm says.

Located within the “established streetscape” of St Kilda Road in Melbourne, Australia, the Mayfair Tower will enable residents in 158 new residences to take full advantage of its location.

The architects commented: “Taking its cues from the fluidity within Australia’s landscapes and seascapes, the facade’s composition has evolved from a system of simple wave formations that is further developed to generate variables of the same design language.”

ZHA continued: “Using algorithms to determine these variables enables the facade to adapt to the wide variety of different apartment layouts and also adapt to the irregular site.”

The computational parametric design used an algorithm to identify shape similarities within the facade and minimise the number of different facade panels required. This process “enabled the creation of a sculpted facade that would have otherwise been cost prohibitive.”

The fluidity of the exterior is also carried through into the interiors. Living areas within the apartments have been arranged to maximise the views, with features that echo the sculptural qualities of the facade.

NEW TOWN

Design team appointed for Northstowe, Cambridgeshire's new town

Tibbalds Planning and Urban Design and Proctor & Matthews Architects have been chosen by the Homes and Communities Agency (HCA) to provide planning support and architectural services for a new town in Cambridgeshire.

Northstowe, one of the Government's Healthy New Towns, will be built to encourage residents to lead more active lifestyles through a more sustainable and inclusive design.

The two firms will work on the first 380 homes part of Phase 2, which will eventually deliver 3,500 homes, three schools, town-centre workspaces, sports hubs, recreation spaces and infrastructure.

Tibbalds prepared the Design Code for Phase 2, while Proctor & Matthews Architects, supported by the Tibbalds CampbellReith JV, will produce the detailed design for the 380 homes.

Georgina Bignold, associate director at Proctor and Matthews, said: "Proctor and Matthews Architects are delighted to be working alongside Tibbalds to design the first residential parcel of the second phase at Northstowe. It is an opportunity to create a vibrant 21st century sustainable new town with a distinctive local identity, and to meet the HCA's requirement for high



quality design to set the benchmark for the wider development."

Katja Stille, associate director at Tibbalds Planning and Urban Design, added: "Northstowe will be one of the most significant developments created over the next decade. Our aim is to create a sustainable,

flexible and aesthetic place that caters for all living aspirations and deliver a town for the future."

The HCA is set to build the first of the scheme's 3,500 homes in 2019 and then commence the town centre and future phases.

FUTURE TRENDS

Month of optimism despite 'mixed signals' from practices

Architects have shown cautious optimism in the latest RIBA Future Trends survey, but some firms have reported difficulties recruiting staff.

The workload index balance figure bounced to +14 in July (up from +10 in June), with improvements in workload forecasts for all four sectors.

Practices outside of London were the most optimistic, with the Midlands and East Anglia returning a balance figure of +32. Practices of all sizes remained

positive, but large practices (51+ staff) showed the most confidence at increasing future workloads, with a balance figure of +63.

Growth in the value of work in progress remained at an annualised rate of 1 per cent.

The Future Trends staffing index also increased, standing at +10 in July, with large practices most optimistic about increasing staff levels in the medium-term.

RIBA executive director (members),

Adrian Dobson, said: "Commentary from participating practices points to a steady outlook in the medium term, but with more uncertainty over the long term. Some of last month's pessimism seems to have lifted, but signals remain mixed.

"Some practices have detected nervousness on the part of developers of larger residential schemes. At the same time we have had the first reports for some time of practices struggling to recruit staff with the skills they need."

GOLD FOR JO

Da Silva picks up structural award

Jo da Silva OBE, director of Arup's International Development Group and Arup Fellow, has been awarded The Institution of Structural Engineers' 2017 Gold Medal.

The award recognises her 'outstanding leadership' as structural and humanitarian engineer, and for her distinguished and cross-sectoral work on urban resilience.

Da Silva co-ordinated the efforts of over 100 humanitarian agencies to provide transitional shelter in Sri Lanka following the Indian Ocean Tsunami in 2005, constructing 60,000 shelters in six months.

She said: "Looking back at my career I have been lucky to work on some wonderful projects, but honestly my proudest achievements have always related to designs that help build better societies. It is a great privilege to join such a distinguished list of Gold Medallists, and I would like to thank the Institution for the honour."

Among Da Silva's current projects is the Resilience Shift, a new initiative that seeks to move the agenda among structural engineers from risk to resilience, applying performance-based design across the profession, to areas like seismic engineering.

Jo da Silva will address the Institution at its London headquarters in Bastwick Street on 11 October 2017. Visit istructe.org to book tickets or watch the live-streamed talk.



EDUCATION

Work starts on Fuse Studios' new building for Leeds College of Building

Work has begun on a new £13m building on the South Bank campus of Leeds College of Building.

The new campus will feature red brick and metal cladding to echo the area's industrial heritage and is targeted to achieve BREEAM Excellent.

Architect Mike Harris from Fuse Studios, which also designed the college's existing South Bank campus, commented: "This is another major development for the South Bank area of the city and we are excited to see our plans come to fruition."

Harris said that the response to the design of the project had been "overwhelmingly positive" adding that the development would have a positive impact on the city, as well as becoming a "superb learning resource which would help to shape the future of the construction industry."

The 5,200 m² four-storey building will house a range of classrooms, workshops and a central atrium. The new addition will sit alongside the college's existing South Bank campus, between Cudbear Street and



Black Bull Street.

Construction is expected to be completed in October 2018. The development is supported by a £11.9m grant through the Leeds City Region Enterprise Partnership (LEP) Growth Deal.

Once complete, the two South Bank campuses will serve a large proportion of Leeds College of Building's 7,000 students, with the remainder attending the college's other campus on North Street.

Ian Billyard, principal at Leeds College of Building, thought to be the UK's only specialist further education construction college, commented: "This new building will enable us to continue enhancing and improving the exceptional standards of training that we are renowned for."

CPD SCHEDULE

DCE announces range of CPD events for autumn

In July, Direct Contact Exhibitions (DCE) celebrated 30 years of staging regional events enabling industry professionals to Meet the Experts in a particular field and gain CPD points.

DCE owner Steve Hilton has announced another 32 CPD events for autumn 2017. He commented: "It has been a privilege to take these events around the country delivering educational opportunities.

"Over the years I have met some great characters and built relationships with

delegates all across the country – we have a unique network of contacts and some good friends in most towns and cities where we stage the CPD events.

"We are already gearing up for another 80+ venues in 2018 and look forward to welcoming new visitors and renewing connections with previous attendees as we continue the mission to deliver CPD knowledge and expertise to as many as possible!"

Among the companies to have taken part are Selectaglaze, Vectaire, Rockwool, Kemper System, and Du Pont.

Each event offers up to six hours CPD, aiming to offer excellent hospitality and technical presentations to building and construction professionals.

Dates and more information on DCE Meet the Experts events are available at www.dcecpd.co.uk



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COMPETITION

National Passivhaus award sees joint winners

Two postgraduate students from the University of Nottingham's Department of Architecture and Built Environment emerged as joint winners in the UK Passivhaus Student Competition.

The schemes of Andres Guamani Rodriguez and Nuansa Atika Kusumastuti achieved equal scores from the judges, who reviewed over 100 entries from five UK universities to select the winners.

Andres' design comprised carbon neutral homes surrounded by public space and green areas, which integrate energy and food generation. Nuansa's entry is a development of Passivhaus homes in Bestwood, Nottingham, designed to maximise the occupants' comfort and minimise energy usage within a connected, inclusive, healthy and self-sufficient community.

Yogini Patel, design and research associate with the Passivhaus Trust and a member of the judging panel, commented: "Nuansa's scheme showcased a simple form factor, which would help meet Passivhaus performance criteria and good consideration to shading, whilst judges were impressed with Andres' clear comparisons of design iterations and development."

The winners will receive their awards at a ceremony which will take place on 24th October at the UK Passivhaus Conference in London.

BOOK

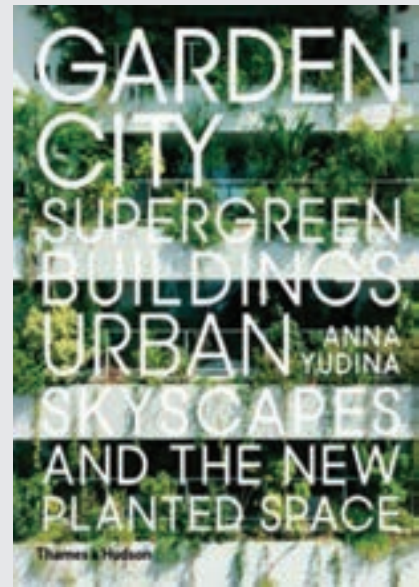
Garden City

by Anna Yudina

A book about the benefits and necessity of integrating nature in the built environment has been published by Thames & Hudson.

Featuring 70 projects from around the world, 'Garden City' by Anna Yudina looks at the "increasingly inventive ways in which architects and designers are incorporating nature into the built environment". Packing over 300 illustrations into its 256 pages, the book features a "rich set of examples, from office farms to lightweight systems for growing gardens on vertical surfaces; from 'tree houses' as tall as city blocks to a building designed as a living organism".

As Yudina writes, "The garden city is a unique organism in which the natural and the man-made...form one living and breathing whole." Yudina has curated a number of international architecture and



design exhibitions, including shows on Zaha Hadid and Jakob & MacFarlane. She also wrote 'Phase: The Architecture of Jakob & MacFarlane and Eske Rex: Silent Action'.

BOOK

Interior Design: A Professional Guide

by Jenny Grove

In the latest book from RIBA Publishing – Interior Design: A Professional Guide – designer Jenny Grove "sets out to decipher exactly what it means to be a professional interior designer", offering what's claimed to be a definitive guide for both practitioners and clients on how best to navigate this "increasingly interdisciplinary design practice".

Readers are taken on a journey, giving them an insight into the projects and specialisms involved while demystifying the role of the interior designer and the skills required to achieve a successful project.

"The book considers interior design in its broadest and purest sense," said Grove. "How it is now a multi-layered, cross-disciplinary global profession,

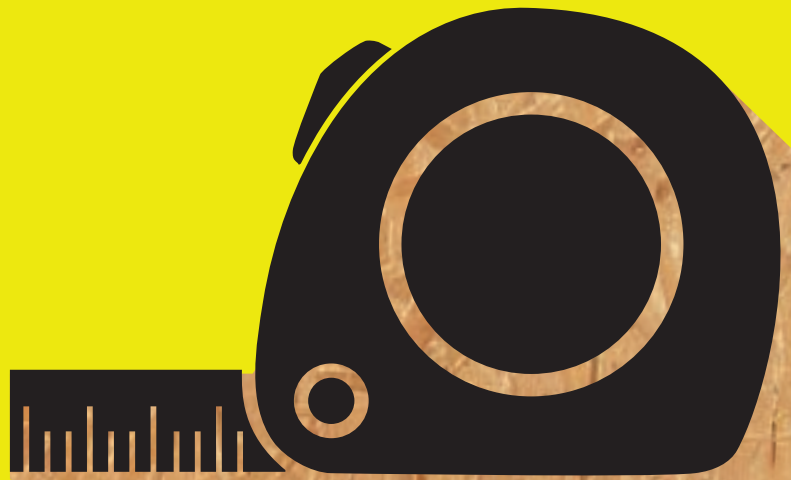
which includes design and architecture, cultural, social and business contexts, and how these all impact on decisions and choices."

Topics covered in the book include the profession in its historic and current context, the people, roles and relationships involved in interior design, the skills and knowledge that designers need, the benefits of using a designer, and the importance of a good client-designer relationship. Project examples illustrate key points, pinpointing important project types and showcasing designers working in specialist fields and include comments from the designers, clients and end-users.

Copies of the book are available online from the RIBA Bookshop.

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RICS AWARD

CPMG recognised for BIM expertise

CPMG Architects has scooped a RICS BIM4SME award for their use of BIM during the design and construction of the Discovery Building in Nottingham.

The scheme – a ‘flagship’ bioscience centre in the city – was realised through Level 2 BIM, with the design team using BIM to work collaboratively in 3D to design and develop construction information with subcontractors.

The Nottingham and London-based practice was presented with the award at a ceremony held on 12 September at London’s HMS Belfast.

Nick Gregory, director for CPMG Architects said: “Our team has been using BIM technology for a number of years. This is just one example of several varied Level 2 projects we have delivered while working with clients, design teams, contractors and supply chains. This award is a testament to the hard work of the team to continually improve the way we support teams to deliver building projects.”

Matt Greenhalgh, lead architect on the project, added: “BIM helped to inform better decision making between all subcontractors, the client and tenants, without



impacting on the design and construction programme, and enabled the manufacture of off-site components where possible.” He added: “On site changes were reduced thanks to the clash detection process helping all subcontractors to deliver on time, within budget and to a high quality. CPMG is proud to have utilised BIM on this project which was central to its success.”

The Discovery Building is a five-storey, BREEAM Excellent-rated facility built next to the BioCity building and forming part of the UK’s largest bioscience park. It opened in May and has already won the Judges’ Special Award at the East Midlands Property Dinner. A key exterior design element is the scheme’s brise soleil which is linked to NASA satellites and reflects the sun’s activity in real time.

BOOK

New design for old buildings

by Roger Hunt and Ian Boyd

The substantial benefits and challenges of complementing old buildings with contemporary architectural design are looked at in a book co-authored by the Society for the Protection of Ancient Buildings (SPAB) and published by RIBA Publishing.

New Design for Old Buildings, which is co-authored by award winning writer Roger Hunt and the chairman of the SPAB, Iain Boyd, explores how effective design can rejuvenate old buildings. It also proposes “a more radical approach to new design when working in a historic environment”.

The SPAB commented on the need for a new book on the subject: “In the context of urban regeneration projects and a renewed

focus on sustainability in the built environment, the need for good design in old buildings is as pressing as ever before.”

Setting out practical thinking regarding the coupling of new and old in architecture, the book aims to “provide essential reading for anyone with an involvement in adapting old buildings for future use,” said the publishers. “From building owner, architect and designer to planner and contractor, New Design for Old Buildings outlines ways of achieving thoughtful, practical and aesthetic design while avoiding pastiche.”

Matthew Slocombe, director at SPAB, said: “The SPAB approach encourages appreciation of, and maintenance of, old buildings. Sometimes, to ensure continuing

care and use, sensitive change is needed.” He added: “New Design for Old Buildings sets out the society’s ideas and offers a range of successful examples including domestic, commercial, religious and other buildings.”

The book’s co-author, Roger Hunt, said: “We hope that readers will be emboldened and gain a greater understanding that good new design is essential to ensuring the life and sustainability of old buildings.

“Our aim is to guide readers and help them appreciate that introducing good design in the historic context relies on understanding, respect, good manners and skill but is immensely rewarding, as demonstrated by the diverse projects we feature.”



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Green light for £12m shop and cinema project in Haverfordwest

Planning permission has been granted for a landmark town centre development in Haverfordwest, Wales, to be designed by Holder Mathias Architects.

The planning application, originally submitted by Fairacre commercial property company in November 2016, received unanimous council support and will result in the delivery of four restaurants/shops at ground floor level with a five-screen cinema at first floor level, covering 1,400 m² of leisure floor space.

Holder Mathias' design intent is to create a new leisure offer that fully engages with the River Cleddau, and the proposals include widening and improving the existing riverside walkway, as well as the creation of new restaurant units with spaces for external terrace seating.

Terry Morley, partner at Holder Mathias, commented: 'In introducing this new leisure offer into the heart of the town centre, we are looking to improve the vibrancy and attractiveness of Haverfordwest as a destination through the day and evening for locals and tourists alike. Our goal is to design a modern high-quality leisure destination that will function as a focus for the town centre.'

Jeannie Pritchard of Fairacre commented: "The redevelopment of this town centre site will provide widespread opportunity for existing retailers and traders in Haverfordwest. Our aim here is to attract more visitors to the town during the day and to also boost the night-time economy. The commitment from REEL Cinemas is very positive and we are looking forward to progressing with this scheme."

Construction work on the project is expected to begin in summer 2018.



LOST SPACE

London faces loss of office stock from resi conversions

A total of 13.3 million ft² of London office space could be lost to office-to-residential conversions carried out under new Permitted Development Rights introduced in 2013, according to new research published by the British Council for Offices (BCO).

This figure comprises 7.5 million ft² of office space in London which has already been converted to homes since the introduction of the rights, with a further 5.7 million ft² of conversions in the capital having approval. An average of 2 million ft²/year has been converted each year since the rights were introduced in 2013, or 0.7 per cent of the total London office stock.

The report, 'Permitted Development Rights: One year on from permanence', was commissioned by the BCO and carried out by property consultants CBRE. It finds that while Bristol, Birmingham and Leeds have all experienced high levels of notifications to local councils, London remains the city most affected. Additionally, a higher proportion of these have been converted compared to the rest of England – London's implementation rate is running at 57 per cent, compared to an estimated national average of 50 per cent.

Miles Gibson, UK head of research at CBRE, commented on the report's findings: "The new Permitted Development Rights have made a significant contribution to housing supply. However, following its introduction we have seen a decline in office stock in England for the first time in over 10 years. There is strong evidence to suggest that this decline is due to these new rights, rather than economic or other regulatory factors.

"There are a couple of reasons why London in particular has seen significant take-up. Heavy use of the new rights in the capital may reflect the fact that certain London boroughs, such as Camden and Islington, have traditionally had strong policies protecting office floorspace from conversion. In boroughs which have historically been protective, great losses are less surprising once that protection has been withdrawn.

Richard Kauntze, chief executive of the British Council for Offices, added: "To ensure future economic prosperity, local authorities must take a more active approach to reviewing and approving notifications from developers in order to protect the workplaces needed by local businesses."



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EXPANSION

KAAN Architecten's terminal extension for Schiphol Airport maintains single vision

Amsterdam Airport Schiphol has chosen KAAAN Architecten's design to extend the airport via a new terminal building.

The new building will open in 2023 allowing 14 million more passengers to travel through Schiphol per year. In extending an existing terminal it makes it possible to retain the airport's original 'one terminal' concept. The project consortium has appointed Netherlands design firm Arnout Meijer Studio as "innovative thinker".

The expansion is required in order to strengthen the competitive position of Mainport Schiphol, to keep pace with the growth in aviation and to continue to enhance the position of 'Europe's preferred airport' among both airlines and passengers.

The last time that Schiphol permanently expanded the terminal was in 1993, when the current Departure Halls 3 and 4 and Arrival Halls 3 and 4 were built.



Amsterdam Airport Schiphol CEO Jos Nijhuis commented on the design, saying that it suited Schiphol's "fundamentals". He said: "That was the main reason why the jury decided to choose this design. The design solution contributes to excellent

processing, it provides optimal support to passengers, contributes to our sustainability ambitions, and is future-proof."

He added: "We are looking forward to welcoming airlines and passengers into the new terminal and adjacent new pier."

OLYMPIANS

Populous and Egis secure committee's approval for Paris 2024 Olympic and Paralympic venues

Plans to transform Paris into an Olympic Park for the 2024 Olympic and Paralympic Games were officially approved by the International Olympic Committee (IOC) today when it named the French capital as the host of the 2024 Summer Olympics.

International design practice Populous and Paris-based international consultancy and engineering group Egis were chosen in 2016 to collaborate on the Paris 2024 bid, and provide the technical expertise and assistance required to develop plans for 38 Olympic and Paralympic venues across Paris.

As part of preparing the bid, Populous and Egis have worked in association with ISC, a sport and culture consulting agency on plans to ensure the existing venues are

ready for the scale and needs of Olympic and Paralympic events.

Populous senior principal Ben Vickery said: "We are proud to have played a part in the successful Paris 2024 bid. Bringing people together to enjoy an unforgettable experience is the overriding ambition of Populous in all that we do and is at the heart of the Paris 2024 vision.

"The city will be a magnificent Olympic Park, and transforming some of the world's most beautiful and historic sites into temporary stunning stages for sport will provide unforgettable images around the globe."

Egis chairman and CEO Nicolas Jachiet said: "Our group is proud to have taken part in this Olympic and Paralympic bid adventure. Our consulting teams have

contributed all their expertise, their capabilities in technical and organisational issues and their project management know-how to help to bring the 2024 Olympics and Paralympics to Paris."

Diogo Taddei, from Egis, who supervised the work of the design consortium preparing the successful bid, commented: "Our mission was to understand how each sport and discipline could best function in existing venues, new buildings when required as legacy and temporary modular sites, identifying the best option in each case.

"One of the biggest challenges was to transform illustrious Parisian monuments into sports venues, adapting them to the requirements of the Olympic and Paralympic Games."

