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One tiny action

...that changes so much. Yet to cite the butterfly effect to explain how a political party, initially so far behind in the polls, could have ballooned in popularity to being within a few thousand votes of a majority in the UK Parliament seems glib now. But, in uncertain times it's as if life itself is becoming rolling news.

Writing as the damped-down smoke of Grenfell Tower still rises over London, to jump to conclusions about anything, particularly how such an appalling tragedy could happen today, would be foolish. But there will be repercussions that will, rightly, be felt by all in the industry.

All that should have filled anyone's mind since the fire is the devastating loss of life, families ruined, and homes and possessions needlessly destroyed. In an industry dedicated to generating the structures that help organise, house and better society, an event such as this throws into the sharpest relief the huge responsibility of the profession to work proactively with everyone in the process to ensure our buildings are structurally sound, fit for purpose and, above all, safe.

Building Regulations and BS guidance can seem limiting, dry and tedious, but they form the inviolable mesh in the safety net of the design – and in this case even they will be found wanting. Attention to detail and vigilance is everything. No dreamy allusion of a delicate butterfly's wings felling an Amazonian tree here, just the nausea-inducing realisation of the effect's relevance. Inaction or omission. Somewhere, somehow, this hellish conflagration came from a single flame unstopped.

Jan-Carlos Kucharek, Editor

SIMON HARVEY PHOTOGRAPHY

HAMAN ELEVLI

KNUT RAMSTAD

More online...

Variable temperatures may have a positive effect on our health

Stephen Cousins finds fluctuating temperatures are good for you ribaj.com/hotandcold

30 mins

Time taken to build a 3D coffee table top at Milan Furniture Fair: ribaj.com/coffeetable

Cover image: Oldham Town Hall, photographed by Nick Caville/BDP

Compendium

Occidental light

In Munich Platzl did Alfons Schuhbeck a stately spice emporium decree. Germany's most celebrated chef has tipped his hat to the oriental bazaars of old with his recently refurbished 300m^2 spice shop in Bavaria. Its atmospheric interiors, adorned with ceiling and wall paintings, ornate gilded sculptures and furniture, have all been set off marvellously using ERCO's 'perception-orientated lighting concept.' The designer went for the firm's Quintessence and Optec downlight (above), which deliver a warm 3,000K light that guarantees, it says, optimal colour rendering for its obsessively wrought spaces and highly coloured spices.

Modernist tile

Le Corbusier's used colour as much as his signature white, so it's good to see pigments taken from his 'Polychromie Architecturale' in a range of tile colours by Domus. In all he created 63 shades – 43 subdued and 20 bolder colours. Of these, 12 are now available as the Le Corbusier LCS Ceramics range, in the rather Modulor Man scaled size of 1200mm x 300mm. Hard core functionalists look away now, but the 'Line' range even takes six of those colours and runs them across 'beton gris' and 'beton blanc' tiles, mimicking Corb's beloved raw concrete and white lime.

Zero gravity

If you've ever wondered how The Bullock felt, floating in Alfonso Cuarón's epic thriller Gravity, after George Clooney drifted off into space, TOTO's Zero Dimension bathtub could help. It says it's the reclining position that does it: the buttocks lower than slightly bent legs, as astronauts do sleeping in zero gravity. Further relaxation is offered by the dual 'shaped pillow' and massaging faucet. This looks not unlike the dented head of a 'Smash Martian' – a TV ad much loved by anyone born about the time man first set foot on the Moon.

Day trip to Bangor...

If you think that the best you could expect of a CPD event was to learn a little more about a project while chowing down on some sandwiches, how does a 4x4 trip round a Welsh quarry sound? That's what Welsh Slate is offering with a factory tour of its Penrhyn quarry in Bethseda near Bangor in north Wales. Lasting two hours, there'll even be an opportunity for architects to have a go at splitting slates themselves- a skill that's almost 2000 years old. Go to welshslate.com or call 01248 600656 to book.

Square deal?
If the Piazza dei Signori, Castelvecchio Bridge, Roman Arena and Carlo Scarpa's museum can't tempt you to endure a budget flight to Verona, content yourself with the pleasing minimalism of local furniture firm Morelato's Modulo Zero wall unit. Its cherry wood and walnut, glass fronted, blue-lacquered shelves are topped and tailed with finely milled doors; the elegant square module looking like the face of an uber complex Rubik Cube. The only puzzle here is how many budget flights you could take for what this hand-crafted baby would cost you.

Tiles of the city
It's gone all tile-tastic in Clerkenwell too, with the collaboration of Pentagon Tiles, Schlüter Systems and Ardex coming together with their new 49 Leather Lane showroom. Architect Simon Astridge Architecture workshop, which seems to be have been kitting-out a number of London showrooms recently, was appointed to design this one and seems to have been influenced by the manufacturing heritage of the area. Apart from the old haberdashers' display cabinet, pictured, it's used fired clay pot detailing on the ceiling and has even shunted recycled shipping containers onto the site for added industrial effect. As it's located bang in the heart of the famous inner city street market near Hatton Garden, once you're done with selecting tiles, you can spend the rest of the afternoon hunting down gastro pop-up food stalls or discount engagement rings.-Result!

Medite night light
Suspended over its Redwood Treewalk in Rotorua on New Zealand's north island, lighting designer David Trubridge's Nightlights project is the country's first design-led tourism experience and consists of 2.5m tall lantern-style lights, 30 in all. But, aside from being naturalistic, they had to be durable enough to withstand changing weather and fungal decay, which led to him making them out of Medite Tricoya Extreme engineered wood. Not only looking good, sustainably sourced and FSC certified, the material has a 50-year guarantee in external environments.

GEORGES DE KINDER

Singing from the same zinc sheet
Abbott and chemist Jean-Jacques Dony has a lot to answer for – namely his invention of the industrial scale zinc refining process he developed in 1810. Setting up a foundry among the zinc-rich seams of Vielle Montagne near Aix-la-Chapelle in 1837, his rolled sheets' corrosion resistant properties instantly appealed to Baron Haussmann, who wanted robust materials for his radical transformation of Paris, applying it to the mansards of his grand, classical, stone-faced boulevards. Now, 180 years later, the ghost of its original provenance remaining in the 'VM' of 'VMZinc', zinc sheeting has become truly ubiquitous. Here it finishes the curved facade of the Shopping District Docks Brussels, by Art & Build Architects – a text book example of the material's ability to really move with times.

BIM is there to help

The other day I shared with my office the results of the recent NBS National BIM Report 2017, in which 62% of respondents claimed to have adopted BIM and 70% of them to have achieved Level 2. A colleague emailed me back, 'you guys are taking over... scary!' Two things struck me straight away; one was the figures themselves and the other was my colleague's response. He was obviously joking but it made me think.

Many people seem to think BIM advocates are a closed lobby trying to take over the industry and hinder creativity, speaking an unknown dialect in which every other word is an acronym: 'The BEP is the response to the EIR, includes the MIDP, the MPDT and lives in the CDE which is managed by the IM... Do. You. Understand?'

Truth is, BIM workflows don't harm creativity or the quality of architectural output . In fact, it helps us do all that we do anyway, just in a different, more structured way. Architects producing good architecture without BIM will still produce it with it; they'll just be quicker, more methodical and more able to mitigate risk. There's no such thing as a BIM project – it's an architectural one using BIM workflows.