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VIEW POINT

Dr Andy Lewry of BRE Global outlines his strategy for better-integrated design and build processes that use modelling to address the 'Performance Gap'

As we drive the performance of our building stock, it is becoming clear that one of the key challenges we must address is narrowing the gap between design and actual performance. The industry needs support to ensure we use more accurate modelling and data to understand how the building will perform in operation. Without this the gap in performance can be as big as 200-450 per cent greater than predicted.

With project costs squeezed and 'value engineered', all too often performance suffers. Allowing design teams more time to spend on modelling and considering how the building will be used by its occupants, rather than imposing 'default values' and specification, we will go some of the way to eliminating this performance gap.

Understanding the gap

The performance gap has two components: the compliance gap and the actual performance gap. The compliance gap is estimated at 50-70 per cent but can be solved by more realistic modelling that mirrors the conditions more accurately. The reasons for the second and larger actual performance gap are generally unknown. Speculation has led to assumption in this regard, but there is little in the way of hard evidence.

When a building is managed effectively, property value is maximised. A high performing building will ultimately generate maximum profit via high and continuous rental income, low operating and maintenance costs and low depreciation.

Modelling tools are used for compliance, which means they use standard default values for the building design. All the operational plant which controls the building is then set at these 'standardised driving' conditions and the occupancy density (i.e people versus square metres) is based on industry averages.

As a result these standard default values

underestimate the usage by up to 100 per cent. Software is used to meet Building Regulations and energy performance certificates, as well as being used for ranking rather than the operation of the building. When you pass the design stage, it's essential that real numbers are inputted and this can be done via modelling techniques such as the Green Deal software developed by BRE. This allows users to tailor the usage of the building to match real operating conditions and to work out what it should and shouldn't be.

But from that point onwards it much depends on how well the building is commissioned; what maintenance strategies and schedules are put into place; and how the building is managed. If these strategies aren't implemented. Buildings need to be commissioned properly with particular attention paid to control systems and occupant need.

Without this [modelling] the gap in performance can be up to 450 per cent

The power of management

Building management systems and building energy management systems are powerful tools in helping ensure that buildings are run efficiently and that they provide the desired environment for their occupants. As technology becomes cheaper and advances more rapidly, control systems need to be flexible, upgradable and have the facility to easily communicate and integrate with other systems.

However, care needs to be taken in their operation, and staff using these systems need to be fully trained. Ongoing commissioning and preventative maintenance needs to be carried out to ensure the potentially large energy savings are realised, operational costs are controlled and expensive failures do not occur. End-user needs should be taken into

account, while staff training and awareness-raising should be carried out to get the building's occupants involved.

Ongoing commissioning is essentially a higher form of maintenance. Maintenance simply deals with faults. It's also important to consider management issues. Is the right environment being provided? Is it being provided in the proper place? Are systems being switched off at the right times?

If it is not managed properly, the performance gap will only get worse. Modelling doesn't help with the building in use but 'baselines' the building predicted performance. It starts by putting decent controls in place so things are turned off when they are not occupied. Once you have control of the building, you can put the management systems in place so that building is optimised for energy usage.

Focus on people

One of the most important things to remember is that a building is built for its occupants. In terms of costs, staffing is around 95 per cent and workplaces are key to productivity. Any reduction in productivity has a large effect on a business' bottom line; after all 95 per cent of operational costs are the staff. Buildings need to be efficient, responsive and innovative, which is why it is so important to optimise the environment in first place. It's imperative that the industry treats the underlying causes and not the symptoms.

One of the main problems is that architects are not bringing the design teams early enough in the design process. The later you do this, the more expensive it gets and reduces the benefits in the long term. By engaging with the performance gap, it's possible to deliver the 'triple bottom line' of people, planet and profit. ■

Dr Andy Lewry is principal technical consultant at BREEAM

EU CULTURE

US and Belgian architects to collaborate on Brussels Cultural Centre

JDS Architects (Brussels) and Diller Scofidio + Renfro (New York) have announced their selection to head a multi-disciplinary team to design the Citroën Cultural Centre project in Brussels.

The new €125m facility in the refurbished historic Citroën building in central Brussels will host a Museum of Modern and Contemporary Art (15,000 m²), an Architecture Centre (10,000 m²) and public spaces to be used for cultural, educational and recreational events (10,000 m²).

JDS architects said that the project will “take over the preserved building at the crossroad of multiple urban conditions”.

The intent of the centre is “to favour cross-disciplinary innovation and serve as a flexible tool for both creative workers and the public”. The centre must be capable of adapting to ongoing cultural change.



The Urban Development Corporation (SAU-MSI) shortlisted seven teams from 92 initial applications. The other competing teams were 51N4E with Caruso St John

Architects, ADVVT, AGWA and 6A, Lhoas & Lhoas with Ortner & Ortner, NOA with EM2N and Sergison Bates, Office with Christ & Gantenbein, and OMA.

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SITE LINES

The real value of human-centred design

‘Human-centred’ buildings offering users better technology or greater material comfort will always be the exception rather than the rule as they are costly and challenging. This is a perception Atkins is trying to counter, as Rebecca Wicks reports

The needs of a building’s occupants may not always be a central focus of its design or the materials specified for it, especially when certain ‘comforts’ are associated with higher costs for innovative technologies and luxury finishes. However, international design, engineering and project management consultancy Atkins is at the forefront of turning this perception around.

Atkins’ ‘human-centred design’ approach focuses on ensuring that the needs of building users are at the forefront of design decision-making. The firm’s evidence-based approach is underscored by years of research including a recent partnership with a team from Imperial College London that investigated its economic benefits in the context of ongoing benefits to users, as well as research into materials produced with Oxford Economics and the Institute of Making at University College London.

Using an interactive digital survey the company invites a broad spectrum of building users and commissioning teams to identify their priorities against nine primary physical and perceptual wellbeing factors. This, says Atkins, “helps to inspire early, informed design decisions towards improving wellbeing, energy efficiency, as well as lowering costs and ultimately providing an environment where fiscal rewards can be reaped from increased productivity, staff retention, and reductions in stress and sickness.”

With the ability to show such quantifiable outcomes from such an approach, it’s not surprising that Atkins has employed it across its major projects since its launch in April 2016. The firm’s UK head of design, Philip Watson, has insights about the elements comprising specification for human-centred design for holistic spaces, in particular, innovative materials.

Biophilia & natural materials

Biophilia suggests that we need contact with the natural environment to sustain our health and wellbeing. Research into biophilic design shows that upon merely entering a workplace that incorporates nature, people are more likely to feel happy and motivated. Atkins’ Watson says: “Natural materials – those still in their organic state such as unpainted timbers or unreconstituted stones – make us feel calmer, reduce blood pressure and heart rates, and reduce stress.

Timber is one of the most obvious and yet rare natural materials, being a material used in its pure form in construction, and it is

seeing a major revival in architectural design across the globe. “Timber naturally has a lot of advantages,” says Watson. “It is non-toxic, does not leak chemical vapour into the building, and is safe to handle and touch.” He adds: “Timber also ages naturally and doesn’t break down into environmentally damaging materials.”

Biomaterials & mycelium

Given the positive physiological benefits of using natural building materials, there is increased interest in materials derived from living, or once-living, materials; namely biomaterials. Mycelium – an environmentally friendly, organic fungus – is one such material currently being researched and developed for construction applications. While so far its use has been limited to experimental furniture and smaller-scale structures, Watson says it has great potential: “It literally lies beneath our feet with the potential to be harnessed as a robust and durable building material. Consequently, it’s abundantly available!”

He adds: “There can be a huge reduction on the reliance on fossil fuels, the embodied energy required for fabrication and the waste



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As well as lowering costs, it ultimately provides an environment where fiscal rewards can be reaped from increased productivity

occupational exposure to fumes, chemicals and dust. Watson says: “Clearly choice of materials affects the working environment, from the need to cut concrete blocks and the dust that creates, through to the specification of paint, resins, and adhesives, suggests the move to cleaner offsite construction methods may have considerable benefits.

Detail is key

When asked about the main challenge faced by those tasked with material specification for human-centred design, Watson believes it lies in the level of consideration designers will give to understanding the materials they specify; “how thoughtful designers are at considering wellbeing right into the detail of material specification; making sure that the materials involved are sustainable, and non-toxic in assembly, construction, and disposal.” He continues: “Cost is always a consideration, but I think if people are committed and prepared to spend a little more time researching their material choices and not just picking things because it’s what they used on the last job, benefits can be reaped.

Watson concludes: “Challenging contractors and their supply chains to use natural materials and is the key,” advocating open access to a database or library that documents the qualities of materials, their sourcing and application such Portico in the US – which he says “would be of great help to designers.”

The future is smart

Watson believes that smart materials, specifically thermo-bimetals, will have a role to play in the future of human-centred buildings. Described as “self-actuating responsive materials that enable buildings and other architectural structures to adapt to their environment,” thermo-bimetals are a lamination of manganese and nickel. When heated, one metal will expand faster than the other, resulting in a curling displacement, meaning panels can open and close in response to heat generated in the surrounding environment.

Watson describes two possible locations: “By integrating thermo-bimetals into window systems a self-regulated shading system could enable a window to shade itself only in the areas that are affected by sunlight, and they could also as a safety device, shutting the air out of a building in a fire.”

He is excited to see technology moving forward to help facilitate and replicate the effects of daylighting, natural materials and water features where it’s not feasible to use natural materials. He concludes: “Technology can be used to change the colour, reduce glare and get better distribution of lighting. Having full control of LED systems can enable the colour temperature to be changed depending on the time of day or night. Sound systems can play the sound of water to reduce noise in the office. In Japan, there are buildings where every now and then, a breeze will come through the space; not from a window, but generated by controlled building services.”

Research and development into materials partnered with a progressive approach to specification is paving the way for a much more enlightened future for human-centred design. ■

left at the end of the product’s life. It is 100 per cent biodegradable and can be recycled as soil.” He believes this sort of “bio-fabrication” could support a carbon neutral building process, “eliminating products such as artificial insulation used in walls, MDF and other non-load bearing structures.”

Perhaps the most compelling aspect of this is the realisation that the development of materials such as Mycelium shows a changing attitude within the construction industry towards more sustainable, environmentally conscious materials. Watson says: “It indicates a desire within the industry to create and foster a more “cradle to cradle” attitude towards building.”

Material toxicity

While many natural materials have a demonstrably positive effect on users, materials can also have a detrimental effect on wellbeing. Watson highlights emerging concern relating to materials that contain toxicants (toxic substances emitted into the environment) and/or emit volatile organic compounds (VOCs). “Toxicants can assert their effects during the manufacture, use or disposal of a product, and may be carcinogenic, or otherwise impact the respiratory, neurological, endocrine or other systems.” He gives examples of paint emitting VOCs, particleboard containing formaldehyde, flooring containing phthalates, and furniture which is often coated in flame retardant. “Each of these is likely to contain toxicants, and this is only the tip of the iceberg – the vast majority of manufacturing ingredients are poorly understood for their health impacts.”

Research has demonstrated however that reducing exposure to toxicants has real, measurable health benefits. Watson elaborates: “A recent study shows that minimising VOC emissions in an office environment can significantly improve cognition; positive news for an employer whose operating budget is almost entirely tied to employee costs and productivity. Eliminating formaldehyde has shown potential to reduce asthma symptoms by over half.” He adds: “Many studies claim that overall, these kinds of intervention measures are much more cost effective than clinical treatment of illness.”

Watson asserts that the industry “has grown more confident when speaking about the environmental impacts of the products we use. Data related to recycled content or regional materials, for example, have become commonplace.” However he adds that “the same cannot be said about data related to human health impacts. We need to understand more about this as an industry.”

It’s not just the end-user’s wellbeing that needs to be considered. Every year, more than 500 construction workers die from lung cancer attributed to silica dust alone, and an estimated 4,000 deaths from Chronic Obstructive Pulmonary Disease are from past

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
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NEW ARRIVALS

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BARRY SPENCER HUGHES BENOY

Barry Spencer Hughes has been appointed design director at Benoy. With over 25 years' experience in design, Barry has a strong design-led portfolio having worked on significant large-scale, mixed-use projects. Primarily based at the London campus, he will shape Benoy's global design message while also expanding the business in America. Benoy CEO Tom Cartledge said: "The appointment of Barry fits brilliantly with our business objectives for America. He brings energy, passion, creativity and drives us forward as a cutting-edge design team. His previous experience includes award winning mixed-use, retail and transport projects. [He] also brings a great reputation in designing tall buildings – an area of increased interest for Benoy."



BEN STAPLETON AURECON

Global engineering and infrastructure advisory firm Aurecon has appointed Ben Stapleton as managing director for infrastructure. Ben has significant experience as a leader and advisor in the infrastructure industry across many geographies and roles. His expertise on major, multi-faceted infrastructure projects will help the firm to assist clients to 'navigate mounting complexities', including changing funding mechanisms and delivery models. Aurecon's Global CEO Giam Swiegers said: "Ben will play an important role in contributing subject matter expertise to clients working in a complex global environment and who need asset optimisation, support with digitisation and smart infrastructure solutions."

DAMIAN MASTERS URBAN VISION

Urban Vision, has announced the appointment of Damian Masters, who will take on the role of strategic property director. A chartered surveyor with over 20 years' experience, Damian joins from his own property consultancy that he established in 2014, where he acted for a variety of public and private sector clients including, Middlesbrough Council and the Greater Manchester Fire & Rescue Service. Damian's role will help to transform the way in which Salford City Council uses its property and estates portfolio and support them in delivering their existing and emerging regeneration, housing, education and commercial strategies.



SARAH MCDONNELL UNISPACE

Unispace has appointed Sarah McDonnell to its team in Dublin as principal, client relations, and studio leader. Sarah brings 22 years of extensive industry experience to Unispace, and has worked on a wide range of work overseeing all project management processes from purchase, through to design development and construction contract completion. Her extensive experience includes projects across all industry sectors including work for clients such as Willis, JP Morgan, Jazz Pharma, Google and Workday. Prior to joining Unispace, Sarah worked for Sisk, Shelbourne Development and, most recently, StructureTone in Dublin, where she project managed and delivered projects for industry-leading clients such as Willis, Google, KPMG and Workday.



MIKE ELLIOTT SOUND SPACE VISION

Mike Elliott has joined Anne Minors and Bob Essert as a director of theatre planning and acoustics consultancy Sound Space Vision. Mike has been with the company since 2008 and has project managed a number of completed venues through construction including the ACCA Centre for the University of Sussex and The Light in Euston. He is now leading the refurbishment of Fairfield Halls in Croydon and a new space for Nevill Holt Opera. He studied Theatre Design at Nottingham Trent University and also holds an MA in Theatre Consultancy from the University of Warwick. He has also worked with the Society of British Theatre Designers on exhibitions in 2007.

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JURONG LAKE DISTRICT MASTERPLAN, SINGAPORE ARUP

The Singapore Urban Redevelopment Authority (URA) has unveiled the masterplan for Jurong Lake District in Singapore, what will be the city's second central business district. The ambition is to create a new mixed-use business area built around the future Kuala Lumpur to Singapore high-speed rail terminus. The plans incorporate new waterways and a series of stacked horizontal landscape datum and connections that weave through the entire district to create a distinctive identity for Singapore and its vision of being 'City in the Garden'. The integrated, sustainable urban systems maximise the streetscape by proposing to place all major transport and engineering below the city, creating layers of optimised infrastructure and a 'car-light' district. Existing heritage buildings, landscapes and ecosystems are respected and repurposed in a 'powerful dialogue' with the new development.

Ref: 8756



MONROE BLOCKS, DETROIT SCHMIDT HAMMER LASSEN

The first US project for Schmidt Hammer Lassen, Monroe Blocks will aim to 'stitch together the urban fabric' of downtown Detroit, connecting some of its key public spaces. The scheme includes the creation of the city's first high-rise office tower in a generation as well as 480 homes, commercial spaces and entertainment & sport and leisure facilities; it will 're-establish historic alleyways, introducing new public plazas and green space while prioritising the public realm both indoors and out'. Also involved in the project developer Bedrock Detroit, local architects Neumann Smith, engineering firm Buro Happold and landscape architects SLA.

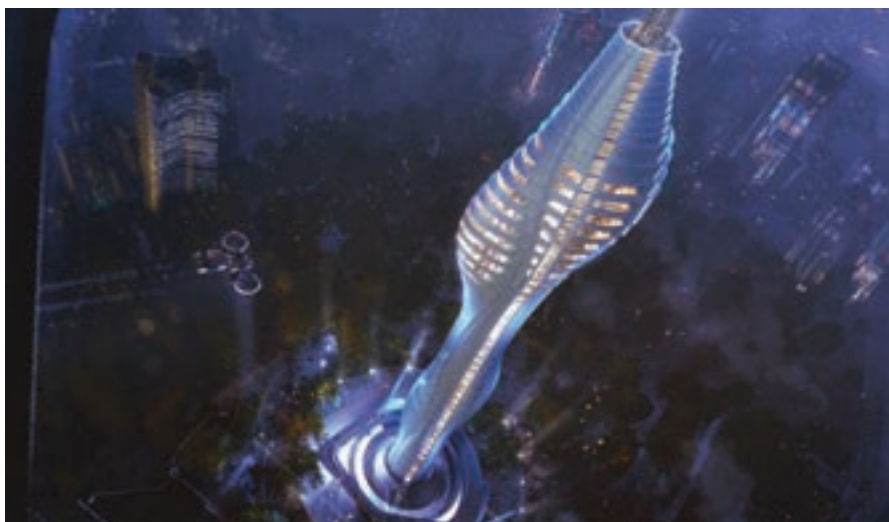
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OLD CITY HARBOUR, ESTONIA ZAHA HADID ARCHITECTS

Zaha Hadid Architects has won the Masterplan 2030 competition for the Old City Harbour in the Port of Tallinn, Estonia. While contemporary in concept, the new masterplan deliberately preserves the city's urban fabric, its vistas to historic landmarks and its views to the sea. The new city blocks within the masterplan will continue the existing scale of adjacent districts. The flexibility of the masterplan's civic zones allows for a number of uses, including culture, entertainment, shopping and hotels, to serve Tallinn's residents and its growing number of annual visitors (anticipated at over five million in 2017). The new pedestrian quayside incorporates terraces served directly by cafés and restaurants.

Ref: 1825



KÜÇÜK ÇAMLICA TV TOWER, TURKEY NEWTECNIC

Construction of Istanbul's 356-metre high Küçük Çamlıca TV Tower (KCTV), with facades devised by UK building engineering designers Newtecnic, has commenced. When the futuristic building is completed, the £36m structure will be the city's tallest and will replace several unsightly existing broadcast towers. The tower, which will host 125 broadcasting transmitters, is expected to attract 4.5 million annual visitors and become a new city landmark. The tower, which incorporates restaurants, exhibition and meeting spaces, two observation decks and a panoramic elevator, was wind tunnel tested.

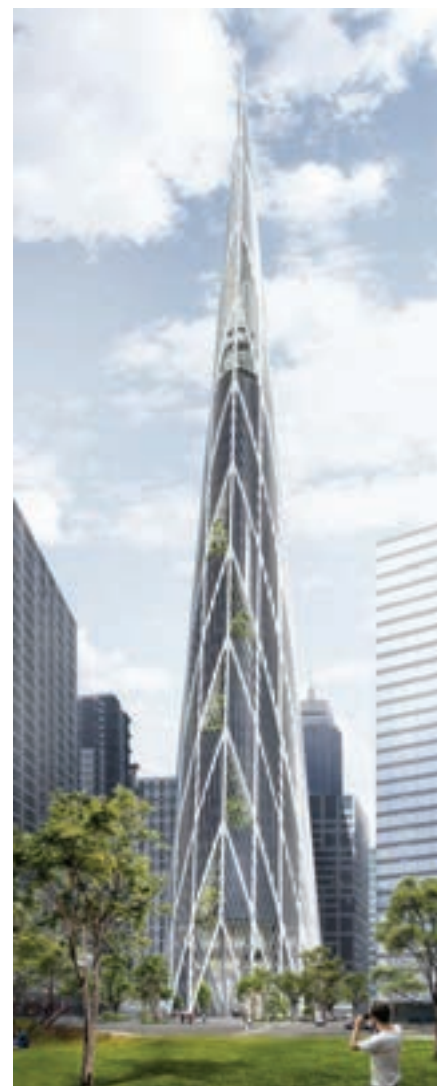
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BERGGRUEN INSTITUTE SCHOLARS CAMPUS, LOS ANGELES HERZOG & DE MEURON

The Berggruen Institute has unveiled plans for a new campus in Los Angeles designed by Herzog & de Meuron, supported by Genster as executive architect. The campus masterplan and its design respond to both the Berggruen Institute's desire to respect and restore the landscape of its 447-acre site, over 90 per cent of which will be preserved as open space. A "landscape vision as much as an architectural project," the design by Herzog & de Meuron in collaboration with Michel Desvigne Paysagiste and Inessa Hansch Architecte, concentrates development within previously graded areas, and thereby limits topographic changes. The principal site for the campus will be a long mountain ridge that was scraped and flattened in the 1980s to cap a landfill. The design envisions the ridge being restored and transformed into a linear park or gardened plinth, landscaped with drought-resistant plants and incorporating the collection, filtration and re-use of water. Plans call for a low-density campus featuring meeting and study spaces, scholars' residences and gardens along the linear park. The campus will follow the existing contours of the ridge and make use of infrastructure that is already in place.

Ref: 1034



ICONE TOWER, PHILIPPINES HENNING LARSEN

Henning Larsen has won an international design competition for a high-rise building in Manila's Bonifacio Global City financial district. The architects, who collaborated with landscape architects SLA and BuroHappold Engineering, beat off stiff competition from NSI + CAZA, DP Architects, JDS Architects SPRL and J. Mayer H. and Partner + Collaborative Architecture. The winning 308 metre tower design also features a large public plaza with a dense tree canopy, while the tower itself includes workspaces, restaurants, a civic centre with exhibition spaces, and a public observatory. The middle part of the tower offers generous daylighting, social spaces and green terraces and atriums. The building is envisaged as a 'lighthouse' for the city at night, with its illuminated pinnacle, while the observation deck will provide views across the city during the day.

Ref: 6696



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Designed especially for architects, civil and structural engineers, **Saint-Gobain Weber** offers new technical CPDs that provide integrated solutions for a broad portfolio of construction projects. From building renovation and refurbishment, to new build developments and major civil engineering projects, Weber provides problem-solving solutions in the technical mortars market. Weber's *Concrete Repair & Protection* CPD provides comprehensive and informative content from the different types of concrete defects to technical standards, including BS EN 1504. Remedial work using flowing concrete, sprayed concrete and hand placed mortars, as well as cathodic protection, are all considered together with the products, materials and systems that are required to solve a range of concrete defects. The new *Structural Strengthening* CPD covers the introduction of epoxy resins, fibre reinforced polymers (FRP) and design considerations. This content is supported with application advice, good site practice, case studies, and current industry standards. A new seminar on *Precision Grouts* can also be delivered to suit specific requirements and applications. This presentation covers the uses, selection and installation methods while case studies are also reviewed including some familiar iconic structures which have benefited from precise alignment and uniform support that Precision Grouts can offer. All CPD seminars of approximately one hour. 08703 330 070 www.netweber.co.uk

WATERLOO HELPS STUDENTS TO BEGIN A CAREER IN ENGINEERING



As part of **Waterloo Air Products PLC's** commitment to the future of engineering and construction, Commercial and Export Markets Manager at Waterloo, Alan Smith, has been appointed as an Enterprise Adviser with The Careers & Enterprise Company. Alan's role helps to ensure young people are aware of the career opportunities in engineering and construction. "It's a really exciting opportunity," says Alan. "I've already had several years' experience working with the Engineering Department at the University of Greenwich Medway. Being an Enterprise Adviser with The Careers & Enterprise Company provides an opportunity for Waterloo to help address the national skills gap by attracting more young people into the industry, and connecting schools to businesses." Alan provides support and information to students in West Kent, encouraging them to look at careers in manufacturing and construction. His new position is part of Waterloo's wider commitment to promoting engineering to the next generation. "Waterloo has been a member of the Constructing Excellence programme for several years," adds Alan. "It operates nationally as a platform for industry improvement through collaboration. This new role means I will be engaging with teaching staff to arrange workshops, presentations, office and factory visits, with the potential to offer work experience too". 01622 711500 www.waterloo.co.uk

THE AIRFLOW RESIDENTIAL MECHANICAL VENTILATION WITH HEAT RECOVERY CPD



The Airflow Residential Mechanical Ventilation with Heat Recovery CPD provides an understanding of the latest Building Regulations relating to residential ventilation. It discusses the different system options available to comply and specify appropriate ventilation systems while delivering improved indoor air quality, reducing energy and creating a lower carbon footprint. By taking part in the course participants will learn about compliance and practical issues to implement an effective, efficient mechanical ventilation system with heat recovery including,

- Building Regulations and how they apply to the correct specification of a ventilation system
- Understanding Compliance Guides and their place in the installation process
- A system is only as good as the ducting. The do's and don'ts of installing a duct system.
- Sign off by Building Control is mandatory. How to comply.
- The aspects of poor indoor air that can effect occupant health and degrade the fabric of a building.
- Explain the principle of operation of a Mechanical Ventilation with heat recovery system and where it will provide the most suitable ventilation solution.
- How to commission a fan system so that standards are met and Building Control will sign off the project.
- Be skilled in conveying accurate informed advice about ventilation to clients and installers.

01494 525252 www.airflow.com

CHIMNEY DESIGN AND RESTORATION OF FLUES AND DUCTS



Flue Liner Solutions are offering a RIBA approved CPD presentation entitled *Chimney design and restoration of flues and ducts*. This seminar will give an overview of chimneys, factors to take into account when designing buildings and an awareness of common problems. It will help architects to understand the following topics: chimney design and sizing; flue lining systems and suitability for different appliances and fuel types; remedial works to existing chimneys; maintenance requirements for chimneys as well as understanding chimney terminals and chimney fans. 0203 858 3888 www.fluelinersolutions.co.uk

'STEP ON IT!' SPECIFICATION OF ENTRANCE MATTING



Quantum Flooring Solutions – RIBA approved CPD seminar *STEP ON IT!* is a presentation and discussion dealing with the subject of specifying safe and effective entrance matting. The CPD presentation includes: What entrance matting is designed to achieve and how to select the right one; How recent BRE guidelines affect the choices for specifiers; Environmental and health and safety considerations applicable to the manufacture, installation and maintenance of entrance matting. 0161 627 4222 www.quantumprofilesystems.com

TWO NEW RIBA ASSESSED CPD SEMINARS FROM COMAR



In two RIBA assessed seminars, Comar outlines: *Stand & Deliver: a Study of curtain Walling* – the design of curtain walling, it's properties and how it is used by specifiers. This seminar aims to offer an understanding of the points of Hill in the NBS specification system, and how best to make use of it. *Designing functions & reliability into entrances* – the issues that influence the function of main entrance design and technology. This seminar aims to offer an understanding of how user expectation influences door design and links this with hardware selection, entrance configuration and floor finishes. 020 685 9685 www.comar-alu.co.uk

RIBA APPROVED CPD LAMINATE FACTORY TOUR FROM FORMICA



Formica Group, is now offering a CPD factory tour approved by the Royal Institute of British Architects. The tour is based at the Formica Group facility in North Shields and incorporates the factory, office and fabrication support unit, as well as an overview of the process of laminate manufacturing and usage. A hands-on opportunity to work with laminate, the tour also includes the experience of bonding and postforming, as well as understanding the various grades and laminate capabilities. Lasting two and a half hours, tours are limited to eight people. 0191 259 3512 www.formica.com

RENOLIT LAUNCHES NEW RIBA APPROVED SURFACE DESIGN CPD



RENOLIT has launched a new CPD seminar on the flexibility and uses of thermoformable PVC as a decorative surface which illustrates the benefits of PVC films over other decorative surface materials. The seminar provides architects with an understanding about PVC and its common uses within interior construction projects. It informs how to recognize different types of surfaces films, their applications and raises awareness of some specialist applications. 01670 718222 www.renolit.com/design

FLOOR TILING ONTO CALCIUM SULPHATE SCREED



Saint-Gobain Weber have introduced a new RIBA-Assessed CPD: *Floor Tiling onto Calcium Sulphate Screeds*. The main learning aim of the new CPD is to assist in the design and specification process. By identifying potential problems and how to avoid them, specifiers will learn to understand the key considerations when detailing tiling work on anhydrite screeds and meeting industry standards. This 30 minute CPD can be presented by Saint-Gobain Weber's specification team either on site or at a clients' office, and has been designed for individuals and small groups. 08703 330 070 www.weberspec.co.uk

YBS new Specification Manager



Innovative insulation manufacturer appoints new Specification Sales Manager to national role. Such is the growth in demand for its multi-layer insulation products that YBS has taken the step of creating a new position within the company, by appointing a Specification Sales Manager to influence and support key decision makers across the industry. Selected for the role,

Paul Horton will have responsibility for working with a wide range of professionals assisting them in understanding the unique performance benefits and potential of the diverse YBS product range. 01909 721662 www.ybsinsulation.com

Damp-proofing rods gain WTA approval



The innovative Dryrod damp-proofing rods from Safeguard Europe have been accredited by the German WTA organisation for creating remedial damp-proof courses (DPCs) against capillary absorption in masonry, otherwise known in the UK as rising damp. The WTA accreditation is a perfect accompaniment to Dryrod's British

Board of Agrément (BBA) certification, awarded in 2015, which establishes that it is effective against the ingress of moisture for at least 20 years. Dryrod is designed to be the fastest, cleanest, easiest and most effective rising damp treatment on the market. 01403 210 204 www.safeguardeurope.com

Saracen completes fast-track refurbishment



Saracen Interiors has completed a £150,000 fast-track refurbishment project for equity investor, Mobeus Equity Partners at the company's head office. The workplace consultant's team worked during weekends and evenings to ensure that the project was

completed within three weeks. This also meant that the office space could be occupied for two of the three weeks, causing the minimum of disruption. The project was awarded to Saracen following the submission of detailed plans, demonstrating an intelligent use of the space available and creative designs that best reflected the brand. www.saraceninteriors.com

SFS intec shares specification expertise



Roofing and cladding fastener manufacturer SFS intec has been exclusively invited to share its specification market knowledge, analysis and experience in a new report published by NBS. The 'What Specifiers Want' report, provides expert guidance for construction product manufacturers supplying into the UK specification market. David Wigglesworth, Managing Director of SFS intec's UK business, who wrote an

article for the report, says: "We're delighted to have been invited to share our insights in this latest NBS report which will be enormously beneficial to anyone working in the specification market". 0113 2085 500 www.sfsintec.co.uk

Aluprof expands Consultancy Team



As the demand for Aluprof systems continues to increase across the UK, two new Project Consultants have joined the rapidly expanding UK division. John Higgs joined the team in July and covers London and the Southern region. Having extensive knowledge of fenestration systems, especially their applications and specification, John brings a wealth of knowledge to the team. John's interest outside of Aluprof include travel, golf and motorcycling. Andrew Pease also joined the team in July and covers the Northern region. Andrew's background is in project design and estimating, so is well placed to offer the company's principles of Value Management to any project. When not supporting specifiers, Andrew can be found cooking Greek dishes and exploring the great outdoors. Aluprof's philosophy encompasses the principles of 'Value Management' which looks across the facade supply chain to offer the best value for each bespoke project requirement. This innovative approach enables Aluprof to be highly competitive on any size, complexity or location of any project. The company's extensive range of systems are increasingly being specified on a variety of residential and commercial projects across the UK.

0161 941 4005 aluprof.co.uk

VEKA teams up with Burnley FC



The 'clarets' have made a new signing with Burnley-based VEKA Group as part of the Friends of Burnley FC in the Community programme. Burnley FC in the Community is a stand-alone charity that works in Burnley and nearby communities on various projects. In less

than a year since its launch, 'Friends of' has already raised £20,000. VEKA Group is one of Burnley's biggest employers, with a 'team sheet' of over 400 people from the town and surrounding areas. The Group takes an active role in the local community having also recently signed up as main sponsors for Rosegrove FC.

01282 716611 www.vekauk.com

Project consultant appointed for Ocula



Ocula Systems has appointed Brian Cockburn as their new Project Consultant for Scotland. He joins the business with 15 years of experience in the partitioning industry and almost 30 in specification sales. His main focus will be to grow specifications in his area with a goal to ensure Ocula Systems becomes the first choice for archi-

tects. Ocula Systems provide full Partitioning support from design through to installation. Their team includes a network of specification consultants experienced glass installers, project managers, estimators and design technicians based in eight regional hubs across the UK.

0118 935 8152 www.oculasystems.co.uk

International women in engineering day



A north west structural engineering practice has marked the recent International Women In Engineering Day with the appointment of another female engineer. Over recent years, Rhodes & Partners has supported the day, which this year coincided with its appointment

of Daria Lachowicz-Bierc as its new 2-D CAD Technician. Rhodes and Partners' Financial Director, Penny Ribbeck explains "We always support the day itself as we have a far higher proportion of female engineers than the vast majority of companies in our industry. We're delighted to add to our female numbers by welcoming Daria."

0161 427 8388 www.rhodesandpartners.co.uk



New look website for Freefoam

Freefoam Building Products has just given its website in the UK a completely new and dynamic look. The new site has users at the heart of every page, and reflects Freefoam's confidence in its product range, company credentials and well established brands. Access to information online has led to the continual fragmentation of traditional business and consumer markets. Freefoam has embraced these challenges and developed their new site to address these issues by providing separate areas for both building Professionals and Homeowners – with targeted content and specialist tools to enhance the customer experience for every visitor. With clear imagery to show-case the range and detailed information on every product the site has been designed to help support visitors through every stage of their decision making process.

01604 591110 www.freefoam.com

Signbox delivers for Alpha Bank



When Alpha Bank, moved its offices from Canon Street to King William Street, it commissioned Resonate Architects to transform its new space into one that exuded quality and delivered an amazing client experience. Having successfully worked with Signbox on many previous occasions, Resonate

Architects turned to them to help to bring this project together. Alpha Bank logos were precision cut on Signbox's Zund S3 plotter and applied directly to a painted wall with a low-tack application tape. The end result is a striking feature wall that reinforces the bank's brand, while also providing an attractive space for staff to unwind.

01784 438688 www.signbox.co.uk



**BUILDING
PROJECTS**

**V&A MUSEUM OF DESIGN
DUNDEE**

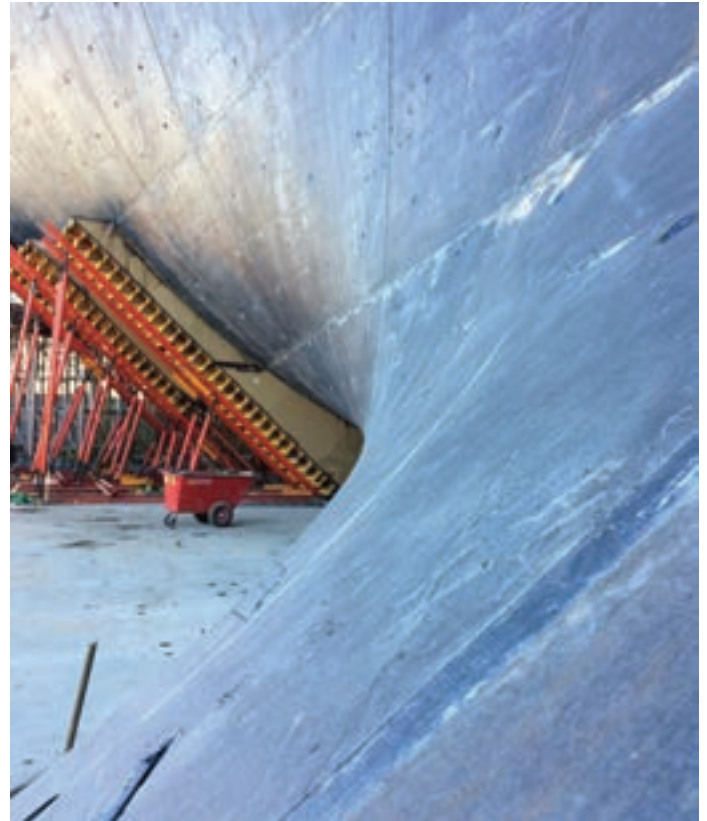
Dialogue between the elements

Scotland's new museum of design has a fittingly cutting-edge design by Kengo Kuma & Associates which combines bracing modernity with an organic feel, and connects a city back to its riverfront. James Parker reports

This is a tale of two firsts. Dundee is the UK's first city to be recognised by UNESCO as a City of Design, for achievements in fields as diverse as computer games, comics and pioneering medical research. It's now also the location of a fittingly groundbreaking building dedicated to design innovation – the V&A's first museum outside London, due to open next summer as celebrated Japanese architect

Kengo Kuma's first major UK project.

The momentum generated by these two big 'firsts' and the ambition of a multi-headed municipal client have led to the practice producing something very special on a prominent site on the river Tay, visible to everyone travelling toward the city over the Tay Road Bridge. This dynamic new form has the potential to put Dundee on the global architectural map in the same way



that Bilbao's Guggenheim did for that city. The Guggenheim's architect Frank Gehry chose Dundee for what is still his only permanent UK building, a much more modest Maggie's Centre for cancer patients at Ninewells Hospital to the west of the city – the V&A is a different kettle of fish.

Its client Dundee Design Ltd (DDL) comprises the City of Dundee, the Scottish Government, Abertay and Dundee Universities, and the V&A itself. In staging its 2010 design competition for the building DDL wanted something that would form the centrepiece of a £1bn masterplan to improve the city's neglected riverfront. It also had to be a part of the city, and reconnect it with the river. With this in mind, perhaps the biggest success of Kuma's building is how, despite its dramatic geometry, its design harnesses a combination of unashamed modernity and an organic, earthy feel to manage this feat.

From the new urban plaza next to the permanently-moored 'Discovery' (the ship that took Scott to Antarctica) the building's two tapering volumes slightly resemble two boats sitting side by side, one with its prow jutting out across the river. However viewed from the triangular main entrance the two

The building's two tapering volumes slightly resemble two boats sitting side by side, one with its prow jutting out across the river

forms are revealed to be connected at first-floor level, forming one new floor. The pedestrian walkway continues invitingly through the somewhat sea arch-like gap between the two, towards the Tay estuary, one leg of the 'arch' disappearing mysteriously into the water. Also, the undulating nature of the facade, clad in seemingly randomly shaped precast planks, becomes more noticeable as you get closer.

This is a big departure from what was here before, as project architect Maurizio Mucciola tells ADF. "Until six or so years ago the whole waterfront area was an industrial port, but most of the docks had fallen into disuse." He says that when the practice first visited the site in 2010 there was a leisure centre sitting where the museum is, "which was not the best building to be in such a nice position." There was also a hotel

FACING PAGE

Scottish cliffs inspired the museum's cladding of individually shaped and angled cast stone planks

ABOVE LEFT

The museum's black pigmented concrete volumes before and after cladding

ABOVE RIGHT

The concrete wall section with the most extreme dimensions – no. 18 – curves through a total of 123°
Images © Ross Fraser McLean



© Ross Fraser McLean

and a network of roads which “weren’t doing any favours to the city” he says, in fact they were deterring anyone from wanting to take a walk down to the river.

This was a shame because the wide river estuary is “very beautiful,” he says – and despite its main function being essentially a gallery, the building has been designed to engage with its surroundings both in terms of grabbing views of it, and more literally, in its form. Having carefully explored the site, the architects “wanted to focus on the relationship between the building and the water, and trying to relate that back to the city,” says Mucciola.

A cliff facade

The central design response was the idea of emulating a Scottish cliff, complete with its horizontal striations, and water lapping against its base. Mucciola explains: “As a powerful natural element, the cliff played a strong part in the design, because the way it sits on the water is very strong but also at the same time very organic and gentle.” This has now been realised because the coffer dam built by main contractor BAM together with temporary piles and slab for cranes to sit on has been removed, allowing water to come right up to the wall. Kuma himself previously – and evocatively – described the inspiration behind the design: “The beauty of cliffs comes from the long dialogue between earth and water”.

In trying to give the impression of a rough, naturally striated rock face, the building’s cladding of metal-fixed and rough textured cast stone planks also helps to offset the overall somewhat forbidding scale of the building, giving it a more natural, organic softness. Using planks of varying length, depth, and inclination to match the contours of the facade, breaks up what could have been an overly linear result from such an approach. In addition, leaving a gap between each of these angled planks not only provides a space for windows to be hidden in, it also allows uneven shadows to fall on the dark pigmented reinforced concrete walls and create a further semblance of a cliff face’s randomness.

Says Mucciola, “Scottish cities have a great tradition of using local stone and each city is characterised by its use of local stone.” Although quarrying around Dundee is long past being able to provide the capacity this project needed (about 2,300 planks) the stone aggregate with its exposed rough texture was chosen to blend with local stone. The architects worked with the subcontractor to develop flexible moulds so



that it could efficiently produce planks, no two of which are likely to be of the same dimensions.