What about the unknown dialect? I've never been fond of acronyms and buzzwords; but there are webinars, training courses, the regional BIM hubs, to help you see behind them – and most are free. It is up to you to see what we see and get involved. And it's up to us to open up more and share our enthusiasm with less jargon.

The second thing that struck me was the number of people claiming to have adopted BIM and to have achieved BIM Level 2; as I have yet to see a whole design/construction team, including the supply chain, all working collaboratively in BIM on a project- let alone one that's reached Level 2 maturity. Maybe this is because I'm involved in private sector projects, but I suspect most respondents were BIM savvy, which doesn't reflect my experience.

It's been six years now since the BIM mandate and the use of common standards, methods and procedures, the rule-based cross-discipline 3D co-ordination and QA, the ability to perform buildability analysis at various stages, to manufacture off-site and to capture data of the installed products are all benefits of BIM that we have begun demonstrating. We have the ability to create a live model which represents the built asset and use it throughout its lifetime – yielding massive savings to consultants and clients.

There is still a lot of work to be done with educating our clients, the driving force of our industry. We need to encourage them to enter the 'BIM world' and demonstrate its capability, show them what can be produced and how much data we can pass on to them at the end of a project. No training course can teach that- we need to prove its value at operational stage, which accounts for about 70% of an asset's total cost. I am sure no one will disagree that there is huge value to this.

Change is never easy, but I am convinced that BIM will be business as usual for all of us sooner than we think.

Pantelis Ioannidis is an architect and BIM Manager at John Robertson Architects

Books

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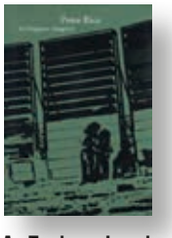
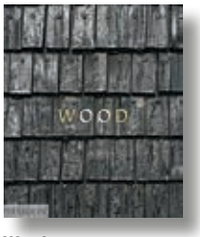


An Engineer Imagines

Peter Rice. Batsford 214p HB £25

In a world where the process of architectural and engineering design is facilitated by 'intelligent' software systems, some might view this re-issue of famed former Arup engineer Peter Rice's musings on engineering and architecture as something of an anachronism. Don't. First published two years after his death in 1992, Rice's involvement with some of the greatest architectural designs of the late 20th century still makes for a thoroughly compelling read. He writes in a pared back way and draws from the gamut of history, even when talking about the structural specificities of Beaubourg, Sydney Opera House or Lloyd's. As with his engineering, Rice clearly thought long and hard about the layout too; his simple frontispiece of cowslips to this account of his life and work evokes the humanity at the core of the man – and of the best design.



Wood

William Hall ed. Phaidon 224p HB £29.95

As coffee table books go, I've certainly seen worse. Following on from the other two in the series, 'Concrete' and 'Brick', Hall takes us on a whistle stop tour of buildings using the 'world's most versatile and beautiful building material'. Some you will know, such as the 14th century Temple of Heaven in Beijing and the 16th century Katsura Imperial Palace that so inspired the early modernists but there's probably loads of buildings that, unless you trawl through Dezeen on a daily basis, you won't know at all. Categorised under eight generic themes, such as texture, mass and even 'presence'; while it's introduced with an essay by naturalist Richard Mabey, this is ostensibly timber clickbait in printed form. But nicely presented in large format, there's plenty of inspiration to be had here for architects.

Drawing Futures

Laura Allen, Bob Sheil, Frédéric Migayrou & Luke Pearson eds. UCL Press 260p PB £30 or download at ucl.ac.uk/ucl-press

True to fundamental notions of democracy in education, this tome highlighting drawn works of noted academics and practitioners is available as a free download – a big tick in my book. Based on papers submitted for a conference at the end of 2016, it focuses – unlike Peter Rice's analogue methodologies – on discussions on drawing 'alongside technological and computational developments'. It's encouraging to find works highlighted and awarded by RIBAJ's Eye Line competition. Elsewhere, among some very heavy titling of papers, there's obviously serious study being carried out using the drawing as an investigative tool for new methods of spatial practice. You could treat this with circumspection or conclude, given the density of the work here, that there's no smoke without fire.

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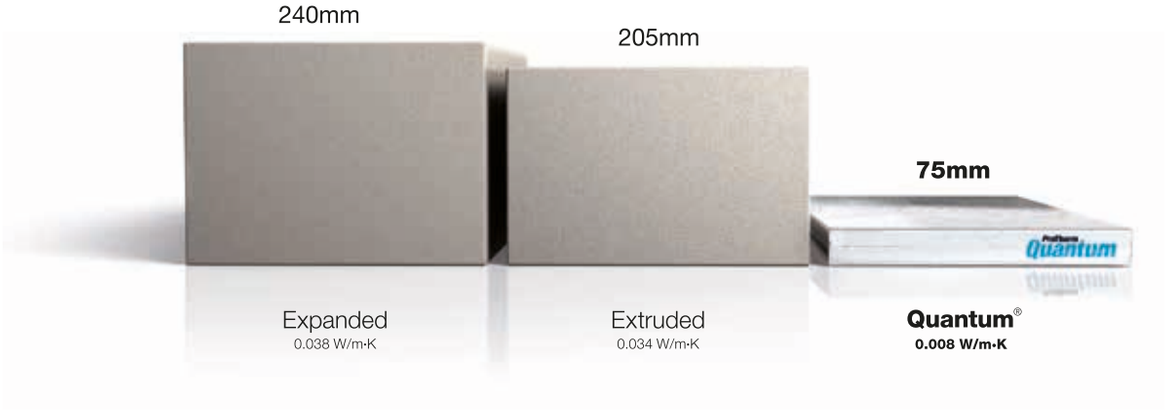

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Made

Kevin Bohea
UK & Ireland commercial director

What: Recticel Insulation
Where: Stoke-on-Trent

As you travel through Stoke-on-Trent you are constantly reminded of its past as one of the cradles of British manufacturing. Those brown heritage road signs direct you to museums celebrating the work of Josiah Wedgwood, William Moorcroft or other innovators behind the early factories that gave the Potteries its name, made it a global centre for ceramics and helped develop modern industrialised production. Now only around 47 of the 4,000 or so distinctive pottery bottle kilns that once dotted the landscape remain, while the industry is more visible in the city's tourist attractions than working factories.

Now Stoke is a base for industries with a very different vision of manufacturing. Global names with a presence in the city include chemicals giant Huntsman, tyremaker Michelin and insulation manufacturer Recticel Insulation. The latter is a relative newcomer, opening a purpose built factory here nine years ago.

Recticel may have been a new name, but the company has history and experience. Its heritage stretches back as far as Stoke's famous 18th century potterymakers, to a gunpowder factory in Wetteren in the Belgian province of East Flanders. The business changed course in the early 1950s with a determined step into innovation; it acquired a licence to produce and market polyurethane foam from German chemical company Bayer. That led to Recticel developing its four diverse PIR and PUR product areas: building insulation; bedding; flexible foams (which are used in everything from seating to dishwashing sponges); and seats, dashboards and other components for the automotive sector.