The stone's roughness gives it a bedded-in feeling on installation, and helps to moderate light reflection. Mucciola: "We have always thought that particularly in such locations a building with this sort of cladding shouldn't be pristine. Having such a mineral and powerful material lends itself to ageing beautifully in a natural way."

Internal spaces

The 8000 m² building is designed in the form of two inverted pyramids, the steep taper at the bases chiefly done to provide a welcoming incline that encourage visitors into both the main entrance – Kengo Kuma keen to avoid a vertical facade which might "reject people" – and the gap between the buildings. It was also the result of a much larger footprint being needed on the first floor for the gallery and learning spaces located here.

The entrance leads into a 600 m² double-height foyer space, lit by a number of small roof lights above and narrow horizontal slit windows cut into the concrete, 300 mm high (the same as the wall's thickness). There is a museum shop and waterside cafe, and there is also space that can be easily recon-

figured for events such as fashion shows or concerts. In the other building ground floor houses offices and back of house.

The first floor linking both buildings has a lounge exhibition area leading off to four galleries, totalling 1650 m². They will feature everything from Scottish design through the centuries, including Charles Rennie Mackintosh's famous Oak Room tea room (restored and rebuilt) to international travelling 'blockbuster' exhibitions. A corridor runs from the first-floor reception past the atrium foyer space – whose upper section forms the 'prow' over the river – to an auditorium, 'creative learning centre' and a staff area.

Continuing the natural theme, timber is the key material internally, providing a warmer counterpoint to the prevailing mass of concrete, including planks cladding the walls of the main hall. Says Maurizio Mucciola, "The Scottish weather can be tough sometimes, so we wanted a welcoming feeling to the interior, and timber is obviously a traditional material in Scotland." The upper floor spaces have oak floors, and there is some timber cladding to spaces like the auditorium. The main hall, which also features a very long timber bench running along its perimeter, has a floor of Irish limestone.



TOP

Render of main lobby with timber planks

ABOVE

Narrow windows cut in the concrete walls visually connect interior spaces with the city
© Ross Fraser McLean



© Ross Fraser McLearn

The interiors have been designed to be “very open” says Mucciola. “From most parts, you can see across to the rest of the building, and we hope that people will enjoy lingering in the spaces. We wanted to create a real civic centre for Dundee and for visitors.” He says that local feedback has been very positive so far, despite the bracingly modern statement the building makes, and a “sense of ownership and pride” has been reported.

In terms of sustainability goals, the project is targeting BREEAM ‘Excellent’ and features natural ventilation via automatic roof vents to all spaces except the galleries. There has been a focus on sustainable sourcing of materials, “down to the paint”, and there are also various renewables such as air source heat pumps, geothermal bore holes and lighting which responds to exterior light levels to maximise efficiency. Mucciola says there is a general move to making museum spaces less strict when it comes to internal climate control: “There is a tendency now to try and relax the restrictions where possible in museums and galleries to increase energy efficiency while keeping exhibits safe.”

Concrete curves

Perhaps the most impressive design feature is the double curvature in situ concrete wall which is the main structural element of the entire building, formed from 21 sections. Due to the design’s complexity, tapering in towards the ground while linking two forms, some of these sections twist dramatically in and out, with several presenting extreme curvatures. The most extreme example (illustrated on page 33), Wall section 18 goes from a 33° incline towards the river then curves through 123° to a 24° incline away from the Tay, over a 15 metre length of wall.

Initially the architects used a combination of 3D modelling software, testing this against a physical model, to arrive at the right shape, but once structural calculations were needed it was easier to break the walls down into sections. Says Mucciola: “Obviously we had engineering input from Arup, and we started working with them as our own engineers very closely since the earliest stages of the project, and at all times.” He adds: “Any small modification we were doing was fed back to them so they could recalculate.”

The enormous amount of bespoke formwork (11,000 m²) that was needed was one of the biggest challenges on the project,



© Rapid Visual Media

although not one that the architects had direct responsibility for. “They had complex shapes because they had to be both faces of the wall, and to perfectly match the 3D model,” says Mucciola. The tolerances BAM and formwork subcontractor Peri had to work with were only a few millimetres, so the formwork had to be precisely aligned.

Mucciola is full of praise for the level of collaboration, which he says is unusual: “The way the entire design and construction team has worked together has worked out very well, which is not very common.” He puts this down to the fact that “everyone liked the design – when I went down to the site, everyone including the staff making the sections were very proud of what they were doing and there was a genuine will to get a good result.”

One way in which the architects assisted in making this process a success was by creating a mock-up of the wall to make sure there were “smooth joins between the formwork,” and this included carrying out tests and discussing the necessary tweaks with BAM. The architects have had continual involvement throughout the construction phase due to the complex nature of this project, and its engineers have been site almost every day checking the quality of the concrete, and resolving any issues or questions the contractors had, on the spot.

Connected to the city

The architects have carefully focused on the important goal of ensuring the building both draws visitors to the riverfront, including via new public spaces outside, and that it feels part of the city. Internally, the insertion of

The way the entire design and construction team has worked together has worked very well, which is not very common

Maurizio Mucciola, project architect

over 100 narrow horizontal windows throughout the building, as well as giving a soft light to gallery spaces and at low-level, views for children, are also a subtle way to remind visitors that they are in Dundee. Mucciola says: “They frame many different views of the outside – the river, the Discovery, or back towards the city. It’s not very common to have windows in galleries but we thought it was important.”

As part of the riverfront masterplan, a new train station is currently nearing completion near the end of Union Street, the major thoroughfare connecting the city centre to the river. The building’s entrance has been carefully positioned so that it is clearly visible from the train station and from the street itself, however the new landmark Kengo Kuma and team have created is virtually guaranteed to draw not only hordes of visitors from the town but from across the globe.

This museum will also be a stunning legacy of the V&A’s former director Martin Roth, who died this summer from cancer, aged 62. Having led this multi-faceted project, it is sad that he did not get to see it completed. ■

PROJECT FACTFILE

Client: DDL (Dundee Design Ltd) – Dundee City Council, Scottish Enterprise, Abertay University, University of Dundee, Victoria & Albert Museum

Lead architect:

Kengo Kuma & Associates

Project manager: Turner Townsend Project Management

Executive architect:

James F Stephen Architects

Delivery architect:

PiM.studio Architects

Structural and services engineer:

Arup

Landscape:

Optimised Environments

Quantity surveyor: CBA

Wayfinding: Cartidge Levene CDM/DDA Consultant C-MIST

Water feature specialist:

Fountains Direct

Main contractor: BAM

Concrete: Careys

Formwork: Peri

Floor area: 8,500 m²

Cost: £80.11m

Building completion due:

January 2018

Opening: Summer 2018

Luceco LED Lighting performs for Westlands in Yeovil!



Luceco has recently supplied an energy saving LED lighting solution to Westlands in Yeovil, Somerset. Operated by South Somerset District Council alongside The Octagon Theatre, Westlands offers the ideal venue for sports and entertainment. A host of LED luminaires from Luceco were installed by R.E.F Electricians Taunton Ltd working in partnership with EDP Environmental in Exeter, including Platinum, Climate, LuxBay, LuxPanel, Atom, Academy and Atlas. LuxBay luminaires were used in the purpose-built fitness gym, refurbished squash courts and sports hall, providing cost-effective LED lighting for this multi-use area. Platinum downlight luminaires offering potential running cost savings of up to 80 per cent over traditional lamp fittings were installed in meeting rooms, fitness suites and dance studios as well as circulation areas such as the lounge bar, entrance lobby and reception. Offering 50,000 hours of operational, maintenance free life, Platinum has an impressive efficacy of 129 Llm/cW. Other luminaires included the Atlas Bulkhead, providing an alternative to traditional 28 and 38 watt 2D compact fluorescent fittings, were installed in changing rooms.

01952 238100 www.luceco.com

Boon Edam provides elegant entry



Boon Edam was consulted to provide a stylish entry solution to London's Berkeley Hotel, to complement its refurbished lobby entrance and reflect its brand image. Boon Edam's Crystal Tourniket door was chosen for the entrance; one of the most impressive and eye-catching revolving doors available. A Crystal Tourniket is constructed almost entirely from glass, with added stainless-steel accents to support the

solidity of the door. With 140 years' experience, Boon Edam ensured the bespoke design blended seamlessly with the building.

sales@boonedam.co.uk

Wetroom drain has sunk to new depths



CCL Wetrooms, a leading wetroom specialist, have launched their shallowest ever waterless trap – the NEW Lo-Seal Trap – at a cutting edge depth of only 55mm. Developed specifically for use in

wetroom construction projects with screed depths of below 60mm, the new trap allows wetroom drainage to be installed where standard depth drains cannot be accommodated. Designed as the central element of the Linear Screed Drain, the new Lo-Seal waterless trap has an improved design which contains a spring-loaded mechanism keeping the trap sealed when not in use.

0844 327 6002 www.ccl-wetrooms.co.uk

C-TEC powers up paradise island!



An exclusive resort in the Maldives is the latest prestigious location to benefit from C-TEC's innovative life-safety systems. In an environment prone to adverse weather conditions and reliant on diesel

generators rather than mains, C-TEC's high-performance EN54-certified switch-mode power supplies are ideal for powering the life safety systems on the island. With deep discharge battery protection and EN54 compliant reporting of battery impedance faults, the BF362-5 units are supplied in tough durable metal boxes and include single-pole volt-free changeover relays that switch for any fault condition.

sales@c-tec.co.uk

Novus scales new heights with refurb

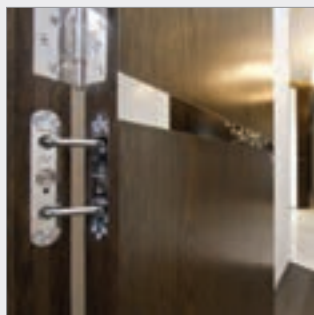


National maintenance, refurbishment and new build contractor, Novus Property Solutions has transformed a Luton hotel into a brand new Thistle Express Hotel. During the eight-month project, a team from Novus' National Projects office carried out

extensive upgrades to the full M&E infrastructure of the existing hotel building, which was also reroofed using the innovative Triflex system. The team refurbished all 152 bedrooms, corridors and ancillary areas as well as reconfiguring some public areas to create a brand new breakfast room, kitchen and communal area.

www.novussolutions.co.uk

Hidden benefits for hotel interiors



Powermatic door closers from Samuel Heath deliver outstanding performance in fire resistance and accessibility, but it is their concealment that delivers a host of benefits for hotel projects, and which has made them the specifier's choice for hotel interiors. British designed and manufactured, the door closers fit neatly between the door and frame and are totally concealed when the door is closed. They do not have the unsightly control arms and boxes that make surface-mounted devices so unsightly and, as such, ensure that nothing interferes with the appearance of the door and interior. They also help to create a more homely, less functional, ambience within the room, assuring a more comfortable and relaxed guest experience. These benefits have seen Powermatic used by the world's leading designers on impressive hotel projects across the globe, from owner-managed boutique residences to luxury hotel, spa and leisure resorts. Recent additions to the long list of hotel projects that have benefited from Powermatic, include Brown's Hotel and The Savoy in London; ARIA resort and casino, Las Vegas; Hilton, Manchester and the exclusive South Lodge hotel and spa in Surrey.

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ROYAL PORTFOLIO HOTEL
CAPE TOWN

South African carving

The transformation of a historic Cape Town grain silo into a contemporary art museum topped with a hotel involved carving out the inside to form an elliptical atrium, and covering the facade with glittering glass pillows. Stephen Cousins reports

When architects Heatherwick Studio were approached to transform a historic grain silo building in Cape Town harbour into a spacious new museum for contemporary art, it was faced with an inflexible industrial concrete structure comprising a densely-packed network of 33 metre-high concrete tubes.

The 42 cylinders, formerly used for storing grain, each had a diameter of just 5.5 metres and were entirely unsuitable for use as functional gallery spaces, or indeed access by humans. The studio's ingenious solution was to devise a form of architectural surgery, slicing into the structure to form a large elliptical central atrium, capped by a glass roof, and a network of 80 other gallery spaces.

The architecture is like a 3D anatomy lesson exposing the different layers inside

Stepan Martinovsky, project leader,
Heatherwick Studio

The exterior of the building would remain largely intact, to pay tribute to the original industrial design, apart from a series of twinkling jewel-like faceted windows that light up at night like a lighthouse.

Stepan Martinovsky, project leader at Heatherwick Studio tells ADF: "Visitors entering the museum will understand in a single glance the cellular structure of the original building, the material it was made





CARVE UP

A new 250 sleeve of structural concrete was cast inside each of the silo tubes to boost their integrity before they were cut

from, and get a view of it that no one has ever seen before. The architecture is like a 3D anatomy lesson exposing the different layers inside.”

An elephant in Cape Town

At 57 metres-tall, the Grain Silo building has dominated the harbour area of Cape Town since it was constructed in 1921, and for a while held the title of the tallest building in sub-Saharan Africa.

One of a network of silos built to process grain and ship it worldwide, the concrete-built block ceased commercial operation in 2001 and has remained empty ever since, despite several attempts to identify an alternative use.

“The Grain Silo was like the elephant in the room, it was so large everyone could see it, yet it was mostly ignored,” says Martinovsky. “When Heatherwick Studio became involved with the project, we recognised the need to do something

cultural with it, such as a gallery or museum, which is the missing piece in the puzzle for the area.”

The lower 10 levels of the block are occupied by the £28m Zeitz Museum, the first museum of such a scale (9,500 m²) dedicated solely to displaying contemporary art from the African continent completed since 2000.

The top six floors of the complex, inside a former grain elevator adjacent to the main block, are occupied by the 28-bedroom Royal Portfolio Hotel. The hotel includes a rooftop bar and restaurant, on the 11th floor, with spectacular 360-degree views of the surroundings, including Table Mountain.

Liz Biden, the hotel’s owner and founder, was the brains behind the design for its interiors and furnishings, which comprise an eclectic mix of fabric, carpets, paintings and furniture, no two rooms are alike.

The rough industrial look of the building

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**ABOVE**

Client Victoria & Alfred Waterfront owns 123 hectares of Cape Town's former docklands

FACING PAGE

The shape of the atrium space is based on a 3D modelled single grain of maize
All images © Iwan Baan

was exploited to create contrast, Biden tells ADF: “I tried to keep as much of the industrial feel of the building as possible, but added luxury comfort and colour to the look. We have some of the old machinery at our entrance and on our sixth floor. Each room has at least one new, one old and one customised piece of furniture in it.”

The design for the refurbished building had to both respect the listed status and create a recognisable landmark synonymous with the city – a key requirement of the client, Victoria & Alfred Waterfront, which owns 123 hectares of the former docklands.

Heatherwick Studio was wary of the modern trend, seen in many towns and cities, of creating iconic ‘trophy’ museums that are highly sculptural on the outside, such as the Guggenheim Museum Bilbao, designed by American architect Frank Gehry.

“Our building was already unique and present in terms of its significant

monumentality, so we chose to exploit that,” says Martinovsky. “We wanted to preserve as much of its soulfulness, richness and uniqueness as possible.”

Excavating a void through the building's innards would create a spectacle to draw in visitors to see the art, considered a challenge in a region that has no established museum-going culture.

Grain exploded

The atrium space is based on the elliptical shape of a single grain of maize that was 3D scanned and scaled up to 27 metres tall. “We liked the idea that all the grain is now gone, but one tiny piece of it is carved out of the building forever to remain there as a reminder,” says Martinovsky.

The void is intersected by glass lifts and a spiral staircase that rise up into the sawn-off cylinders. The floor below is also cut through to reveal the basement, where conveyor belts once shifted grain.



Carving out such a huge amount of concrete from the heart of the building was a tough construction challenge, made trickier by the fact the concrete cylinders were just 180 mm-thick with limited structural strength.

A new 250 mm sleeve of structural concrete had to be cast inside each of the tubes to boost integrity before they were cut into with jack hammers and circular saws. “The labyrinth of 5.5 metre-diameter tubes, only connected together via openings at the bottom, was a very tough space for the builders to work in,” says Martinovsky.

The method of construction made it difficult for the designers to see progress on site, as the final form was only revealed section by section, like a stone sculpture slowly chiselled away by an artist. “The big reveal only came when a large portion of the atrium was cut out and we realised, thank god, this was actually working,” he adds.

Beyond the atrium space, interventions were made into the sides of other tubes to create space for footbridges that provide access to galleries.

A different approach was taken to create the galleries themselves, the museum’s director had specific vision for white rooms with no architectural detail to distract visitors from the art.

As a result, around two thirds of the existing silo tubes were removed, on either side of the atrium, to create space for a series of minimal white cubes that slot into the voids. As visitors walk through the building the cubes can be seen hovering above the ground floor, and they can be viewed from below and from the side.

Glittering pillows

The Silo Building is like an architectural Pandora’s box, its flamboyant sculptural interior concealed behind a largely unadorned concrete facade.

A light-touch approach to the exterior

PROJECT FACTFILE

Client: Victoria & Alfred Waterfront Holdings (Pty)

Location: Cape Town

Completion date: September 2017

Total area: 102,000 ft²

Exhibition space: 65,000 ft²

Designer: Heatherwick Studio

Project manager: Mace

Structural engineer: Arup / Sutherland

M&E / sustainability engineer: Arup / Solution Station



involved simply stripping away a layer of magnolia-coloured waterproof paint, applied in the 80s, and washing the concrete to expose the aggregate.

“After revealing the aggregate, the wall came alive, making it possible to see the different strata, from the time the concrete was poured, and the mix of different sized blue, green and brown stones,” says project leader Martinovsky.

The windows are based on designs for Venetian hand-blown lamps

The top six floors of the building were stripped back to the base grid of concrete columns and beams, which define the layout of the new Royal Portfolio Hotel behind.

Each square opening in the facade is fitted with a curved, multi-faceted glazing panel that bulges outward by one metre, as if gently inflated.

The windows are based on designs for Venetian hand-blown lamps, created by blowing glass through chicken wire mesh to create miniature bubbles. Each acts as a form of structural dome comprising 56 triangular panes of structural glass, the largest opening is around 6 metres tall by 5 metres wide.

Heatherwick Studio worked hard to maximise the number of facets in each panel to create a form that looked as close to curved as possible, without blowing the budget.

The glass is fixed with structural silicon to T-section aluminium extrusions, which are attached to a frame of flat steel bars. A degree of opaqueness and reflectivity was required to reduce heat gain and glare in the searing heat of summer.

“We questioned whether to install a standard curtain wall facade, as this method is not very unique and associated with generic office buildings and towers. This building deserved something special that would be dignified enough for a cultural institution,” Martinovsky comments.

The windows glitter and pick up reflections during the day, and when lit at night, they draw public attention to the building. They now give it a special extra visual presence in the city, which despite its monumental size, it previously lacked. ■

Mapei products for marble installation at prestigious Grosvenor House Hotel

Over 700m² of marble tiling with approximately two miles of brass inlay has been fitted using Mapei's high quality ceramic and preparation products to the foyer and reception areas at the prestigious Grosvenor House Hotel, Mayfair. The refurbishment project took place over nine months.

The subfloor and screed products from Mapei were installed to the flooring after existing tiles were removed from the lobby and reception area, as well as lifts and bathroom areas. Mapei's Topcem screed binder was used as a fast track option before Ultraplan Renovation 3240 screed were used to level the flooring. Prior to tiling, Mapei's waterproofing Primer S was also applied.

Mapei's Mapeutex anti-fracture membrane was installed to ensure the luxury tiles in the lobby area were protected from cracking. Mapeutex is a special non-woven fabric designed to alleviate stresses within the substrate, preserving the integrity of the tiled finish in areas of high pedestrian traffic and less than perfect substrates.

Installers Superior Stone commented: "We are confident users of Mapei's products however, as this was a renovation project we came across many problems from the previous build up being up to 80mm out of level. Movement within the floor whilst fixing tiles also caused some problems but Mapei's



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Technical Team were great at providing assistance on this important project."

Mapei's Keraquick S1 adhesive in both Grey and White shades were used to fix Superior Stone's Crema Marfil tiles with brass inlay to the lobby and reception areas, using Latex Plus adhesive polymer admixture to improve elasticity and vertical slip characteristics.

Muza Lab designed the refurbishment of the historic Grosvenor Hotel's foyer area to revive the rich history of the venue,

enhancing the "sense of place" of the hotel and transforming the public areas into a destination in their own right as traditional English architecture mixes with contemporary twists.

Call or visit the website for more information on how Mapei products for ceramic and marble installations can be used in your project.