Few are aware of the breadth of the group's operations, because most of these items are white label goods, manufactured by Recticel but branded by its end retailers. As Kevin Bohea, UK commercial director of the company, says, 'Polyurethane is very widely used and is all around you in buildings, but insulation is the only Recticel product that carries the brand.' This quiet endeavour has generated a €1 billion turnover business and keeps production lines running at factories in France and Belgium, as well as in Stoke. The company's only other UK insulation facility is Gradient Flat Roof Insulation, a business it acquired almost a decade ago and which is a specialist in design, manufacture and guidance for bespoke flat roofing. Building insulation is now Recticel's fastest growing division.

The Stoke factory manufactures a range of PIR rigid foam insulation products, under such brand names as Eurothane and Eurowall and, for roofs, L-Ments and Powerdeck. These products are used in roofs, walls and floors in large and small projects across the development spectrum. In housing for example, around 15,000m^2 of Eurowall+ was recently used in two developments at Hedge End, Southampton, by housebuilder Foreman Homes; while a Nicholas Lacey & Partners designed low energy house, in Burley in the New Forest, last year became the first UK project to use L-Ments fully insulated roofing panels.

These products are manufactured in

Far left and above left A low energy house in Burley designed by Nicholas Lacey & Partners became the first UK project to use L-Ments fully insulated roofing panels last year.
Below left Rectical Eurowall installed in a brick/block wall.

processes that would be unrecognisable to the likes of Josiah Wedgwood and Recticel's own forefathers. The firm spent around £17 million on its light, airy, modern factory in Stoke, and a further £10 million two years ago on additions to the building and its production line.

In this highly automated factory, board is produced almost entirely without direct manual handling. Both on the factory floor and behind the scenes the company has staff dedicated to monitoring, managing and benchmarking to achieve what Bohea calls 'the flattest, squarest possible board' and minimise waste throughout the production process.

Products are supported by the company's technical expertise, which extends from an online U-value calculator and BIM details to a team of six full-time support staff, based in Stoke, who deal with enquiries on specification and installation. Alongside this, eight field staff, working across the UK, deliver CPD to architects. A separate technical team of five surveyors and seven designers advises on flat roof specification and installation.

Such engagement with designers and installers working on live projects helps to inform the industry technical committees in which company staff are involved, and improve the company's own products and services. It can also contribute to product development, carried out both in the UK and at Recticel's Wetteren HQ in Belgium, where the group has its R&D facility. The next new products will be a range of acoustic panels, officially launching later this year, which will be made using the clean foam waste from Recticel's own bedding products. Stoke's industries may have changed, but the reputation for innovation continues. ●

1. INTRODUCTION

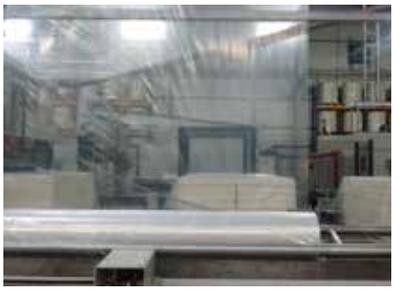
The first board came off the production line at the Stoke factory in 2008 and sits on the factory wall, bearing the signatures of the workers who made it. That 123,500ft² facility has been enlarged, with a 69,000ft² extension providing additional warehouse space and a second packing line. Recticel employs 500 people in the UK – 140 in the insulation division. Computer controlled machinery on the factory floor leaves humans managing the process and ensuring quality control, so a factory shift can rely on as few as 25 staff.

2. RAW MATERIALS

Polyurethane foam is made from polyol, isocyanate and water, plus the blowing agent, pentane. The first three are stored in tanks in the factory, but pentane is stored in underground tanks nearby, because of its flammability. The company's stores contain several days' stock of raw materials and consistent supply chains. Alongside the chemicals required for the foam, the factory stores rolls of different facing materials for various applications.

3. PRODUCTION

Production is extremely fast. PIR board can progress along the production line in the time it takes to walk around the factory floor. The liquid mix is dictated by precise computer control and injected between facing materials. Chemical reaction causes the mix to expand up to 40 times and harden. This is accelerated by passing the continuous length of board through an oven at temperatures of up to 160°C. Up to 400mm thick, it continues along the conveyor belt, where it is laser etched with details of its origin, giving full traceability of product. It is also cut to length on the conveyor belt.

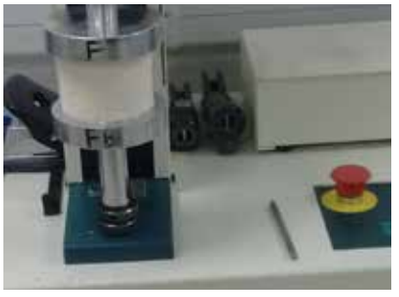


4. PACKING

The lengths of board are stacked on racked cooling towers, the faces alternated to keep them flat. They are then trimmed and cut to final size before being sent to one of two packing lines. One stacks the boards on EPS bearers – an efficient alternative to traditional wooden pallets – while the other shrinkwraps. It is important that the product is cured after production to ensure it remains flat. Curing time varies; a 100mm board remains in isolation and cures for around five days.

5. SUSTAINABILITY

Waste levels are constantly monitored to ensure that production is efficient and the end product remains sustainable. Less than 0.2% of overall production goes to landfill. Any mis-shapen boards, test samples, offcuts or other waste boards are directly recycled. Dust generated by the production process is piped out of the factory to a separate compaction area, where compactors turn the waste into briquettes which are used by an energy from waste plant.



6. QUALITY

The company puts a strong emphasis on quality and safety, its messages reinforced by prominent posters in the factory. It has its own laboratory to check on reliability of the product, and technicians take samples in each production run to ensure quality is maintained. The laboratory contains climatic chambers to subject samples to extremes of heat and cold. It can also simulate extended rainfall or exposure to water – important when testing the adhesion of facing materials. This testing can be key for Eurowall+, which is suitable for use in areas vulnerable to flooding.

Home energy storage

What: SENSIBLE energy storage system
Where: Nottingham

Financially viable onsite energy storage has long been the missing piece in the renewable energy jigsaw. However, the rapid development of the electronic car has produced technological advances that are transferring to the built environment, making individual home storage systems increasingly commercially available.

In Nottingham, an innovative scheme aims to quantify the direct benefits of self-storage batteries on a community level. Funded by the European Union's Horizon research and innovation programme, the project, named SENSIBLE (Storage Enabled Sustainable Energy for Buildings and Communities), will install batteries in up to 37 homes across the Meadows area of Nottingham, free of charge.

This community of homes across different tenures, types, ages and socio-economic groups will be a test bed to scientifically record and analyse the exact benefits of battery storage. More than 20 of them already have solar photovoltaic (PV) panels installed using government grants.

Along with the home storage systems, larger community batteries are also being installed in a local school and library to investigate the possibility for the community to share energy, rather than relying on the existing grid system.

The project is being led by the University of Nottingham and MOZES, the Meadows' Community Energy Group, with the batteries installed by the charity, Nottingham Energy Partnership and T4 Sustainability, a renewable energy installer.

Dr Lee Empringham, principal research fellow at the University of Nottingham and project lead, explains: 'We will monitor household energy patterns for 12 months to see both what benefit there is to storing the excess and how people react to their 'free' electricity in the evenings. We will also research the storage of thermal energy produced using electricity from solar photovoltaic panels together with dual tariff systems to reduce the total energy costs.'

The batteries store excess solar energy from photovoltaic panels, as well as cheap off-peak electricity collected during the day, for use in the evening when home energy use is at its highest. Storing electricity onsite in this way both reduces bills for the homeowner and puts less load on the local grid.

Proving the viability of home storage systems could greatly boost the adoption of PV use in the UK, as it balances out the peaks and troughs of renewable energy generation.

Paul Chandler from T4 Sustainability, which commissioned the first system in March, says of the early results: 'The first installation has shown that the system is working very well with over 80 per cent efficiency, meaning it can power a house overnight and offer real financial and environmental benefits.'

Tom Ravenscroft

SENSIBLE will install batteries in up to 37 homes across the Meadows area of Nottingham, free of charge. This community will be a test bed to scientifically record and analyse the exact benefits of battery storage

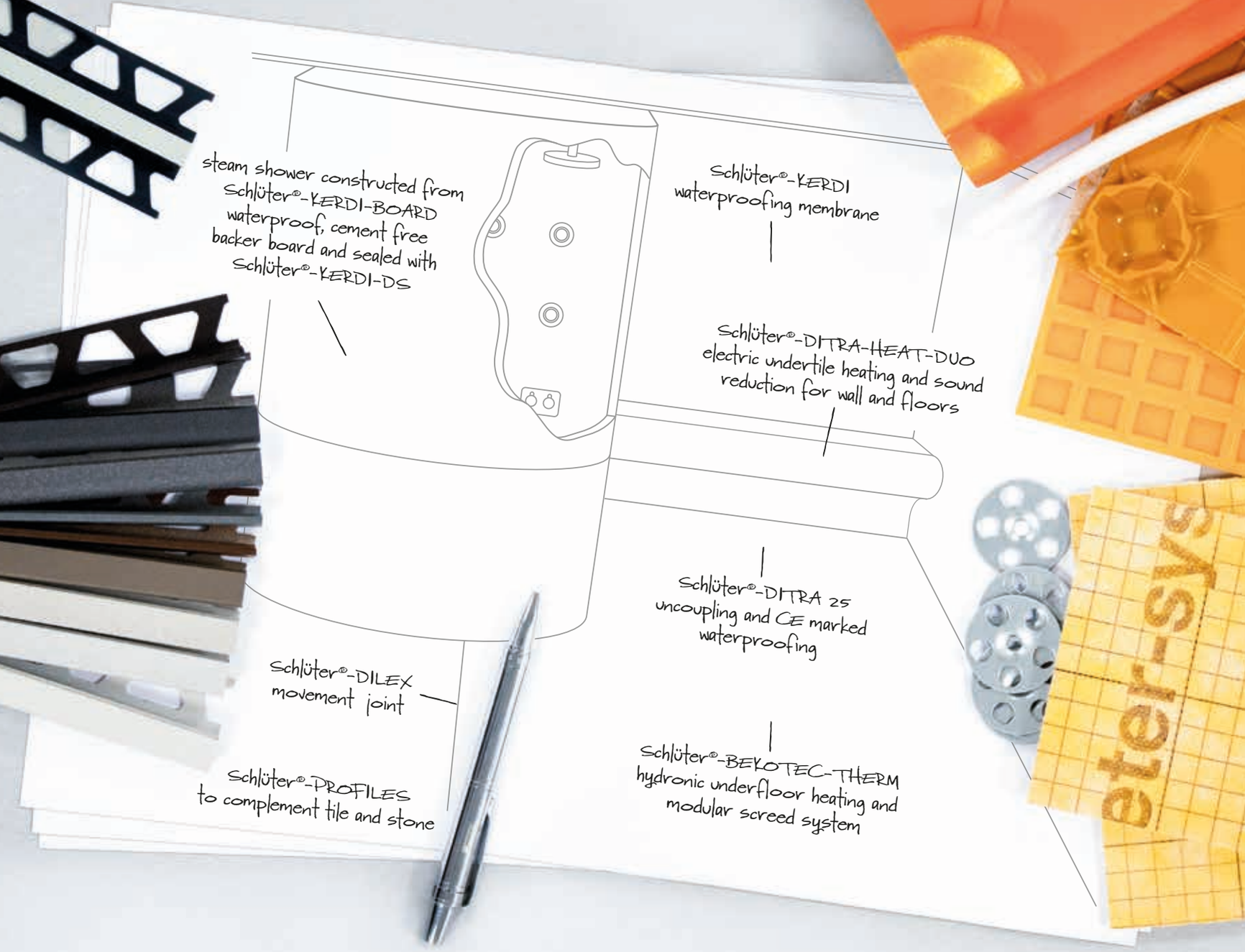
POWER BALANCE

The choice of equipment is determined by space requirement, accessibility and house type. Each home storage system relies on two key factors: the capacity of the battery and the rate of charge and discharge. Batteries initially being installed by T4 Sustainability have a capacity of around 6.5kWh and can a charge/discharge rate of around 2.5kW.

These batteries are connected to a charger/inverter box that regulates the amount of charge entering and leaving the battery. This is wired into the mains. An energy meter acts as a sensor, sending information to the charger/inverter box, which decides the rate of battery charge or discharge.

For example, if a house has 1kW of loads switched on and the PV is generating power of 4kW, 2.5kW will be used to charge the battery and 0.5kW exported to the grid.

As far as the battery capacity and maximum rates of charge and discharge allow, the system will act to minimise both energy export and energy import.



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Opposite The principal entrance from Hampstead Road has full height pivot doors and fixed glazing with frames rebated into the stone facades.
Below right Detailing the interface between fixed glazing, stone facades and minimal frames between full height fixed glazing.
Bottom right 3m high double pivot doors with minimal frames allow access to the roof terrace.

A building originally designed to create a six floor commercial site with underground access to Mornington Crescent station, finally gained approval as a 330m^2, two storey café/restaurant under the guidance of George Kythreotis from Vivendi Architects. The site was developed with sympathetic consideration to its surrounding areas. To supplement ground and first floor internal seating, a first floor roof terrace facing Mornington Crescent and a ground floor outside seating area on the Hampstead Road elevation were complimented by landscaped gardens and lighting.

Located next to Greater London House offices, the need to develop detailing of the external features of Portland Stone and frameless glass was a principal design instruction from the client. Working closely with Vivendi and developer Synergy Property Group, Fineline Aluminium helped develop designs to recess all the fixed glazing between stone facades. To further progress the need for light and space, full height fixed glazing was to be installed between the buildings stone pillars. To fulfil the aspirations of the planners, client and architect, Fineline needed to develop bespoke glazing options that would complement the cafe/restaurant.

Using our System 22, the building had two principal elevations with glazing that would need to fit between fixed grid lines of 1700mm. The Mornington Crescent elevation had fixed frames hidden between internal and external stone reveals. With heights of 4000mm in single units, the requirement for zero tolerance was a challenge for both the steel and stone manufacturers. To comply with planning the glazing on the roof terrace was designed to finish at low level, giving open views of the terrace from the street level below. Access the terrace was via three 3000mm high double pivot doors. Further detailing used fritted glass to discreetly cover fixings between floors. Elevations on Hampstead Road gave access to the building. The ground floor entrance doors used Fineline System 22 pivot doors with 22mm frames; each door was designed to 2550mm in height and 1400mm in width with side fixed glazing to fill the 1700mm grids. All ground floor pivot doors were fitted with both manual and electronic locks. A further requirement was for one entrance door to have disabled access. The fixed elevations were in two sections on the Hampstead Road side with discrete fixings and tie backs to minimise the joints.