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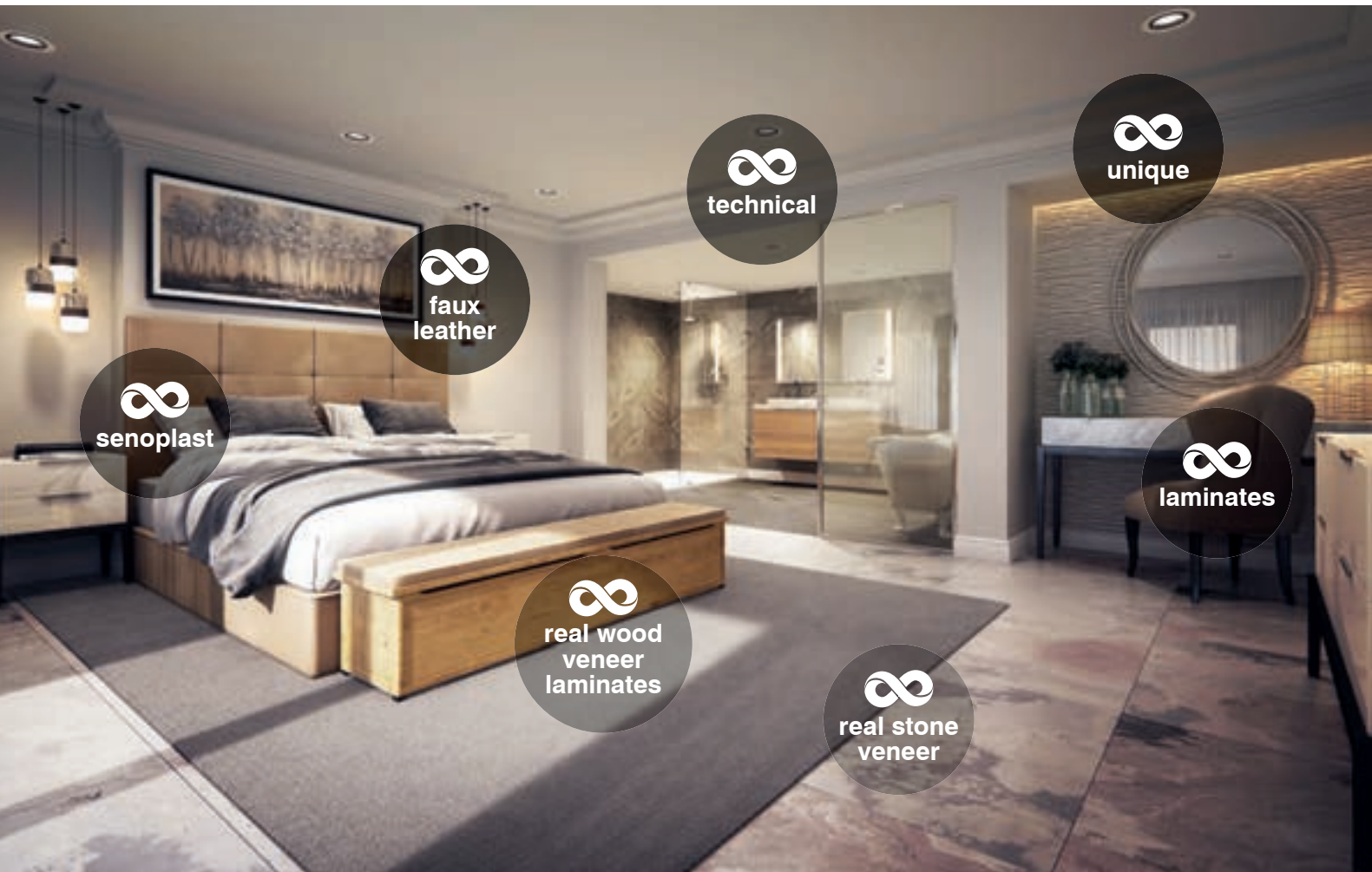


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UK Construction Week promises more than ever

If there's one event that should take priority in the calendar of any built environment professional, it's UK Construction Week. For the third year in a row, UK Construction Week will be held at the Birmingham NEC, and attending this year is more important than ever before

The construction industry has seldom been in the news more – from the aftermath of the Grenfell Tower tragedy, to the uncertainties and potential impacts of the UK's imminent departure from the EU, to the countrywide housing shortage. The chance to influence, share, learn and network at UK Construction Week has never been more important.

Event director Nathan Garnett of Media 10, organisers of the event, said: "The UK's construction industry is more topical than ever. Not only is it at the forefront of political debate and public opinion, it's also clear that we're moving towards a new age of innovation and change, with topics such as off-site construction, modular and BIM driving conversation. This will be our biggest event to date, and we're looking forward to bringing the industry together to debate, learn and do business, as well as showcase a diverse range of products and services."

Nine specialist shows

Running from 10am to 5pm on Tuesday 10th, Wednesday 11th and Thursday 12th October, the multi-award-winning UKCW is trade only, and free to enter. Visitors will benefit from a total of nine shows: The Build Show, Timber Expo, Smart Buildings, Grand Designs Live, Surface Materials, Energy, Plant & Machinery Live, HVAC,

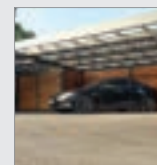


and Civils Expo. More than 650 leading exhibitors, including construction's biggest names, such as Velux, Screwfix, Easy-Trim and more, combine to make this the largest industry event in Britain.

In between exploring the industry's most innovative products and services, visitors can attend an array of debates, seminars and specialist building safety workshops hosted at six hubs and the UKCW main stage. The CPD-certified workshops run on all three exhibition days, but will book up fast, so early registration is advised.

Thought-provoking themes

As you'd hope from a show bringing together the industry's big thinkers, as well as huge diversity of information, the organisers are focusing on several key themes this year.



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Kedel Limited, the North's master of recycled plastic manufacturing, launch their new decking

'KEDECK', during UK Construction Week at The Build Show 10th-12th October 2017 NEC, Birmingham. Walk on this premier quality, stylish recycled plastic product on stand B10/J30 and meet the MD, Dermot Walch and his team. Stand B10/J30.

Offsite construction of course features heavily. It's the future of the how we build, and visitors will find more exhibitors focusing on offsite and modular construction than any other area. This part of the event is supported by the Modular and Portable Building Association (MPBA) and the Structural Timber Association (STA). There's a dedicated offsite award ceremony plus a theatre, with key speakers

focusing on volumetric construction in the residential sector, including Urban Splash chairman Tom Bloxham, Rory Bergin – a partner at Sustainable Futures at HTA, plus insights from industry-leading manufacturer Knauf Insulation.

On the subject of innovation, the Building Research Establishment (BRE) is hosting the BIM Prospects Theatre. Here, experts will offer insights on the skills gap



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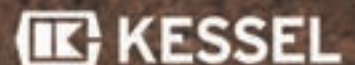
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UKCW STAND C310

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and delivering BIM level 2, and update on the government mandate requiring collaborative 3D BIM.

Building safety should be at the forefront of every construction professional's mind at all times – and UK Construction Week has made safety, quality and fire prevention an absolute priority at this year's event. Free CPD advice will include changes to legislation on safety, guidance on product safety, fire prevention strategies, and your role in the construction process, among others. It's an area where nobody can afford to be complacent, with spaces expected to be filled very quickly by architects, facilities professionals, developers, and local housing authorities and associations.

What else is new?

You'll find a brand new layout and floor plan for this year's show – all the better to showcase an unprecedented number of exhibitors and seminars. UK Construction Week has also introduced the Innovation

Trail to highlight the latest products on the market.

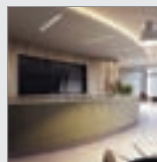
New, specialist awards have been added to the awards ceremonies too, including the Offsite Awards, BIM Awards and several new World Architecture News awards.

Social networking

UK Construction Week makes it easier than ever to share knowledge, meet new contacts and make lasting connections.

In person, visitors and exhibitors are guaranteed entertainment as well as great networking opportunities. The beer and ale festival – a huge hit last year – is open throughout each day and both nights, featuring live music, entertainment, 15 beers and hot food.

UK Construction Week has also arranged special perks in the form of casino nights on the 10th and 11th October at Genting International Casino at Resorts World Birmingham, just a five-minute walk away from the NEC.



A leading manufacturer of laminated panels Decorative Panels Lamination will be exhibiting at the Surface & Materials

Show as part of UK Construction Week. Producing over 300,000 m² of the highest quality laminated products each week, dp-lamination will be showcasing designs from its brand new dp-limitless range, as well as highlights from across the dp-décor and dp-specialist collections. Stand M240.

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Breathing easier with technology



The revolution in indoor climate control and security spearheaded by smart technologies is the subject of a UK Construction Week seminar being given by GEZE UK's head of window technology. The session, which takes place within the Smart Buildings Hub, on 10 October, will look at how smart solutions are used in life-saving buildings such as hospitals and how they can be used to save lives in the event of fire by allowing safe and smoke free escape. It will also address security – eliminating 'windows left open' and the benefits of safe and secure night ventilation.

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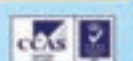
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Bison gets bigger with Forterra, as firm set to double its precast concrete offering

One of the most recognised names in precast concrete, Bison, is now part of Forterra, thanks to a £20m acquisition which sees the company grow as a leading UK precast concrete manufacturer, as it takes on nearly 200 Bison employees.

The Swadlincote-based Bison, founded by Royal Engineers in 1919 and responsible for an array of iconic products, from pillboxes in the Second World War to the terraces of Old Trafford and the new Wembley Stadium, is to continue as Bison Precast, part of Forterra.

The Bison Precast brand will expand to cover Forterra's existing precast concrete facilities at both the Hoveringham and Somercotes sites.

The announcement is the result of the £20m acquisition of Bison's trade and assets by Forterra from multinational construction company Laing O'Rourke. The overall production volume of Bison



Precast under Forterra is to effectively double, making it one of the biggest precast concrete manufacturers in the country, and the largest in terms of precast flooring.

This expansion means the 195 existing staff at Bison in Swadlincote will join forces and share expertise with the 230 staff at Forterra's Somercotes and Hoveringham sites, who specialise in precast concrete solutions for all sectors of the construction industry.

Matthew Clay, Managing Director of Bespoke Products Division [which includes Bison Precast], said; "We are proud to be able to continue and build upon the long, distinguished history of Bison, a true British innovator in precast concrete for almost a century."

Stephen Harrison, Chief Executive of Forterra, said, "The combined manufacturing knowledge, skills and resources of Bison Precast and Forterra makes us bigger, stronger and faster, and reinforces our status as a leading precast manufacturer in the UK."

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Imperial Bricks partners Bebbington



Imperial Bricks has partnered with Bebbington to sell its masonry colour correction products and offer an on-site brick tinting service. The complementary product will be sold in builders' merchants nationwide, as well as directly from Imperial

Bricks' depot. Bebbington, is a masonry colour correction expert, offering a remedial solution for the brick industry. A combination of colourfast inorganic metallic oxides is blended with either potassium silicate or vinyl acetate to form colours designed for weathering, colour correction or, in bespoke applications, lightening of brickwork.

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Imperial Bricks to offer lime mortar



Imperial Bricks has entered a unique partnership with Limetec to create a Heritage hydraulic lime mortar range, available in ready mixed, 25kg dual-branded bags. The complementary product will be sold alongside Imperial's wide range of handmade, wirecut and pressed bricks in builders' merchants across the UK. Bulk bags and larger quantities requiring silos will be supplied directly by Limetec. Seven varieties are available,

including Natural, Bathstone, Cotswold and Traditional London, which is perfectly suited to London Yellow Stock bricks.

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Ash & Lacy are delighted to announce the successful commissioning of our brand new, state-of-the-art, powder coating facility. The new plant represents our commitment to sustained investment in our group process and manufacturing capabilities.

The powder coating line will be instrumental in servicing our Façade and Fabrications products, offering turnaround times that can only be associated with a single source supplier, with a wide spectrum of finishes on offer.

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RCI Show covers the best of roofing, cladding and insulation

National and international exhibitors will be on hand at this key trade event on 1-2 November in Coventry, while seminars and CPDs will raise awareness on current issues in housing

The tragedy at Grenfell Tower was a stark reminder that closer attention to safety needs to be paid when refurbishing high-rise buildings. Material choice, construction methods and fire safety standards have all dominated the discussion in the aftermath of the fatal blaze in June. However, for those working within facilities management and construction, separating the facts from the media speculation is crucial to determine how to best prepare for the future.

With this in mind, one of the major debates at this year's RCI Show, taking place on 1-2 November in Coventry's Ricoh Arena, will focus around fire safety. Industry experts will address questions and concerns regarding the current regulations, and highlight any changes in policy that might be required going forward.

Skills & recruitment

Another major topic that will be explored in depth at the RCI Show is the continuing lack of skilled workers and new entrants in the roofing sector. With an ageing workforce and not enough young workers entering construction, the industry is facing a real challenge to meet the Government's ever-growing housing targets and deliver a strong pipeline of projects in the coming years.

As part of the RCI Show, a panel including MD of manufacturer IKO Andy Williamson, RCI technical note author Keith Roberts, and a representative from the CITB will give their thoughts on how to tackle this problem in a debate chaired by NFRC's CEO James Talman.

CPDs & offsite construction

In addition to this, visitors to the RCI Show 2017 will be able to take advantage of 18

RIBA-approved CPD sessions delivered by leading manufacturers, including RCI Show sponsor Jablite, as well as Knauf Insulation, IKO Permanite, Whitesales, Ash & Lacy, FM Approval, SIG Roofing and Moy Materials.

Visitors will also hear from prominent green roof advocate Dusty Gedge, who is founder of Livingroofs.co.uk and author of the first UK Green Roof Market Report. Mr Gedge will discuss the report's findings and outline his map for the progress of the sector in the coming years.

Elsewhere at the RCI Show, Livia Williams from the National Construction Training Services will host a seminar on 'Developing Modern Methods of Construction in the Roofing Sector'. Williams will outline why she feels modern methods of construction can offer key opportunities in addressing the skills shortage affecting the sector and reduce waste in the industry.

Key professionals & experts

At present, the roofing, cladding and insulation sectors are under more scrutiny than ever before, so the need to source accurate and correct information is now more crucial than ever. With this in mind, the RCI Show 2017 will offer housing providers and facility managers a platform to contact and consult key professionals and experts in order to stay informed with the latest views, products and legislation affecting the market.

Register now for your free tickets to the RCI Show 2017 at www.rcishow.co.uk



The Kiwa BDA stand at the RCI Show will feature information on the rigorous and thorough assessment process leading to the award of BDA Agrément® – Business Development Manager Chris Forshaw and colleagues will be on hand to explain why hundreds of manufacturers, distributors and installers have sought product or installer approval from BDA Agrément® since 2015. Stand number L2.



BEMO has taken advantage of its outstanding roll-forming capabilities to supply the tapered standing seam roof at the Kerry GAA Centre of Excellence. Rolled on site, the stucco embossed panels were produced in one continuous length to avoid the need for end laps, retaining the integrity of the roof system. At lengths of up to 18 metres, the project provides another stunning example of BEMO's market leading technology. Stand number J3.

Four-step solution for penetrating damp



Safeguard Europe, one of the UK's leading specialist in damp-proofing and waterproofing technology – sets out four steps to help architects, builders and other specifiers to deal with both the causes of penetrating damp and the factors which can exacerbate

the problem. The four steps, explained in detail during the seminar Dealing with Penetrating Damp, are: assessing rainwater routes and exacerbating factors; blocking the primary paths for water penetration; controlling the exacerbating factors; and installing back-up in the form of a damp-resistant internal system.

01403 210204 www.safeguardeurope.com

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Vandex BB75 from Safeguard Europe – is a cementitious waterproofing tanking slurry with superb hydrophobic properties, resistant to water and moisture. Developed especially for concrete and masonry, the tough, elasticised coating not only protects structural elements such as foundations, slabs

and below-ground walls from moisture and water ingress; but also provides sealing solutions for reservoirs, tanks and domestic water features. Now available in 12.5kg tubs, each contains enough material for between 2 to 4m², depending on application.

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Klober posts a warning for the RCI show



Klober dry fixing products offer effectively maintenance-free ridges, hips and verges. Universally compatible with any tile or slate manufacturer's products and extensively tested and improved over many years, they will be on view at the RCI show. Marketing Manager Andrew Cross explained. "In the

face of so many dry fixing product introductions over the past five years, the absence of a British Standard has made choice increasingly difficult for contractors. Many aren't supported by testing or technical data, so publication of BS 8612 can't come too soon."

01332 813050 www.klober.co.uk

RCI SHOW STAND E3

Architextural debut at RCI 2017



November 1 and 2, will see Architextural make its debut at RCI 2017, to present a game-changing product, that has been added to its ever-growing range of industry leading materials. Marketing Manager, Lindsay Appleton, and her team, will showcase the

Avery Dennison Facade Film. The product, a premium quality conformable cast self-adhesive film designed to meet the demands of application and exposure on building facades, panels and window frames for restoration, restyling or branding purpose, will be a welcome addition to the roofing, cladding and insulation industry.

www.architextural.co.uk

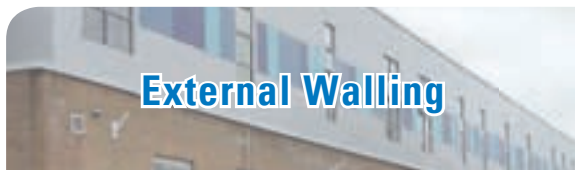
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RCI SHOW STAND H12

Refurb or renew?

When flat roofs fail, the task of stripping, disposing of and replacing it is a costly and time-consuming process. This is particularly true for hospitals. Here, Rod Friel of Wolfin discusses a solution that can save on time, money and disruption



A failed flat roof allows moisture to enter the roofing layers, resulting in a loss of thermal performance and disturbance to building occupants. For hospitals, the integrity of the building is key. If this is lacking, important areas of the hospital, such as the wards, operating theatres and plant rooms could be compromised. A failing roof needs to be rectified promptly.

Clients often make the assumption that the entire roof will need replacing, causing even more disruption, while delaying the repair of any damage inside the building. For vulnerable patients needing around the clock care, the work could cause disruption from an air quality and noise perspective, having a negative impact on

Clients often make the assumption that the entire roof will need replacing, causing more disruption

their wellbeing. Hospitals cannot afford the significant downtime or financial cost.

Time should be taken to undertake a roof condition survey to ascertain if the existing roof layers and structural components have become unstable. If so, a strip and recover should be the chosen method. If a vapour control layer is absent or damaged or if there is fungus, mould or mildew in the roofing layers, the roof must be stripped and disposed of.



However, if the structural components have not become unstable and there is no damage to the vapour control layer, a complete replacement may not be necessary. Instead, a refurbishment product, such as a vapour permeable membrane could be used, saving time and money while mitigating risk to patients.

The roof can be overlaid with the refurbishment membrane. Due to the unique formulation and the black colour of the membrane, the roof layers rapidly heat up under the influence of solar radiation. This causes a high vapour pressure that gradually dries out the trapped moisture by forcing it up and through the vapour permeable membrane. As the roof dries out the thermal properties of the existing insulation are restored.

Savings are made in relation to the reduction in labour time and materials required, as there is no need for stripping back the roof, which eliminates unnecessary waste disposal. In fact, according to an independent cost analysis carried out by Aecom this could reduce costs by as much as 28 per cent compared to solutions requiring the failed roof to be stripped. A solution such as this also makes it possible to

Savings are made in relation to the reduction in labour time and materials required, as there is no need for stripping back the roof

upgrade the roof's thermal performance, as additional insulation can be added prior to the overlay.

From a project management point of view, specifiers can see how the benefits of refurbishing a hospital's roof with a sheet applied waterproofing solution outweighs that of a replacement roof. Not only will time on site be significantly shorter and labour costs be reduced, but the overall cost of the project will be less with a well-refurbished roof compared with a replacement. This helps to keep projects within deadline and budget, but importantly for healthcare buildings this also helps to maintain the care provided to patients.

Rod Friel is the business development manager at Wolfin

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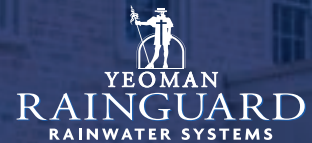
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Story Homes chooses Roofshield



Award winning property developer Story Homes has chosen Roofshield, the unique vapour and air permeable pitched roof underlay as a key product in their strategy for continuous improvement in the quality of build. An important area which Story Homes wanted to improve was the ventilation of their cold roof spaces. Following initial meetings between the A. Proctor Group's technical team, Roofshield was selected. It's high performance air permeability means that the roof space has five times more air changes than using traditional eaves/ridge ventilation.