On final approval, installation of the glazing needed to be completed before the Portland Stone facades were fixed. Working in co-operation with Synergy's site team, Fineline completed the movement and precise placing of the fixed units –with weights in excess of 400kg – without major incident. Due to the precise detailing agreed with fixing, interface and drainage, all elevations were finally installed and completed on time. Fineline System 22 was specified by the architect due to its ability to be adapted to precise needs and designs that comply with U-values and Part G needs. Without the support of the Fineline internal technical team, CAD technicians, onsite fitting teams, Synergy and Vivendi, the project would not have achieved its final design and success.

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Old Town Hall cinema, Oldham

A dramatic wall of light signals how Oldham's Old Town Hall has been repurposed for cinema and retail, but BDP's lighting of the heritage building itself is deft and sensitive

Words: Jan-Carlos Kucharek Main photograph: Nick Caville

Left The classical north face of Oldham's Old Town Hall is now contrasted by the bold new west elevation, a light wall with anchor retail set in its rusticated base facing the new Parliament Square.

Its massive illuminated facade dramatically reflected in the rainwater coursing across the sandstone of Oldham's Parliament Square, the town's new nocturnal vista takes on the alluring quality of a film noir. This is fortunate as it rains here – a lot. At more than 200m above sea level, it's far higher than nearby Manchester, and a taxi driver tells me Oldham lives 'up in the clouds' and is used to such deluges.

He's ambivalent about the new civic space carved out of what used to be the bus station, hemmed in between the east end of the Spindles shopping centre and the run-down 'rear' facade of the Old Town Hall. Given the climate, he initially questions who'll use it. But then he gets to the point: in BDP's £37m RIBA Award-winning conversion of the grade II listed Old Town Hall into a state-of-the-art cinema and retail, the taxi rank had to move and there's no shelter for customers at the new site. Both opinions may be valid, but watching the reflections tremulously rise out of the darkness in the evening rain, they're the furthest things from my mind.

Creating an 83m x 11m triple height facade of light seems an extreme approach, but as BDP associate Andrew Capewell explains, so was the situation the town council faced. Unused since the 1980s, the dilapidated state of the 1841 civic building seemed emblematic of the collapse of the textile town's industrial fortunes. By 2005, and as part of a larger drive to reverse its decline, the council was thinking seriously about how it could make Joseph Butterworth's classical design a catalyst for the regeneration of the town centre.

BDP's involvement resulted in the proposal to retain the principal facades while carving an Odeon cinema and commercial complex out of the guts of the building, salvaging what they could of the interiors. It was decided to generate the highly contemporary illuminated facade out of the Old Town Hall's side elevation. Addressing and lighting the new Parliament Square, a lit piano nobile above a rusticated base of anchor retail, is a bold move for a listed building, aspirational in terms of regeneration, and it reflects the fact that the town's centre of gravity has, over the years, shifted west.

The framework for the huge light wall is a steel structure extending 8m out from the original glazed brick facade of the town hall, forming a grand new circulation zone entered from the north side. Capewell says the extension outwards not only preserved that original glazed brick facade and gave a dramatic entrance sequence up a flight of stairs, but created commercially viable volumes for the A3 anchor restaurants below. Sloping 6m along its length from north to south, these utilise the town hall basement as kitchen/service spaces; one of the units boasts the sandstone arch of the old police station, another even has its cells integrated into the fit-out.

But it is the light wall above that is the real showstopper. Formed of 257 translucent glazed panels, the LED lighting units and drivers, integrated top and bottom into a 900mm module standard Schueco cladding system, cast a wash of white light across the inside surface to create the dramatic blanket effect from the outside.

BDP lighting associate Chris Lowe chose narrow beam LEDs hidden behind a glare shield positioned to graze across the glass. Lowe explains that the effect is attributable to the glass as much as the luminaires and they went through a gamut of sandblasting and acid etching options. The firm was also acutely aware that the glazed expanse had to look as good by day as by night, as well as reducing solar gain, so settled on laminated Saint Gobain double-glazed units with PVB interlayer.

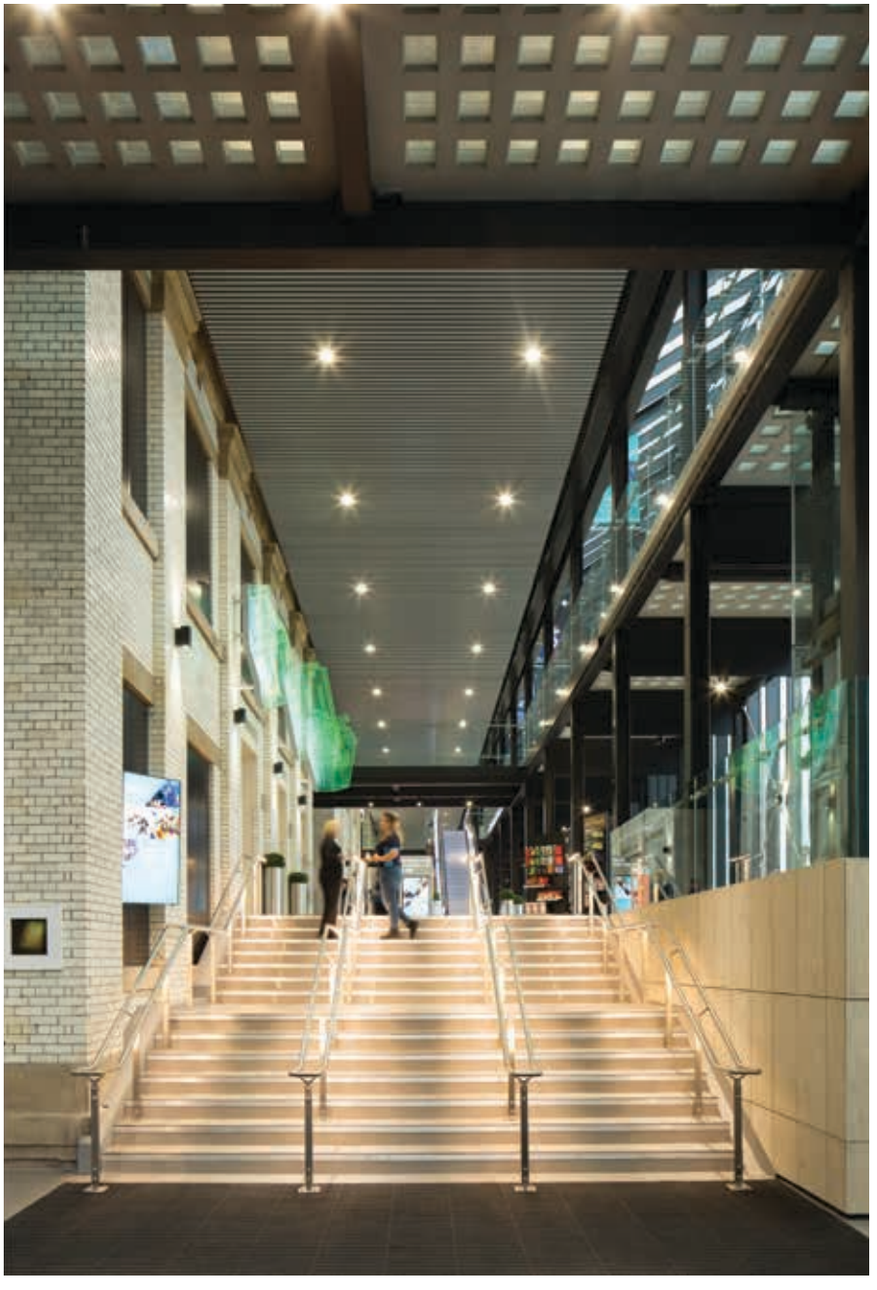
Internally, the sandblasted effect results in uniform lighting everywhere, except for the large, fully transparent openings where walkways move cinemagoers into the body of the building. It's a nice touch – leaving a cinema screening always leads you to a picture window and wide views toward Manchester and Saddleworth Moor. Glass blocks set into the concrete of the upper and lower concourse slabs pull light further into the building and bring a modernist delicacy to what could have been heavy handed move.

Lowe explains that the concourse lighting strategy was to use minimal downlighting and gain dramatic effects in other ways. The downlights provide tight pools of floor illumination while high level, narrow dual aspect beam luminaires highlight the original glazed brick pilasters.

To help with wayfinding, lighting is also inserted on the undersides of handrails – a

Left The cinema and square are part of the wider regeneration of the town centre.

Below The new cinema concourse. Downlights are minimal, dramatic effects created with narrow beam luminaires on the glazed brick west wall of the town hall and LEDs in the handrails.



PAUL KARALIUS

technique easily facilitated with LED cable runs and, Lowe says, increasingly adopted.

Where the two-stage D&B contract (with the council as client) involved the wholesale removal of rotted floors, the cinema 'boxes' inserted into the voids were fitted out by Odeon. Notable exceptions to this involved the old committee room and courthouse and lantern staircase hall, where BDP's continued design involvement led to sensitive insertions. Hardly any original light fittings were still in the building, which left room for some imaginative scope.

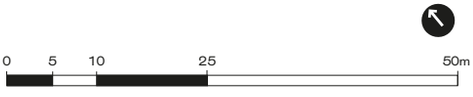
In the old courthouse the judge's bench is hidden by a retractable screen, and the triple height space thoughtfully lit with discreet fittings that highlight the original pilasters, scrolls and ceiling. Capewell points out that all the acoustic attenuation has been inserted in the spaces between pilasters to make it as unobtrusive as possible.

In the committee room, meanwhile, what remained of the 19th century painted friezes was removed, restored and reinstalled. Where the wall panelling had rotted away, its 'ghost' was screenprinted onto wall-sized acoustic panels, the lost features finely delineated in white lines on a dark grey textile surface. While Odeon was initially nervous about the technical performance compromises this conservation approach demanded, Capewell says it came around to the fact that screenings of live events such as theatre or opera were actually very suited to such spaces.

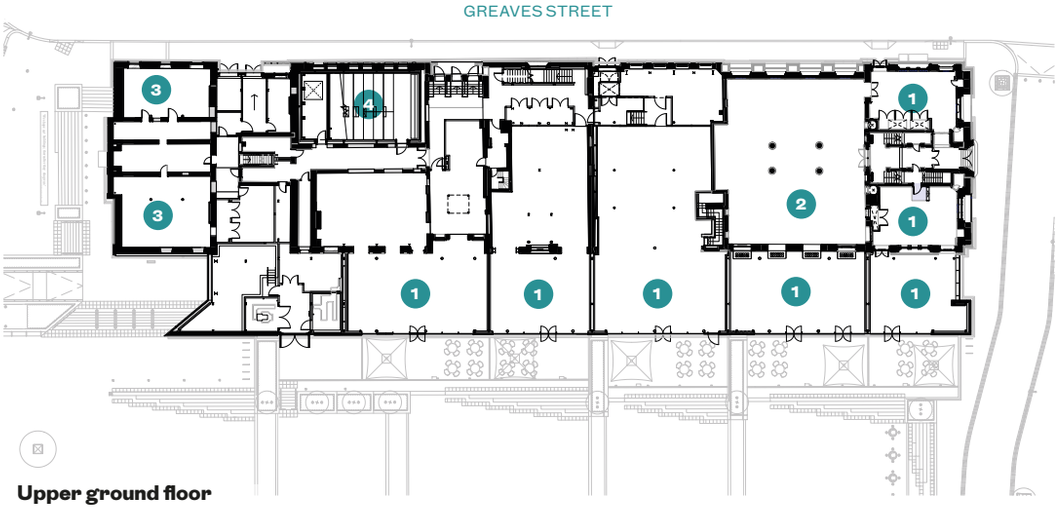
Linking both of these is the grand lantern staircase. BDP's Lowe says that here they wanted a luminaire that celebrated the formality of the space, so they asked Mike Stone Lighting to create a bespoke chandelier from its high-tech modular, configurable range. The result hangs unobtrusively above the stairwell, its directional luminaires individually positioned to dapple light all around the volume, power leads invisibly integrated into the suspension cables.

Given that the new west elevation is a wall of light, it was decided to make lighting as subtle as possible on the remaining heritage facades. Floodlighting was actively avoided. Narrow beam close offset optics cast a warm light onto the sandstone columns and pilasters, picking up on the natural rhythm of the facade and counterpointing the cool blue hues of the light wall. Lowe concedes that the value

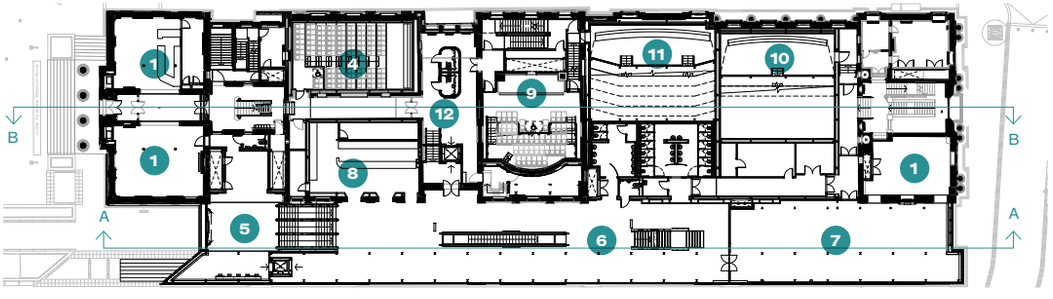
1 Retail units
2 Egyptianate Room
3 Retail store
4 Cinema Studio 4
5 Odeon entrance
6 Lower cinema concourse
7 Future retail/cinema studios
8 Odeon concessions/ticketing
9 Court room cinema Studio 3
10 Cinema Studio 1
11 Cinema Studio 2
12 Court foyer
13 Cinema Studio 6
14 Lantern staircase
15 Cinema Studio 7
16 Cinema Studio 5
17 Court room gallery
18 Upper cinema concourse



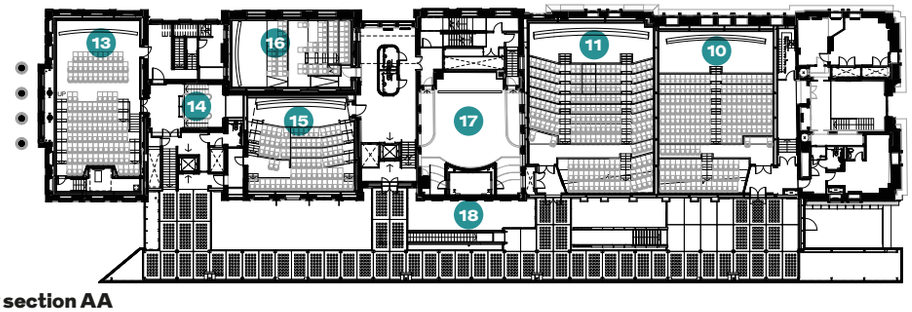
Lower ground floor



Upper ground floor



First floor



Long section AA

Long section BB

Left The diffuse light of the lantern staircase is now complemented with a bespoke chandelier designed by Mike Stone Lighting.
Below Remaining wall murals from the Old Town Hall were restored and reinserted into the conversion. Targeted downlights show them off to cinemagoers.
Bottom The old courtroom friezes have been retained and restored – the retractable screen rises to reveal the judges' bench.