01250 872261 www.proctorgroup.com

Glasshus supplies structural glazing



The development of a brand new college campus in the North-east has seen a leading fabricator for the Technal brand – part of the Sapa Group – design, manufacture and install a major glazing package, which included a double-storey facade featuring the use of the MX SG structural glazing system. Energy performance was a key issue in the specification of the MX SG screen, involving the selection of special IG units. These featured an argon filled 18mm cavity, with a 12.8mm laminated inner leaf and a 6mm toughened outer: offering a centre pane U-value of 1.1 W/m² K.

01924 232 323 www.technal.com/en/uk

Barn represents a sympathetic synergy



Architect David Nossiter's sensitive conversion of a derelict, yet heritage-listed farm barn building. A sympathetic synergy of the historical and the contemporary, Church Hill Barn offers spacious living in a beautiful rural setting. Glazing Vision's Flushglaze fixed rooflights were instrumental in flooding the grand central atrium of the barn with natural daylight. Inspired by James Turrell's exquisite Skyspaces, David Nossiter specified two Flushglaze fixed rooflights, which were to be installed into the existing roof apertures. To find out more design considerations for your next project, visit www.glazingvision.co.uk/request-cpd.


01379 658 300 www.glazingvision.co.uk

Wraprite exceeds latest fire safety tests



Wraprite, the only self-adhering vapour permeable air barrier certified by the BBA has exceeded the latest fire safety tests applicable to building products used in construction. Wraprite was extensively tested by an independent testing authority and achieved the highest classification for a polypropylene membrane of its type. Wraprite combines the important properties of vapour permeability and airtightness in one self-adhering membrane. Wraprite has received BBA certification for use in both roofs and in walls behind rain screen cladding making it an ideal choice for commercial projects with large uninterrupted facades.

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Let's look at the roofline with Swish

Dave Osborne takes a look at the roofline – the part of a building where the roof structure meets the walls – and where detailing needs careful consideration to ensure the long-term integrity of the building envelope.

The roofline is a tricky area where two expanses of quite different materials meet – the roof tiles and the brick wall. Each does its job well but neither is completely satisfactory in covering this crucial junction.

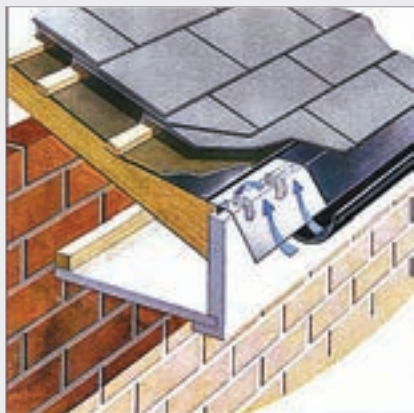
Our island nation is subject to some of the most searching of weather conditions with areas of Wales, Scotland and the Pennines enduring up to 180 inches of rainfall per year, making them some of the wettest areas in Europe. In particularly exposed areas, high rainfall intensity in combination with strong winds will test the integrity of any structure to the very limit.

Consequently, the roof-to-wall union has to be defended rigorously against water and wind ingress whilst at the same time, allowing proper ventilation of the roof void to take place.

But, you may ask; “Why ventilate the roof void at all – why not seal it all up and be done?” A perfectly valid question but the answer is rot.

Protecting against the scourge of rot

Every day, building occupants generate huge amounts of hot air which is laden with water vapour. Baths, kettles, saucepans, boilers, washing machines and even breathing sets off



The preferred method of roof ventilation is a continuous venting unit that sits on top of the fascia board.

Swish Roofline systems - fascias, soffits, bargeboards and ventilation components. All rather good at protecting and ventilating the eaves and roof-space.



clouds of the stuff. And, as we all know, hot air rises. In addition to this, moisture occurs naturally in the air outside and a lot of this damp air finds its way into the roof void.

Now, consider that the average attic is a cold uninviting place that encourages moisture to condense on its vulnerable timber surfaces and you have the perfect micro-world in which mould and rot can take

hold if the air-borne moisture is not kept moving.

Roofline systems, the broad, industry term to describe fascias, soffits, bargeboards and all the associated ventilation components, are rather good at the double trick of protecting the eaves while fully venting them.

Timber was for many years, the preferred material for roofline components but in such

Cellular PVC boarding is the most efficient material for use at the roofline.



a challenging environment, a softwood fascia board is unlikely to survive more than a decade, especially if it doesn't receive regular maintenance including re-painting at least once every three years or so.

Cellular PVC – the material of today

Cellular PVC is probably the most efficient material for use at the roofline because it costs roughly the same as timber to install, requires no maintenance and so suits the exposed and inaccessible location at the eaves. Most importantly, especially from any landlord's point of view, when it is installed correctly it will probably last the lifetime of the dwelling.

As far as roof void ventilation is concerned, the preferred method these days is to use a continuous venting unit that sits on top of the fascia board and supports the roofing felt and the lower row of tiles. This method does away with slots or ugly vent discs set into the soffit board.

On a very practical note, Cellular PVC roofline systems are also good at providing both visual and physical support for the other essential components in rainwater management – guttering and downpipe systems with all the attendant bracketry and fixings.

Co-ordinating finishes

Cellular PVC is an extruded, foamed material with an integral smooth and durable skin. A wide range of colours and foil finishes are available, providing a considerable degree of flexibility in co-ordinating with popular window and door styles as well as coloured rainwater management systems.

Cellular PVC can be cut, drilled, nailed and routed using conventional tools. It is light to handle, easy to fix and does not require any painting or subsequent treatment after installation.

Cellular PVC Roofline products from my own Company, Swish Building Products, also represent an environmentally responsible use of plastics. Not only do they not contain CFCs, lead or cadmium, which are considered harmful to the environment, but the Company itself has also taken huge strides over the last decade in reducing its CO2 footprint and use of water in manufacturing. Cellular PVC also has a very long-life span and when replaced, can be fully recycled.

Complementary Rainwater Systems

Swish also manufactures a complementary range of rainwater management systems –



Swish Cellular PVC is an extruded, foamed material with a smooth and durable skin.

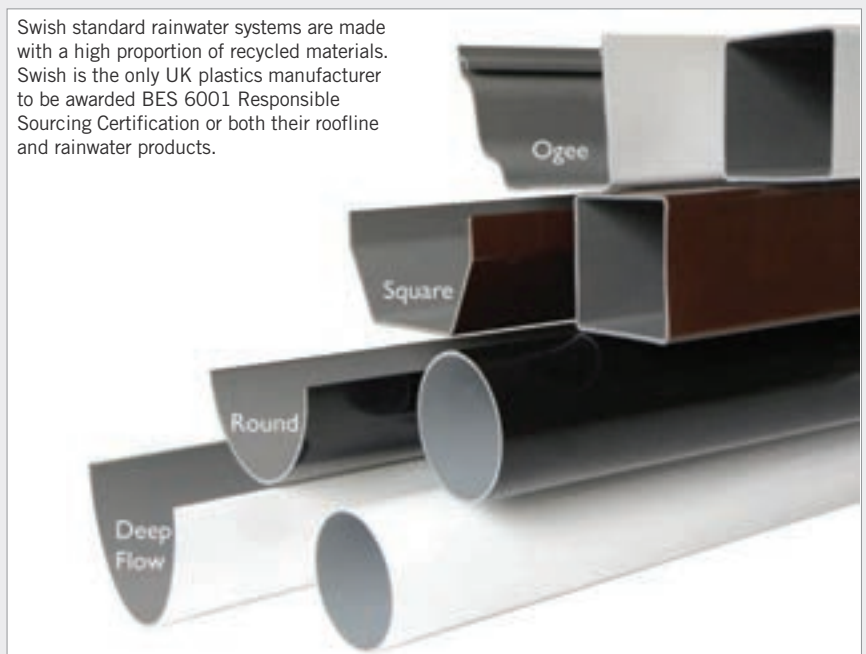
guttering, fall pipes and attendant bracketry – all designed to efficiently collect and dispose of rainwater run-off from building roofs. Swish standard rainwater systems all contain a high proportion of recycled materials and the Company is the only UK plastics manufacturer to be awarded BES 6001 Responsible Sourcing Certification for both their roofline and rainwater products.

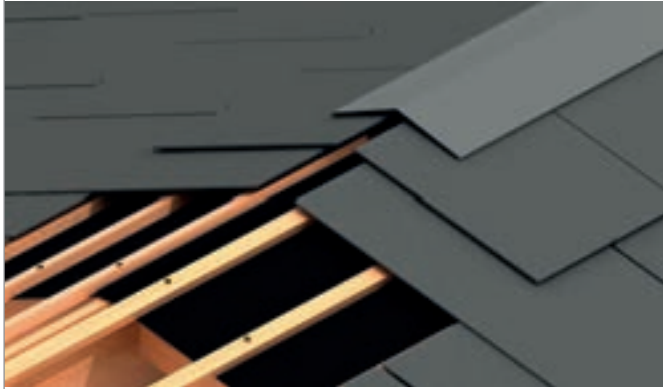
Dave Osborne is Technical Manager for PVC roofline and rainwater systems specialists, Swish Building Products.

For more information on Swish Cellular PVC roof line products, contact Swish Building Products.

01827 317 200 www.swishbp.co.uk

Swish standard rainwater systems are made with a high proportion of recycled materials. Swish is the only UK plastics manufacturer to be awarded BES 6001 Responsible Sourcing Certification or both their roofline and rainwater products.





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Stainless steel roofs for student village



A UGINOX® Patina stainless steel roofing system has been installed throughout the £73m, 649 bed Vita York student village. Situated on the 6.3 acre site of the former closed 'Poor Clare Colettine Order' convent. The stainless steel has been fabricated in traditional standing seam, with the overall project ultimately achieving a BREEAM 'Very Good' status. UGINOX Patina was chosen as its tin coating weathers quickly to take on the appearance of lead, a feature very much in keeping with the desire to develop the site in a sustainable manner.

01246 571660 www.uginox.com

Preserves school's period aesthetic



When the 80-year-old roof of Richard Hale School in Hertford needed replacing it was imperative that new clay tiles matched the existing in appearance. Consequently, the obvious specification choice was Rosemary Clay Craftsman tiles in Victorian from Redland, one of the UK's leading manufacturer and supplier of pitched roof systems. Rosemary clay tiles are an intrinsic element of Britain's vernacular

architectural style. Each Craftsman tile looks like a genuine handmade clay tile because it has a textured surface, an irregular front edge and varying hanging lengths.

01293 666700 www.redland.co.uk/craftsman

Victorian tile leads to Swift sale



When Alan Swift saw the Rosemary Clay Craftsman Victorian tile from Redland his first thought was: "I've got a job for that tile. The colour's perfect." And that job was an upmarket detached house with four double bedrooms in Wigmore, near Gillingham.

The Victorian is the third tile in the Rosemary Clay Craftsman range offered by Redland and has a darker and grittier texture than either of the other two tiles. All three tiles in the range – Victorian, Hawkhurst and Albury – have a weathered look and give traditional roofs a greater depth of texture and character.

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Architects Datafile website



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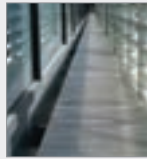


From the company's beginnings in 1928, manufacturing ice cream and chill cabinets, **Hemsec Panel Technologies** has developed one of the most technologically advanced ranges of food safe, fire rated, structural, insulated composite panels for use in internal applications and external envelopes.

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www.hpt-panels.com

Neaco specified at science facility



The University of Liverpool's Materials Innovation Factory, an award-winning new build science research facility, features an extensive specification of **Neaco's** aluminium grille flooring. A unique public/private partnership between the University and Unilever, 11,600sqm building was designed by the Fairhurst Design Group.

Neaco's Techdek walkways provide external maintenance access. Techdek is suitable for a wide range of other applications including balcony and bridge decking, screening, ventilation, cladding and staging. The system is strong, maintenance-free and fireproof.

www.neaco.co.uk

Hueck products selected for £50m Wembley development



Hueck has supplied its aluminium systems for a 699-bedroom student accommodation building overlooking Olympic Way's approach to Wembley Stadium. Unite Olympic Way is a £50m development offering high-quality en-suite and studio rooms in the regenerated area of Wembley, home to the world-famous football stadium and newly built retail outlet centre. The 19-storey tower was developed with a focus on communal areas. There is a shared rec room and study area throughout as well as external roof terraces on the second and seventeenth floors. The building features a traditional concrete frame and a mix of curtain walling and Vitrobond aluminium cladding. Hueck supplied its market leading aluminium (windows and doors) for 600+ dorm rooms and communal areas. The project was completed in August 2016 and officially opened in October of that year. Unite Olympic Way is part of one of the largest regeneration projects in the country. According to the Mayor of London it can accommodate approximately 11,500 new homes and 10,000 new jobs through the development of sites along Wembley High Road and the land around Wembley Stadium.

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Eradicating defects

In an age of construction management and rising compensation claims, it's advisable to engage solid expertise across the supply chain, says Redland's David Patrick

A 2015 survey by the House Builders Federation and the National House Building Council (NHBC) revealed 93 per cent of people report problems to their builders, with 35 per cent of these finding 11 or more issues.

The problem of excessive defects, and how to prevent even more of them occurring if we build more houses each year, was

the subject of investigation by the All Party Parliamentary Group for Excellence in the Built Environment. It published a 44-page report on the matter, 'More Homes, Fewer Complaints', in July 2016.

The report made several recommendations, many of which related to regulation, but it didn't address key issues of modern procurement methods – the practice of



The one thing that always impacts on the number of defects in a new property is the calibre of the site manager present

building houses through various contractors, sub-subcontractors and their suppliers.

Long time coming

We can look back 30 years ago to see the beginnings of this way of working when Sir Stuart Lipton and Peter Rogers were developing Broadgate in London. They came up with a new way of procuring buildings: rather than having a main contractor build everything with a directly-employed workforce, they split the building works up into packages, with the main contractor overseeing lots of specialist contractors.

Changes in contract forms also saw the decline of the Clerk of Works role – traditionally they were employed to look after the client's interest and inspecting the quality of workmanship.

Today it is often the time-pressed site manager who assumes that role. And if you talk to snagging firms – which started to appear in the early 2000s as defects in new houses rose – the one thing that impacts on the number of defects in a new property is the calibre of the site manager.

How bad is it?

The NHBC's annual report for 2015/16 shows that claims incurred fell eight per cent, reflecting a decrease in both net claims paid and the change in provision for claims. Net claims paid fell by seven per cent to £90m (2014/15: £96.5m) primarily due to lower settlement of storm-related claims, while the lower change in the provision for claims reflects the smaller impact of claims from the lower registration years of 2008/10.

Turning to the overall cost of claims, superstructure repairs such as external walls and render remained the most common cause of claims in the year, accounting for 38 per cent of claims reported, and the category of highest cost at £26.5m (2014/15: £32.4m).

In its last annual claims review in 2014, where claims made in years three to 10 of NHBC warranty cover, were dominated by two elements: roofing and superstructure. In 2014, pitched roofing accounted for 60 per cent of all claims.

Meanwhile, over 50 per cent of pitched roofing claims related to problems with mortar. This is an issue, which NHBC has been tackling since 2011 when it reported that 60 per cent of all its claims in 2010 had related to pitched roofs and over half of those were due to mortar. And, this, of course culminated in the most recent revisions of CP 142, now enshrined in BS 5534: 2014, the Code of Practice for Slating and Tiling in the UK.

Although not legally mandatory, compliance with BS 5534: 2014 is considered not only best practice, but also provides the best defence in the event of failures or disputes. The NHBC is vigilant in respect of the standard and, since July 2015, all new housing projects must comply with BS 5534: 2014 to qualify for its 10 year Buildmark Warranty.

Going forward

Sometimes conflicts can occur between different systems of regulation: British Standards, Building Regulations and the NHBC's own standards. What this tells us is that there is no substitute for experience and competency that needs to be demonstrated by those running sites, the specialist contractors installing the various elements, and the suppliers who, if reputable, will have technical experts who are au fait with the plethora of regulations.

The 'More Homes, Fewer Complaints' report made two recommendations around issues of quality and workmanship: that housebuilders should adopt a new quality culture and that the industry should significantly increase skills training programmes.

These are both areas in which suppliers can offer expertise, advice and training. More communication and information flow up and down the supply chain is the only way to banish problems with defects forever.

David Patrick is head of marketing at roof tiles supplier Redland




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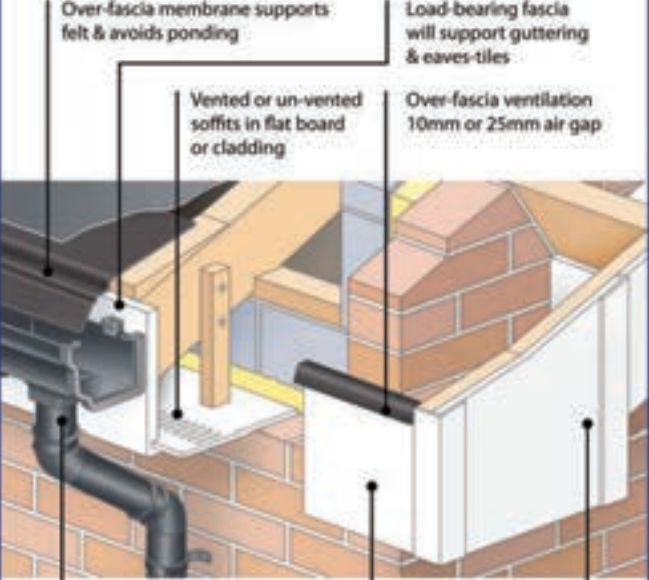
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Steel windows create connected space

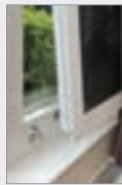


Two large sets of steel windows and doors have created a feeling of space in a kitchen extension to a late 19th-century Victorian terrace house in a Conservation Area close to Tufnell Park in North London.

The screens, from **Steel Window Association** member, Steel Window Service and Supplies, also allowed the new work to blend with the existing interior design and the many original features of the house while ensuring a high level of security. Steel Window Services and Supplies created full working drawings before being commissioned to manufacture the near identical screens.

www.steel-window-association.co.uk

Harrogate hospital turns to Crittall Fendor



Cygnets Hospital Harrogate is a long-established mental health hospital. A recent decision to replace and upgrade the windows led to the specification of specialist units by **Crittall Fendor**, experts in high security fenestration. The CleanVent has been developed as a response to the specific needs of clinicians working in secure mental health hospitals.

It is designed to maintain security while being cleaned and also provides no projection to which a ligature can be fixed, a particular consideration where patients being cared for may have a predilection to self-harm.

01914 170170 www.crittall-fendor.co.uk

Living the high life



Upgrading the manual access system to the iconic Sussex Heights building in the centre of Brighton, **TORMAX** was contracted to install two sets of automatic sliding glass doors, creating a contemporary entrance befitting this prestigious residential tower. Powered by the incredibly reliable **TORMAX iMotion 2202** operator, the doors silently slide open in tandem, allowing residents and their guests smooth access into the lobby, whilst minimising heat loss from the building. In keeping with the upmarket environment of Sussex Heights, the old manual swing doors were replaced with an automatic entrance system more befitting a luxury apartment block. **TORMAX** recommended their **iMotion 2202** operators to power the doors as they are housed in a slim casing, making them particularly unobtrusive and suitable for a sophisticated, minimalist entrance. Vibration absorbent mountings of the guide rails ensures elegantly quiet operation. Understandably security is an important consideration for residents and the new **TORMAX** automatic doors feature an electro-mechanical locking mechanism to ensure a high level of burglary protection. They are also certified for rescue and escape routes.

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Protecting privacy doesn't mean compromising on style or elegance. The Pilkington range of texture glass allows maximum light in, yet keeps interiors discreet with a wide variety of traditional and contemporary patterns suitable for multiple applications. Look out for two new designs coming this Autumn, inspired by latest trends to further enhance a range that offers the optimum blend of form and function.

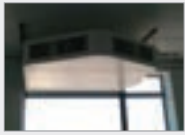
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To find out more, visit
www.pilkington.co.uk/textureglass



PILKINGTON

Solution to learning environment



The new, £20 million, 9450m² New College Doncaster, will have been built from start to finish in just 13 months. It features state-of-the-art ventilation solutions from **Gilberts Blackpool** to create a fresh, conditioned internal environment. The core, standard solution

has been tailored to the specific needs of the project in collaboration with BAM Design and BAM Construction, to deliver, a commercially viable alternative to conventional heating & ventilating strategies. In total, 62 of Gilberts' standard MFS2.56 hybrid ventilation units, each with integrated heat coil, have been installed at the College.