PAUL KARALIUS (2)

engineered lighting of the landscaped areas resulted in bulky mast luminaires, but the IP68 fittings uplighting the planted trees and stone columns at the north and south edge create a theatrical presence for Parliament Square.

Some of Oldham's residents still view the redevelopment as foolhardy, millions of pounds spent on a town centre cinema when they already exist in Rochdale, Ashton and Manchester. But that takes no account of a bigger vision. Parliament Square is instrumental in creating a sense of arrival for the new MetroLink tram and in establishing a cultural quarter together with the Lyceum Theatre at its southern end. It also allows the 1830 St Mary's Church, on a hill to the north, to become fully engaged in the new urban composition.

It's true, the square is literally blindsided by the blank east face of Spindles shopping centre, but future development may address this. And while a cinema is an unlikely use for a former civic building, here it's reinvented in a considered and contemporary guise, resulting in a bold and inviting new public space.

It is easy to regard all this as tinkering instead of addressing the clear social deprivation, but, as with the silver screen, the trick is in the suspension of disbelief. Oldham Town Hall could yet prove to be the torchbearer for a renewed civic pride. ●

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Nimue writes: 'Dear Mr Malory, I am sorry to trouble, but might you possibly see your way to changing my bit part in your Lady of the Lake story? You know, where I'm all mythical in the water and the young man wades out to get his sword? It's just there's a rather fab new house on the shore, and the 'human-centric' lighting they've picked responds to time of day and the astronomical clock. It's all very flattering on the skin so could you please instead have me in the sitting-room, maybe wearing floor-length Missoni and sipping a craft gin cocktail? Thanks.'
deltalight.co.uk

2
Alphabet of light
Artemide

We journeyed through the workaday streets of Harry Styles, lingered in the mystic hermitage of Prince, and slept beneath a galaxy of Belle Stars. Labouring through the Martin Parrs, we were assailed by a fit of ruched blindness which threatened to end us altogether. And then, masked by lianas, we stumbled on Artemide's new LED font. Created in partnership with Bjarke Ingels Group (BIG), and inspired by classic neon, these optoelectronics offer smooth, even illumination in a full alphabet. Our search for a sign of the times was finally rewarded.
artemide.com

3
Hospitality lighting
Davide Groppi

This will make a strange shew to those that know not the conceit: Let a fine Virginall wyar bee concealed in every wick, and left of some length above, to fasten the same to the postes in the roof of your house; & if the room be any thing high roofed, it will bee hardly discerned, and the flame though it consume the tallow, yet it will not melt the wyer.

– Sir Hugh Plat, Delights for Ladies, 1628

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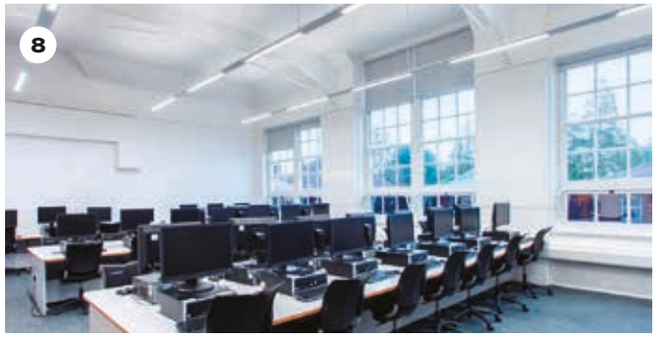
– Hotel Santa Clara 1728, Lisbon, 2017

davidegroppi.com

4
Back-lit façade
Hi-Macs

How I remember those nights in Prague with poet Konstantin Biebl! Joshing him for his anagrammatic name ('would that your works could be a new Bible Konstantin') we dangled those who miscounted his rhyming metre from the Charles Bridge while he pelted them with bread dumplings from a fishing boat on the river. Oh the herbal bitters we consumed! The pils! The stewed cabbage! I can't begrudge him the tribute of this Bieblova Apartment building illuminated through its cut-out Hi-Macs next-generation acrylic stone, but I miss those darkened cheroot-filled cabarets of old.
himacs.eu



5
Toby GU10 LED Track Rail
Megaman

Plot, character, diction, thought, spectacle or song is no use if you can't actually see anything, Mr Aristotle. Thus Input Creative Studio specified Megaman's shadow and glare eliminating Toby track lighting for the difficult second floor gallery at Symi's Lobster, Oyster, Sushi (LOS) bistro bar. Lasting 12 times longer than halogen, and 80% more efficient, LEDs give definitive (ahem) performance. The moral? Greek drama demands careful selection of dimmable and halogen-mimicking mains GU10 LEDs and reflectors. And no fishy tale-telling there.
megamanlighting.com

6
High Contrast Dali
Iguzzini

Less is more, more or less, so it's fascinating to ponder, as the great Goethe once did, the philosophical and physical implications of light – and now what Iguzzini is calling 'invisible light'. Surely, doesn't that mean darkness? Or are we veering into the astrophysical realm of dark matter? And does it matter? At this Milanese architects' studio, the comfort-oriented low glare iN 30 recessed High Contrast Dali is specified for large spaces, entrance, meeting rooms and a small copy shop. Cosmic, man.
iguzzini.co.uk

7
Edge Reader
Astro

Open and say 'Ahhh' for Doctor Astro, whose dual-source LED Edge Reader combines soothing 3w ambience with the directional functionality of an 11.5W reading light. A self-effacing and sleekly clinical design, the Edge Reader's impeccable bedside manner is, in our diagnosis, positively enhanced by the lack of a headphone socket hardwired to some godawful hospital radio.
astrolighting.com

8
LED luminaires and battens
Concord

Have you ever tried to get a student to turn off a light? It's enough to make one nostalgic for that week spent cat-herding in the unfenced splendour of the High Atlas. If only I'd known of Concord's LED lighting systems, whose occupancy detection sensors might have saved me the therapy – and 20% off the power bills. Sylvania battens are among the solutions specified for the awkward access and varied requirements of libraries, lecture theatres and circulation spaces at this university refurb. And perhaps a bit less tuition fee on facilities and a bit more on research?
concord-lighting.com

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Leisure outlets revive flagging high streets

Cinemas and gyms are stepping in to fill the gap left in high streets and malls by increasingly redundant shops. Mixed use schemes are the name of the game

Words: Josephine Smit

The best place to find status, identity, meaning, and happiness is in experiences,' wrote James Wallman in Stuffocation: Living more with less. It's a theory that has been backed by research carried out by US universities including Cornell and San Francisco State, which have reported that people buying experiences derive a greater sense of wellbeing than those buying things.