01253 766911 www.gilbertsblackpool.com

Manufacturer on target for record year



Offsite Solutions, one of the UK's leading bathroom pod manufacturer, has secured £30m of orders in the last six months – a record order intake in the history of the business. Offsite Solutions has seen a significant increase in orders and enquiries for residential schemes, particularly mixed-use developments and

in the build-to-rent sector which is performing strongly in urban centres across the UK. For information on products please email Offsite Solutions or visit their website.

info@offsitesolutions.com

Development offers excellent performance



A new development in Orpington, Kent, by award-winning developer London Square, has been fitted with **Kingspan Kooltherm K106 Cavity Board**, helping to achieve external wall U-values of 0.16 W/m²K with a slim construction.

Whilst the external appearance of the new properties reflects the heritage of the site, internally they have been completed to the highest standards in contemporary living. This led to the specification of 4700 m² of Kingspan Kooltherm K106 Cavity Board for the new-build elements of the estate.

01544 387 384 www.kingspaninsulation.co.uk

Westgate revitalized with Kingspan



The premium thermal performance of **Kingspan Kooltherm K106 Cavity Board** has led to it being installed as part of the £440 million redevelopment of Westgate Oxford, a retail and leisure destination in the city centre. Designed by Glenn Howells Architects to reflect the heritage

of the surrounding Oxford architecture, with an articulated brick facade and a focus on long-term robustness, quality and endurance. The rigid insulation board has a thermal conductivity of just 0.018 W/m·K, whilst its water-tight, vapour-open polypropylene fleece outer facing allows it to be installed with a 10mm residual cavity.

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Introducing FlowDisc – ceiling diffuser



Our comfort and productivity is constantly affected by background noise with HVAC equipment often considered the cause. Air Diffusion's newest product, FlowDisc, is an attractive ceiling diffuser, designed to cause as little disturbance as possible.

Its foam insert cushions supply air. The simple functions make FlowDisc the perfect, high-end alternative to a bathroom extract in luxury hotels and chic apartment blocks. It is a fantastic option that satisfies demands for a diffuser that is quiet, easy to install and maintain and that has a clean aesthetic appearance.

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Air Curtains by design



Architects and consultants can now enjoy a freehand with air curtain design thanks to the Zen from JS Air Curtains. Fascia panels can be custom made in many different materials, screen printed to carry logos or images, and manufactured to incorporate elements such as

clocks and LED displays. Materials designers have specified on custom Zen fascias range from stainless steel, wood, PU leather, high impact polystyrene and PET. A "visual installation service", by JS Air Curtains, allows a designer to preview their creations with a realistic digital mock-up of the air curtain in-situ.

sales@jsaircurtains.com

Airflow helps development achieve certification



Heathcott Road, a social housing project in Leicester, has been granted full Passive House status. Comprised of 68 new dwellings, all benefitting from a Mechanical Ventilation with Heat Recovery (MVHR) unit, including DV96 Adroit from Airflow Developments, the site is the largest housing scheme of its

type in Europe to receive the status. Adroit MVHR units incorporate low energy EC fans, a unique triple filter system that prevents airborne pollutants as small as carbon from entering the property, frost protection and an automatic 100 per cent summer bypass facility.

01494 525252 www.airflow.com

BoilerMag introduces 10 Year Warranty



Heating system filter specialist Eclipse Magnetics has increased the warranty on its BoilerMag commercial and industrial boiler filters to 10 years. As a result of BoilerMag's confidence in the high quality full stainless steel construction and outstanding performance of its products,

the new warranty provides installers with high levels of product guarantee. The BoilerMag XL is designed for use in medium sized commercial, retail, or large residential properties, while the BoilerMag XT is perfect for industrial heating systems.

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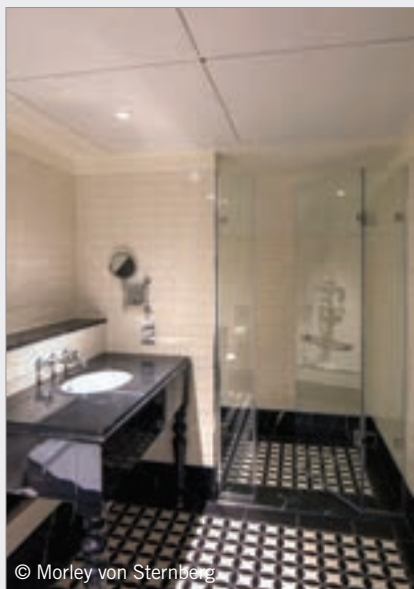
Schlüter Specification Insight: Wetrooms Fit for a Maharaja

We zone in on the complete wetroom solution provided for the Lalit Hotel, London – one of Schlüter-Systems’ grandest projects of 2016/17 and finalist in the ‘Listed Building (Over £5 million)’ category of the AJ Retrofit Awards 2017.

Overview

The conversion project took the historic Grade II listed building previously known as St Olave’s Grammar School, located at Bankside in London, and transformed it into a luxury 70-room boutique hotel that fuses the best of Indian and British culture. Lalit London is the 13th hotel of the Lalit Suri Hospitality Group, and the first based outside of India.

EPR Architects, leading on the project, elected to utilise Schlüter’s complete wetroom system to provide secure waterproofing and appropriate drainage for each of the floor-level showers in the en-suite wetrooms. In each of its wetrooms, Lalit London features Schlüter-Systems’ integrated CE Marked wetroom solution, including Schlüter®-KERDI-LINE drainage system, along with Schlüter®-DITRA-HEAT-E underfloor heating and Schlüter®-JOLLY/-QUADEC wall profiles.



© Morley von Sternberg



© Morley von Sternberg

Insight

Waterproofing is an essential provision for any building that incorporates areas subjected to high levels of moisture; many of the materials available to back tiles are merely water-resistant and therefore require additional finishing processes to prevent the ingress of damp. In order to protect both the tile covering and the fabric of the impressive 19th century building, the walls of the Lalit London wetrooms incorporate the ready-to-tile waterproof foam-cored substrate Schlüter®-KERDI-BOARD, providing even and secure coverage. Schlüter®-JOLLY and -QUADEC, in a polished chrome anodised aluminium finish provide use-appropriate, aesthetically pleasing protection for the small ceramic tiles that were then applied to the walls of Lalit London’s wetrooms.

Schlüter®-KERDI-LINE is a component linear drainage system for the construction of floor-level showers with ceramic tiles and natural stone. It consists of a formed stainless steel channel body with a grate and frame structure that can be seamlessly adjusted to the thickness of the covering, from three to 25 mm. Both horizontal and vertical drain variants were used in the Lalit London

project, complemented by the designer frameless channel cover, Schlüter®-KERDI-LINE-D, which allowed for the subtle blending of drainage provision with the patterned unglazed vitrified tile used for the wetroom floors.

Schlüter®-DITRA-HEAT-E incorporates uncoupling and electric underfloor heating into one solution, which is fully compatible with Schlüter’s wetroom systems and keeps assembly heights to a minimum. This last factor is particularly useful in the case of renovation projects, in which build-up often has to be minimised to ensure flow from room to room.

Use of one manufacturer as the source of your wetroom system results in a solution that is guaranteed to last and easier to specify; with Schlüter-Systems’ assistance, Lalit London’s wetrooms are both beautiful and practical. For more information on how we can help with your tile and stone projects call, email or visit the website.

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Sporting 2 – simple, efficient and versatile

DELABIE's redesigned Sporting 2 shower panel is ideal for schools and leisure centres. Its simple and stylish design withstands intensive use, yet it is easy to install and maintain. Combining simplicity and efficiency, the Sporting shower panel also has impeccable water saving credentials.

Designed for public use

Made from durable aluminium, the Sporting 2 is designed to withstand the intensive use experienced in public showering facilities. Its shock-resistant mechanism has a self-cleaning, hard-wearing hydraulic mechanism with a lifespan of over 500,000 operations.

The panel's streamlined design with reinforced fixings discourages vandalism and renders the mechanism inaccessible to users. The nozzle is also completely flush with the shower head, reducing the risk of self-harm. Although adjustable, it can be locked in place if necessary.

Modularity and minimal servicing

This slimline panel is highly versatile, ideal for both new build and refurbishment

projects. A modular adaptor allows the same panel to connect to a top or back inlet simply by removing the mechanism casing and adjusting the connector's orientation. As a result the Sporting panel is very quick and easy to install.

To simplify servicing, spare parts are standardised to ensure quick and easy replacement. An integrated stopcock allows access to the mechanism and its protective filter without having to remove the panel. Moreover, its spray nozzle and mechanism are made from Hostaform® which reduces the build-up of scale.

Sustainability

In commercial environments, the key to sustainability is to reduce wastage and improve efficiency. The Sporting 2's hydraulic mechanism shuts-off automatically after ~30 seconds, preventing waste through neglect. Efficiency is improved by restricting the flow time to the minimum necessary for wetting and rinsing. A flow rate regulator in the shower head maintains a constant flow rate at six litres/minute whatever the



water pressure. The net effect is significant water savings without compromising efficiency or comfort.

The Sporting shower panel is ideal for public facilities. Its soft-touch mechanism can be used by children, the elderly or people with reduced mobility. For their comfort, the panel is supplied directly with mixed water which can be pre-blended to a safe temperature. Sporting 2 combines simplicity and efficiency, ideal for the leisure sector and commercial environments.

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Seamless autopilot living

With smart home technologies offering seamless control and improved efficiencies, architects need to look at integrating them into buildings, argues Loxone's Omid Nikroo

With every passing year, the number – and complexity of – systems available which are designed to run a modern home increases. Whether it's heating, lighting, automatic blinds or solar photovoltaic systems, they all require a degree of understanding from the homeowner, who will need to control and manage them.

This is where home automation, and its ability to maximise the advantages of technology with the least amount of manual interaction, has a vital role to play. Although smart home technology is a relatively new concept, the market is expanding rapidly and there is great scope for architects to integrate this technology into building design and infrastructure.

Convenient control

The concept of smart homes may conjure up thoughts about smart thermostats, voice-controlled speakers, or fridges that can compile your shopping list. However, while these solutions can provide greater control over the systems within a home, their advantages can be marred somewhat by issues with compatibility, integration and convenience. After all, the novelty of being able to control the lighting with an app soon wears off, as it doesn't bring any tangible benefits without some manual effort being applied.

Convenient control is a significant factor when it comes to smart home technology: according to the 2014 report 'Connected Homes' by Honeywell, almost half (47 per cent) of homeowners surveyed would rather control everything from a single app than use multiple apps. Therefore, for the idea of smart homes to thrive, architects need to consider how the building operates as a whole rather than taking a piecemeal approach to automation.

An alternative to Internet of Things products is an 'ecosystem' solution: a whole-home automation system designed to run a home automatically and efficiently. Typically centrally managed, these integrated solutions have a central logic





ON AUTOPILOT

The advantage of an automation system is that it enables the home to run 'on autopilot' by adjusting to the environment around the occupant

controller (or 'brain') that runs all elements and ensures that systems such as heating and cooling work in tandem rather than against each other.

Benefits of whole-home automation

The resounding advantage of an automation system is that it enables the home to 'run on autopilot' by adjusting to the environment around the occupant.

The result isn't just harsh mechanical changes, but gentle shifts in the ambiance within the home to ensure comfort and efficiency. For example, if the occupant were to open a window while the heating was on, the system would automatically turn the heating down in order to save energy. Similarly, if the occupant were to leave a room without turning the lights off, the system would automatically switch them off.

This level of automation offers increased energy efficiency and subsequently, reduced utility bills. In addition, complete home automation can save time and provide peace of mind to the occupants, removing the little annoyances from their lives and leaving them more time for actually living.

While technology has the power to boost a building's operational efficiencies, it can also enhance its design. Smart lighting, for example, can be used to highlight furniture or certain internal structures within the home, or to create lighting 'scenes' for different moods.

Furthermore, smart technology can offer more practical benefits, such as the option to switch off lighting, lower the heating, or arm the burglar alarm – all at the touch of a button.

In addition, smart technology is useful for homes that integrate renewable energy sources, such as PV systems. It can channel any excess self-produced energy to power running appliances or to charge electric vehicles. Likewise, devices and appliances left on standby can be switched off automatically, further reducing a home's carbon footprint.

Those looking to enhance their knowledge of smart home technology may wish to attend the RIBA Core Curriculum CPD 'Creating Truly Smart Homes' – and visit the Loxone website.

Omid Nikroo is key accounts director at Loxone UK

tp24's showroom is an' LED delight'



tp24, recently invited their customers and local MP Steve Barclay, to join them for a celebratory buffet lunch to celebrate the re-launch of their Showroom at their headquarters in Cambridgeshire. The 2,000 sq ft Showroom displays the complete tp24 LED lighting range, plus

three 'light experience' rooms, each with their own energy monitor, enabling tp24 customers to view the products and receive expert advice on the benefits to be enjoyed by choosing LED lighting over incandescent and halogen light.

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Polyflor brings a fresh look

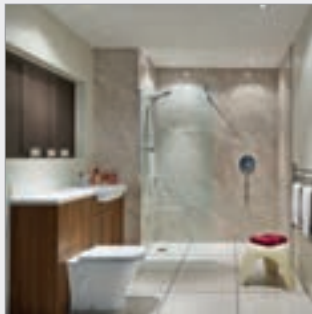


A variety of commercial vinyl floorcoverings from UK manufacturer Polyflor were recently selected refurbishment project at Campus Centre, De Montfort University in Leicester. High performance Expona Design luxury vinyl tiles in Cool Grey Concrete were used throughout

the student union building in circulation areas, corridors and staircases. Featuring 28 stunning wood, stone and abstract effects. Wood effect Affinity255 heavy commercial luxury vinyl tiles in the Seasoned Grey Oak, Cracked White Oak and Dappled Oak designs were also used as a contrast to the concrete effect flooring for Milly Lane's café.

0161 767 1111 www.polyflor.com

Bushboard to exhibit Nuance at Sleep 2017



Bushboard will be at this year's hotel design event SLEEP (Stand DG6) to showcase its outstanding Nuance bathroom wall panelling. Bushboard, now part of the Wilsonart Group, and one of the UK's leading producers of laminate worksurfaces is exhibiting at the London Design Centre at SLEEP. Jo Gilhooly, marketing director for Bushboard explained "SLEEP has gathered pace over the last few years and is now the must-go-to-show for specification and inspiration in hotels and the hospitality sector. It's the ideal platform for us to showcase NUANCE a compelling range of bathroom panelling products. Our aim is to change attitudes to what is an unquestionable alternative to tiling with a product that offers stunning design advantages and real savings on installation time, money, and ongoing maintenance." Nuance panels are manufactured using a patented core that is 100 per cent impervious to water so there is never any danger of warping, peeling or leaking. The panels can be used for walls, around the bath or basin, inside a shower enclosure or to create a true wet room. Because there is no need for trims or extrusions, Nuance panels present a sleek, seam free look.

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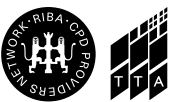
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HeartFelt from Amsterdam



The recently completed restaurant and cafeteria area of the Amstelgebouw office building in Amsterdam Holland, features an acoustic ceiling using Hunter Douglas Architectural's HeartFelt modular felt ceiling system.

HeartFelt is the latest addition to the Hunter Douglas range of ceiling and wall finish applications. It is a modular felt ceiling system that provides the designer with the ability to specify a unique finish to a ceiling or wall whilst still delivering incredible acoustic performance. Available in five different shades of grey, HeartFelt is 100 per cent recyclable and is dirt and dust resistant.

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The power of Crown Trade Clean Extreme has seen the product gain a new style billing, focused on its stain removing powers. The product is 100 per cent more stain resistant than standard matt vinyl emulsion paint – and can be scrubbed up to 10,000 times. Available in Scrubbable

Matt and Durable Acrylic Eggshell Crown Trade Clean Extreme comes with an ISO 11998 Class 1 scrub rating and is geared up to cope with stringent cleaning regimes, ultimately reducing the need for costly redecoration by minimising wear and tear.

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The new Rub Rail from Yeoman Shield

Yeoman Shield has added a new rail to its impressive 30+ range of wall and door protection systems. The new Yeoman Shield Rub Rail may be small on size at just 65mm deep and with a 32mm projection, but it certainly is big on protection! Gaining its strength from a continuous PVCu backing track, the rail is supplied in 3.5m lengths which can be easily cut to size on site. It is an easy to handle, lightweight yet durable, protection rail which is perfect for fitting on doors and walls in warehouses, service corridors or busy congregational areas. The substantial protection properties are also enhanced with the addition of hard wearing stop ends and corner accessories, supplied as standard, in injection moulded EPDM rubber. Available in the full range of Yeoman Shield 48 strong colour palette, the Rub Rail proves to be an extremely versatile solution to preventing unsightly and expensive to repair damage to wall & doors.

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New Quantum Pro-Tread takes staircase safety to a higher level



Quantum has built a great reputation as one of the UK's leading flooring solution specialists, providing a consistently high standard of technical excellence for more than 50 years. Their stair nosings have been specified in thousands of installations making them one of the nation's most trusted brands – and now they're announcing an exciting new product launch which is set to create a new benchmark for pedestrian safety: Quantum Pro-Tread. The result of extensive research, development and independent laboratory testing, new Quantum Pro-Tread offers a higher degree of traction than ever before. The PVC tread material utilises mineral aggregate technology to increase surface roughness, but not only on the top layer – the active ingredient is embedded throughout the entire depth of Quantum Pro-Tread meaning optimum traction is assured, year in, year out. Pro-Tread's excellent Pendulum Test Value (PTV) in wet or dry conditions offers substantive proof of its superior performance, providing the surest footing possible for staircase users in one of the highest risk areas that pedestrians will ever encounter in offices, schools, hospitals, retail outlets and leisure centres.

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Two great new preparations products from BAL



BAL tiling solutions have expanded their portfolio with two new preparation products to provide fixers, contractors and specifiers with strong and protected backgrounds for fail-safe tiling. For the first time ever, BAL have introduced a new lightweight tile backer board for all internal environments. BAL Board is a moisture and water-resistant alternative to plasterboard and timber and helps tilers tackle problem walls and floors when fixing tiles. Easy to cut and install, it provides a solid base for tiling. BAL is also introducing to its line-up BAL DPM – a new multi-purpose damp proof membrane, waterproofer and primer for use on walls and floors. BAL DPM is suitable for use on screeds with up to 98 per cent RH readings (Hygrometer), or up to 87 per cent RH on anhydrite screeds (or as per the screed manufacturers recommendations). BAL DPM provides a great defence against damp, moisture vapour and chemical attack. BAL Board stands out from the scrum by being 15-35 per cent lighter per m² than similar cement-based products. No specialist cutting tools, fixings or screws are required for installations.

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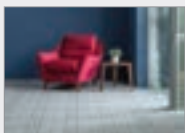
01376 520061







danfloor's new Evolution Collection



danfloor Uk Ltd will be presenting their brand-new Evolution Collection alongside the recently launched Equinox Evolve, at the Care and Dementia Show Birmingham. Evolution is a stunning new collection of patterned carpets consisting of six new designs; aptly entitled Origin, Glaze, Manhattan, Forest, Geo Form and Scape. Manufactured using new innovative tufting technology and incorporating Aquafil's Econyl 100 per cent regenerated nylon yarn, The Evolution Collection not only has outstanding performance features but also has a strong environmental focus.

sales@danfloor.co.uk

Altro solution brings life to design-led



A complete floors and walls solution from Altro has been used to create a relaxing, stylish and home from home environment for mums-to-be in a new birth centre at Hull Women and Children's Hospital. Altro Whiterock Satins is a versatile and sophisticated hygienic walls system available in a range of solid, decorative, satin shades – from soothing and healing through to bright and energetic. It provides all the impact resistance

and hygiene you would expect from Altro Whiterock, with a stain-resistant, wipe-clean surface.

01462 480480 www.altro.co.uk

Polyflor donates flooring to Salford Institute

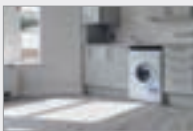


Polysafe safety flooring was recently donated by Polyflor to the new Salford Institute for Dementia Hub at the University of Salford. Polyflor donated Polysafe Wood fx PUR safety flooring in the Oiled Oak shade.

Polyflor has forged a close relationship with the Salford Institute for Dementia to better understand the needs of care homes and other healthcare facilities. Polysafe Wood fx PUR offers sustainable wet slip resistance, achieving 36+ on the Pendulum Wet Test with full conformance to HSE Guidelines and the particle based safety flooring standard EN 13845.

0161 767 1111 www.polyflor.com

Polyflor helps create modern apartments



Luxury vinyl sheet flooring and Polysafe safety flooring from Polyflor, was recently installed throughout apartments on the Belle View social housing development, Stow Park Avenue, Newport. Approximately 1400m² of Designatex PUR sheet vinyl flooring,

Polysafe Wood fx PUR and Polysafe Arena PUR safety flooring was installed during the interior fit out phase by Evabuild Interiors Ltd. The Platinum Oak grey wood effect design from Polyflor's Designatex collection of luxury vinyl sheet flooring was used throughout bedroom, living room and kitchen areas in each apartment.

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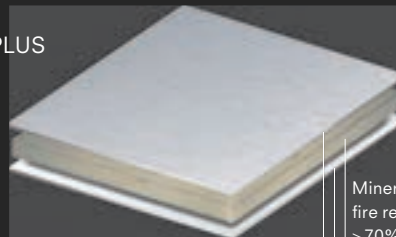
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Seal the voids, stop the fires

Chris Hall of Siderise highlights the critical importance of fire stops in tall buildings and the considerations that specifiers need to bear in mind

As tall buildings are set to continue to play a significant role in meeting our housing and workspace needs, it's more vital than ever that they benefit from adequate passive fire protection.

Smoke generated by fires in high-rise buildings can spread vertically throughout the building, even if the fire itself is contained within one unit.

When the linear gap at perimeter edge between the floor and curtain wall is not properly sealed, flames and smoke can spread vertically to higher floors and horizontally to adjacent spaces. To avoid that, it is essential to properly install fire stops to maintain the compartmentation of the building.

Perimeter barrier firestops seal the gap between the edge of the compartment floor slab and the external curtain wall. Due to project designs and site tolerances, the size of this linear gap can vary, so the fire stop system needs to have a degree of dynamic movement capability – compression and recovery – in order to accommodate serviceability movement, and more significant movement under fire load. In addition, the fire stop system must match the period of fire resistance of the compartment floor.

Integrity & insulation

All firestop systems need to be tested to two performance criteria – integrity and insulation. Integrity refers to the ability of the system to prevent the passage of flame, smoke and combustible gases through and around the material or through joints in an assembly. Insulation refers to a measure of the increase in conducted heat transferred from exposed to unexposed surfaces of 180°C rises above ambient.

These two criteria are critical in the development of curtain wall perimeter firestop products. The most effective products combine a number of material features – density, thickness, resin content, fibre structure and controlled compression – which together determine the resistance properties.

When looking at the 'integrity' criteria, the

material chosen must be impervious to the transfer of flame and gases, easy to install with minimal site management and accommodate all real-world requirements at interfaces, joints and details.

In order to meet the fire and smoke stop requirements in all external facade applications, Certifier Approved perimeter barrier and fire stop systems offer a combination of performance, practical installation and service benefits. These systems offer fire rating options ranging from 30 minutes to five hours and accommodate void widths up to 1,200 mm. In addition to providing an effective seal against the passage of smoke and fire, the products can also form an acoustic barrier and plenum lining.

Key design considerations

Before specifying a fire stop, test evidence, demonstrating the product is capable of accommodating movement of a facade, needs to be examined. It is imperative that the installed seal is able to function effectively with due regard to all designed movement serviceability limits – curtain walling and cladding facade systems will deflect due to positive and negative wind loads as well as occupational live loads. The criteria are covered by EN 13116:2001.

Typically, a project may stipulate that the curtain walling system may have the following allowable deflection limits: under the declared wind loads the maximum frontal deflection of the curtain walling's framing members shall not exceed $L/200$ or 15 mm when measured between the points of support or anchorage to the building's structure – in compliance with EN 13116. These factors may inevitably combine to preclude the suitability and therefore use of certain systems, such as high-density material slab products.

Installation

Perimeter barriers must be installed to provide horizontal compartmentation on each level, while vertical cavity barriers should be provided as a minimum to fall in line with any compartment wall and more



STANDING TALL

Adequate compartmentation is a must in tall buildings (shown: Al Fattan Crystal Towers, Dubai)

In addition to stopping the passage of smoke and fire, fire stops can function as an acoustic barrier

frequently if dictated by the fire strategy of the building. Fire stops should be fitted tightly around all bracketry to restrict the passage of smoke.

Where there is potential for gaps, the product must be sealed with a sealant that carries the same fire insulation and integrity rating as the perimeter barrier. All installations should be carried out in accordance with manufacturers' instructions; where fixing brackets are required, these should be fitted and spaced in accordance with a certified fire test report.

Products used for fire safety installation should carry a third-party certification in order to ensure that the product supplied is the same as that tested. In addition, any products used to improve the acoustic performance must not contribute to the fire load or inhibit the performance of the perimeter barrier.

A high-profile project

The recently-completed Al Fattan Crystal Towers in Dubai, UAE, had to adhere to

vertical and horizontal compartmentation requirements, the specification of Siderise CW-FS 120 firestops provided the contractor Cladtech with a comprehensive solution that could maintain a fire and smoke seal in one product and could successfully fill linear gaps at the podium levels in excess of 300 mm.

For the Crystal Towers project, Cladtech installed 12,000 linear metres of the fire stops, including horizontal (floor slab) and vertical compartmentation. With the timeline on the project being absolutely critical, the use of this dry fix system enabled the work to be completed quickly and efficiently, ready for handover to subcontractors.

While specifying the correct product is vital, the quality of installation is equally as important, as a well-designed and installed system can mean the difference between life and death.

Chris Hall is commercial development officer of Siderise

Impressive development chooses SE Controls

One of Manchester's latest high rise residential developments, Cambridge Street, is using smoke control systems from SE Controls to provide a safe environment for residents, by ensuring escape routes are kept clear of smoke in the event of a fire.

Designed by Hodder & Partners and constructed by developer-contractor, Renaker Build Ltd, the new building stands on a previously derelict 0.35 hectare site and now provides 282 private rental apartments

With such a large number of apartments at Cambridge Street, fire safety is an essential consideration of the building's design with the smoke control system being an integral part of the solution.

Each tower has its own escape staircase at the centre of the structure, which is protected by SE Controls smoke ventilation and control systems. These systems are code compliant to Building Regulations Approved Document B, as the travel distance

from each apartment is less than 7.5 metres.

Every floor of each tower is fitted with an automatically opening smoke vent door, leading to a dedicated smoke shaft, which includes a SHEVTEC automatically opening louvre at roof level. This allows smoke and hot air to be vented and ensures corridors and escape routes are kept clear. On the top floor of each block, an additional corridor roof vent is also incorporated as part of the design, which is controlled by a dedicated SHEVTEC control panel.

The smoke vent doors use SE Controls actuators, which are compliant with BS EN 12101, and these are controlled by a series of OSLoop controllers that provide instant response in the event of a fire to ensure the appropriate doors are opened, allowing smoke to escape.

Cambridge Street, is also installed with SECloudlink™, a remote services solution from SE Controls that uses 4G communications technology to constantly provide system



status information, allowing data to be displayed remotely to enable facilities and building managers to monitor the building's smoke control system.

01543 44 30 60 www.secontrols.com

A gleaming defence against vehicles



A new station serving a high-profile business and residential development in Leeds has invested in three stylish brushed security planters to stop vehicles being driven onto the tracks. Security products suppliers Securiscape installed them close to the line outside Kirkstall Forge railway station to protect passengers and trains. The surface-mounted products meet the rigorous requirements of the PAS68 standard which governs so-called hostile vehicle mitigation devices and can stop a 7.5 tonne truck travelling at 40mph dead.

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coating that is giving both 30 & 60 minutes fire protection to timber according to thickness & type of timber or timber related products. These products can upgrade old panelled doors to fire doors. Can be coated over existing paints or varnish. These coatings can also be used externally such as stable, sheds & facing timbers.

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Smoke ventilation systems

Fire Design Solutions (FDS) has been appointed to supply and install its smoke ventilation systems in Nine Elms' Embassy Gardens development, which received significant media attention thanks to its 'Sky Pool' which spans between two of the buildings. FDS was brought on to the project by M&E contractor Cilantro Engineering, and will install and commission mechanical smoke ventilation systems in three of the block's cores. The system was designed in line with the building's fire strategy, as well as the results of Computational Fluid Dynamics (CFD) modelling, which allows the movement of smoke to be simulated to demonstrate the effectiveness of ventilation systems. Due to their greater efficiency over 'natural' smoke ventilation systems, the mechanical systems being installed require far smaller ventilation shafts providing additional space within the property.

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Nittan launches 'elite' programme



Nittan Europe, a UK manufacturer of conventional and addressable fire detection products sold globally, has launched the Nittan Elite Partner and Nittan Elite Distributor programme. The programmes have been developed to acknowledge and reward a select group of installation partners and product distributors that have shown commitment to promoting the Nittan brand and have undertaken product training to a high level in order to ensure the uppermost standards of customer service.

sales@nittan.co.uk

What's blocking your Fire Exits?



Electronic security manufacturer Hoyles have developed a clever way to ensure fire exit doors are regularly checked. The Fire Door Checker has the unique facility to alert staff to Open-Check-Close as soon as the building is occupied. This is done by causing each Exitguard to give out an intermittent sound whilst strobing. Only when the fire doors have been verified will the Exitguard sounder and strobe stop. This ensures the door is available for emergency use, after which it resumes its normal security monitoring role.

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ADF OCTOBER 2017

Protect and survive, in style

Increasingly prevalent perimeter security systems need careful integration into the urban realm to ensure they're not overly obtrusive, says Jonathan Goss of Townscape Products



The spate of terrorist vehicle attacks across Europe in recent years has highlighted the vital importance of integrating perimeter security measures into urban spaces. Beyond improving safety, architects face the task of striking a balance between achieving effective counter-terror security and preserving the appearance of the urban environment.

While an increased police presence can provide a degree of reassurance to the public, fixed-ground perimeter security has an essential – and more resilient – role to play in robust uninterrupted protection. However, physical security can appear obtrusive to the general public and create a feeling of restriction, which can detract from the architectural appeal of new projects and regenerations. Resolving this issue effectively undoubtedly presents

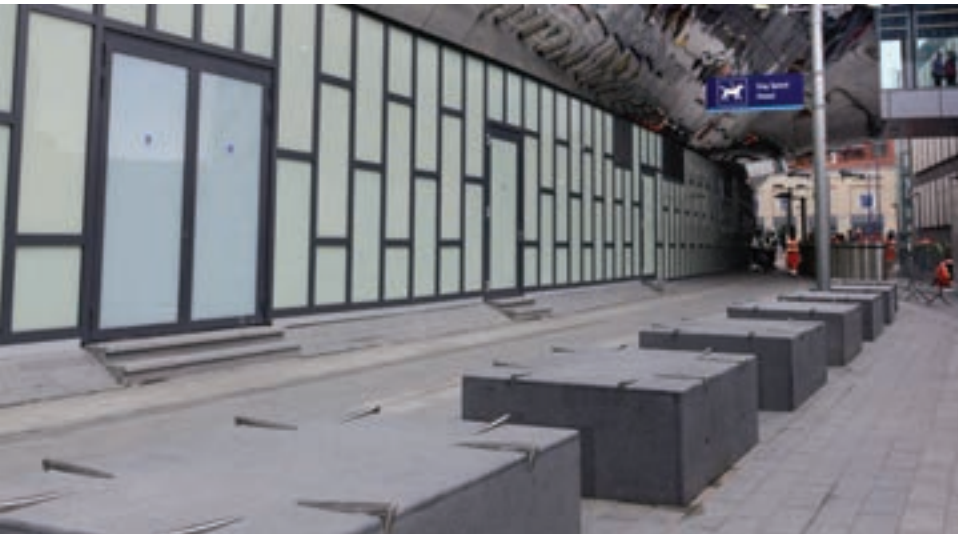
a big challenge for specification and procurement professionals.

Function & aesthetics

Hostile Vehicle Mitigation (HVM) is a strategically-designed perimeter security installation, comprising physical barriers such as concrete blocks, bollards, and planters, to prevent vehicles from harming people or property.

Reassuringly for architects, security solutions can be designed to maintain the required level of protection without affecting the appearance of architecture. This can be achieved by specifying products that combine function and aesthetics, such as counter-terror blocks with wooden seating tops; counter-terror planters that brighten up the surroundings, and PAS 68 bollards that look like

Fixed-ground perimeter security has an essential role to play in providing robust, uninterrupted protection



PROTECTION

HVM installations can immobilise a 7.5 tonne vehicle

standard bollards to the untrained eye.

Specifying a mix of products will provide visual relief in the vicinity of your project, while providing strong and effective security as part of an HVM system. These systems work to deter the type of vehicle-bound assaults that have come to be associated with terrorist atrocities and pose a significant threat to buildings and crowded places.

Protection in practice

A popular HVM product is the counter terror (CT) block, a reinforced PAS 68 concrete installation that can immobilise a 7.5 tonne vehicle. Each CT block weighs 2.2 tonnes and only needs to be recessed 100 mm below ground, making this an ideal solution for buildings and places

which are in central locations.

In addition, the shallow depth of CT blocks' foundations means that utilities don't need to be disturbed and the system can be installed around buildings with little disruption. Bollards and other counter-terror products can be designed to tie into the surrounding architectural design of a building and ensure the street scene maintains a balanced mix of HVM installations.

Perimeter security can be multi-purpose: on recent projects for example, counter-terror blocks have been utilised as seating or landscaping. The counter-terror block can be timber or granite-clad to create planters or have seating and lighting elements added.

20 Fenchurch Street

A prime example of a multi-purpose HVM system driven by architectural aspirations is the one installed at the base of the Rafael Viñoly-designed 20 Fenchurch Street (the 'Walkie Talkie') in the City of London. Street furniture supplier Townscape was appointed by engineering consultants QCIC to consult, install and manufacture a HVM system that could provide robust protection to the building while also creating a high-quality multi-purpose urban landscape around the base of the skyscraper.

In response, the company developed and installed six granite-laden PAS 68 counter terror blocks with LED spotlighting to create an effective security solution that complemented the surrounding architecture.

Situated at the base of the building, this HVM system provides 20 Fenchurch Street with a robust deterrent to vehicle-borne attacks while fulfilling the multi-purpose function brief by offering seating in the plaza and enhancing the area's aesthetics.

A safe future

Whether working on a new city centre development or upgrading perimeter protection of an existing property, integrated perimeter protection is set to remain a key consideration in future building design.

By subtly blending security measures into the urban landscape, architects can create a safe environment with a robust security system.

Jonathan Goss is the managing director of Townscape Products

Polypipe in the driving seat for major highways project

Polypipe has supplied some of its most innovative sustainable drainage and cable protection solutions as part of a multi-million-pound project to keep one of England's busiest road junctions moving.

Main contractor, Galliford Try, specified a fully engineered water management attenuation tank consisting of Polypipe's Polystorm-R and Polystorm Inspect, Ridgidrain surface water drainage system, Ridgistorm-XL large diameter piping system and Ridgiduct cable protection, for construction of the new underpass and additional vehicle lanes at the A45/A46 Tollbar End Junction on the outskirts of Coventry.

Having successfully used Polypipe's plastic piping systems for previous large scale projects, Galliford Try tasked Polypipe with providing a holistic solution that would meet the demands of the client Highways England, whilst ensuring quicker, safer and easier installation for contracting teams working by

the busy highway.

Polypipe's Ridgidrain, and its Ridgistorm-XL large diameter piping system were utilised to channel the stormwater run-off away from the roadway towards the Polystorm attenuation tank. This then provided a geocellular solution, upgrading the surface water drainage capabilities for the highway.

Polypipe worked with Galliford Try and their designer Arcadis to redesign the solution by removing the specified gabion baskets which were originally to be constructed by hand into a rectangular trough. The gabion baskets would have posed health and safety risks during both installation and post-installation.

Polypipe produced a safer alternative which included a 900mm RIDGISTORMSeparate modular manifold which linked into the Polystorm-R attenuation tank, to include seven sumps for filtration. The manifold system is connected at various points to the tank, which allowed for



better hydraulic distribution of storm water into the system. Polystorm Inspect were also installed along the full length of the tank to allow for inspection and maintenance activities, which can be accessed via the RIDGISTORMSeparate chambers within the manifold.

The Polystorm-R geocellular tank, manufactured from recycled material, was designed in accordance with CIRIA C680 guidelines, meets the Specification for Highway Works criteria and is capable of attenuating 3,138m³ of stormwater. Installed by Keytec Geomembranes Ltd, the tank was wrapped in geomembrane to make the tank water tight.

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Jeckells sets pupils in the shade



Jeckells' the Sailmakers has installed three tensioned canopies over outside learning areas at Icknield School in Letchworth. Working closely with architects, Wilby & Burnett, Jeckells fabricated the canopies, sourced the stainless steel posts with red post bumpers and organised full installation to fit in with the school's demanding schedule. Ferrari Soltis 86 premium mesh material was used due to its strength and durability. In recent years Jeckells has built up a reputation for the design and manufacture of quality shade sails with an almost unlimited degree of versatility in design, colour and materials.

www.jeckells.co.uk

Charcon segregate traffic from cyclists



Charcon's range of cycleway segregation solutions is already proving successful in London, on the Cycle Superhighway 2 (CS2), as well as Cambridge, Oxford, Bristol and Nottingham. The unique City Cycle Kerb segregates cyclists from traffic and features a half batter along the carriageway to withstand vehicular impact and a splay along the cycle lane to reduce the chance of catching a pedal. Eco Countryside™ Cycle Kerb replicates natural granite whilst containing 82 per cent recycled and reclaimed material. The angled profile provides both a visual and tactile division between the carriageway and cycle lane.

www.charcon.com

Anniversary of Resiblock at Port of Tyne

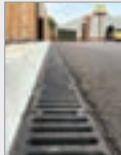


August 2017, saw the 15th anniversary of the installation of Resiblock, and more specifically the 'Legendary' Resiblock '22' sealer for Concrete Block Paving (CBP), at Port of Tyne in South Shields. Phase 3 at the Tyne Dock consisted of

15,904sqm of CBP, and resident engineer at the time David Profit was keen to ensure the reduction of high level maintenance. Resiblock's success at the 465,000sqm Port of Salalah was a key factor in Resiblock '22' being specified. 15 years on and the Port of Tyne paving is still stabilised due to the strength and durability of Resiblock '22'.

custserv@resiblock.com

Filcoten installed at McDonald's



Filcoten, Gatic's lightweight channel drainage system, has been installed at the new McDonald's restaurant in Tonbridge. Filcoten® is manufactured from a breakthrough High Performance Concrete (HPC) that is setting new standards in flexural and compressive strength, and in the long-term performance of channel drainage. Its flexural strength is approximately double that of conventional HPC, which means fewer breakages in transit, in stock, and installation, and a considerably longer, trouble-free operational life. Filcoten is 100 per cent recyclable and is the only drainage channel to be made with renewable energy.

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High capacity channel system drains car park at McArthur Glen, Designer Outlets

McArthur Glen, the leasing, management and marketing company has twenty one Designer Outlets in eight countries across Europe and is still expanding its business. The new Designer Outlets indoor mall at Fulford, York features over 120 designer brands including clothing, foot ware, eyewear, home wares, restaurants and cafés. The mall is set in 60 acres of landscaped grounds, including an extensive free car park available for customers.

Hauraton Limited introduced the RECYFIX® MONOTEC, surface drainage system in January 2016. The McArthur Glen Designer Outlets mall, York, joins numerous installations successfully completed in the United Kingdom.

The RECYFIX® MONOTEC system was installed to provide surface drainage in a section of the car park's asphalt surface. Having a grating width of 100mm (Channel internal dimension) with an overall height of 230mm and a cross-section of 190.5cm², the



66 metres of channel supplied provide a total water capacity of just over 1260 litres.

The MONOTEC one metre long channel component is of a sturdy monolithic design where the HEELSAFE grating and the tongue and groove linking system are integral to the channel moulding. The whole unit is made of tough, virtually unbreakable polypropylene (PP) formulated to be very resistant to daily temperature fluctuations from frost conditions to strong sunlight, including the

Ultra Violet (UV) spectrum. PP is naturally resistant to de-icing salt. Complying with the requirements of EN 1433, the PP is given its UV resistance by adding just sufficient stabiliser so that the structural strength of the material is unaffected and a consistent appearance is maintained. The MONOTEC channels have a loading category of up to Class D400.

Tim Connolly, Hauraton's Managing Director comments; "The tongue and groove features on the MONOTEC channels provides easy assembly of the moulded components and facilitates the alignment of the channel run so cutting installation time for the groundwork contractor.

All Hauraton surface water drainage systems' comply with European Standards (hENS) and carries the CE mark".

For RECYFIX® MONOTEC product specifications visit the website.

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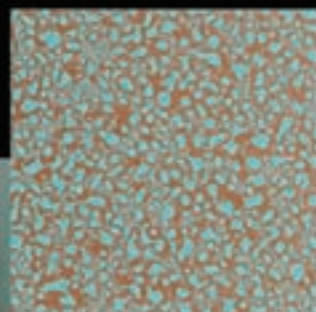


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