Rightly or wrongly, we seem to have taken the message to heart. Property consultant Cushman & Wakefield's latest report on the UK food and beverage market notes that since 2014 the market for eating out has consistently grown faster than the market for the food and non-alcoholic drinks we enjoy at home. Healthy levels of consumer spend on leisure and the decline in traditional in-store retailing have driven a shift in our high streets and shopping centres. Coffee shops, restaurants and trampolining centres are taking the place of clothes stores, shoe shops and bookshops, while developers are now increasingly having to look to cinemas rather than big retail names to take on the anchor tenant role in new schemes. Food and drink alone now accounts for more than 20% of retail and leisure units across the UK, Cushman & Wakefield points out.

Even temples to out of town shopping, such as Sheffield's 230-store Meadowhall and The Mall at Bristol's Cribbs Causeway, are set to increase their leisure offer. Developer British Land, which owns Meadowhall, is aiming to double the amount of leisure space across its overall retail portfolio.

'Regionally, our share of leisure space has been low compared with our competitors,' says Alice Keown, F&B asset manager with British Land. 'Not long ago the figure was sub 5%; we've now hit double digits, and the aim is to get to 15% in two to three years.' For towns, cities and shopping centres in need of regeneration, leisure can therefore be a prime route to revival. But success depends on the extent to which consumers are willing and able to part with their cash for the experiences a location has to offer.

SIMON HARVEY PHOTOGRAPHY

Above PTE Architects' The Scene in Walthamstow, combining mixed-use residential with an anchor cinema, helps reverse the recent trend for out-of-centre leisure.

Out of the box

Modern leisure development has become synonymous with a cinema coupled with familiar restaurant names, such as Frankie & Benny's and Chiquito, all housed in a big box on the edge of town. Bringing leisure back into urban centres and combining it with retail and residential in mixed use development can make business sense, says Matt Ashman, partner, leisure and restaurants, at Cushman & Wakefield. 'The traditional cinema with five restaurants has not driven all day trade. By incorporating a range of uses, with cultural spaces or gyms, developments can drive users at different times of the day, so that there is steady trade.'

Now that we don't need to go to town and city centres to shop, we are looking to them for leisure, and their potential to offer the convenience of working, living and a range of other pursuits suits our time-poor lives, adds Ashman. 'We are seeing a turn back to the high street as an experience. People are choosing where to shop based on what they are going to eat.'

Bringing leisure development into the high street and urban centre, often as part of mixed use schemes, changes not only the offer but also the design proposition. 'Architecture is important,' says Ashman. 'You've got to tell the story of a neighbourhood, and not a unit.' That presents opportunities for architects, adds Teresa Borsuk, senior partner of architect Pollard Thomas Edwards (PTE). 'It requires smart thinking to combine uses – there are challenges to overcome at many levels.

BRENDAN BELL

Left Pop-up culinary units, such as this one at London's Broadgate, are popular with local workers in commercial zones. **Below** PTE'S Finsbury Central; health, childcare and sports facilities in inner-city Islington.

'Cinemas pose challenges in structure, sound and services,' she adds. 'Cinema operators don't want anything to penetrate the box. But we've never found a use that can't be mixed.'

PTE created Walthamstow's the Scene, a scheme that combines cinema, restaurants and homes. While cinemas are generally separated from residential, the Scene's is buried in the centre of its site and wrapped in homes and restaurants. A private garden on top of the cinema gives residents a sanctuary from the bustle, while filmgoers can gather in a quasi-public space in front of the cinema entrance.

'At Walthamstow the driver was to bring homes into the centre of town to be able to sustain a night time economy. Waltham Forest needed a vibrant place,' explains Borsuk. 'Of all the regeneration projects I've done, that has had the quickest effect – it had the critical mass of people from day one.' Since then, Waltham Forest Council has progressed development on sites nearby.

The public-private sector partnership behind Rochdale town centre's proposed leisure and retail regeneration will be hoping its scheme has a similar impact. It combines a six-screen cinema, other leisure, retail, library and a transport interchange. 'It pulls together every strand in the town centre,' says Chris Wieszczycki, principal director of scheme architect, tp bennett. The design, with its gold-fronted cinema, expresses pride in its community, says Wieszczycki, but he adds that such schemes are often not about creating an architectural statement. 'You have to put the customer first – it's all about what brings people in.'

'Of all the regeneration projects I've done, that has had the quickest effect – it had the critical mass of people from day one'

That calls for a focus on placemaking, he continues. 'There can be a format approach to leisure but a successful destination needs more. Successful destinations are places that people want to go to, not necessarily with a purpose in mind. You might go to Covent Garden, take a stroll, eat and shop. The whole experience is important.' Some projects, like the architect's town centre regeneration in Hounslow, west London, start from looking at what a location lacks, and so needs to make it a place. 'In Hounslow town centre, there was nowhere to meet and congregate. People needed a square where they could gather,' Wieszczycki points out.

Another coffee?

Such moves may breathe much needed new life into some towns, cities and shopping centres, but British Land's Keown warns that they are unlikely to provide salvation for all: 'We're seeing a widening gap between primary and secondary locations – and expect secondary locations to continue to see decline,' she explains.

As consumer spending on leisure is discretionary, there are also inevitably concerns about the sector's resilience through economic uncertainty. An analysis of leisure activity in the first quarter of 2017, by business advisory firm Deloitte, found some signs of slow down. Cushman & Wakefield's Ashman, however, points out that when it comes to eating out the UK still has some way to go to match the US, where restaurant sales last year overtook grocery sales. A survey by the property consultant suggests that the UK will see more than 1,400 new food and beverage outlets created this year and 1,500 next to continue to feed our appetites. If the economic climate does worsen, it seems that we may still be looking for experience, even if it is only a flat white.

OCCUPIER MASH-UP

Leisure used to be about cinemas, bowling alleys and a familiar favourite restaurant. Now consumers are more demanding and developers and operators are evolving their offer:

- The same merging of activities that is seeing work, rest and play converge in co-working and co-living spaces, is producing alternative mixed schemes, such as in health and wellbeing. The new Finsbury Leisure Centre in Islington, for example, will combine homes with health, childcare and sports facilities. 'Leisure and health can go together very well, says PTE's Borsuk, whose practice is working on the project. In the US, fitness business Life Time is taking anchor space in retail malls for large-scale centres combining fitness with health and wellbeing services. It is opening its first such centre in Houston's Galleria this summer and has four mall centres in the pipeline.
- Pop-ups: Around and between buildings open spaces are becoming increasingly important for pop-up uses. 'Of our 50 regional shopping destinations, only five are covered, so they are good for that,' says British Land's Keown. 'It's a good way of putting the community at the heart of a scheme.' The developer is testing pop-up street food in shipping container units at Broadgate while construction work is in progress at 1 Finsbury Avenue, and its Eat from the Streets initiative takes street food to regional centres using a Routemaster bus.
- Competitive socialising: Table tennis and crazy golf used to be the stuff of seaside holiday resorts and council recreation grounds, but they are now found in indoor centres from London to Manchester. Centres offering these activities, termed competitive socialising, combine play with food and drink and are designed to appeal to university students and millennials.

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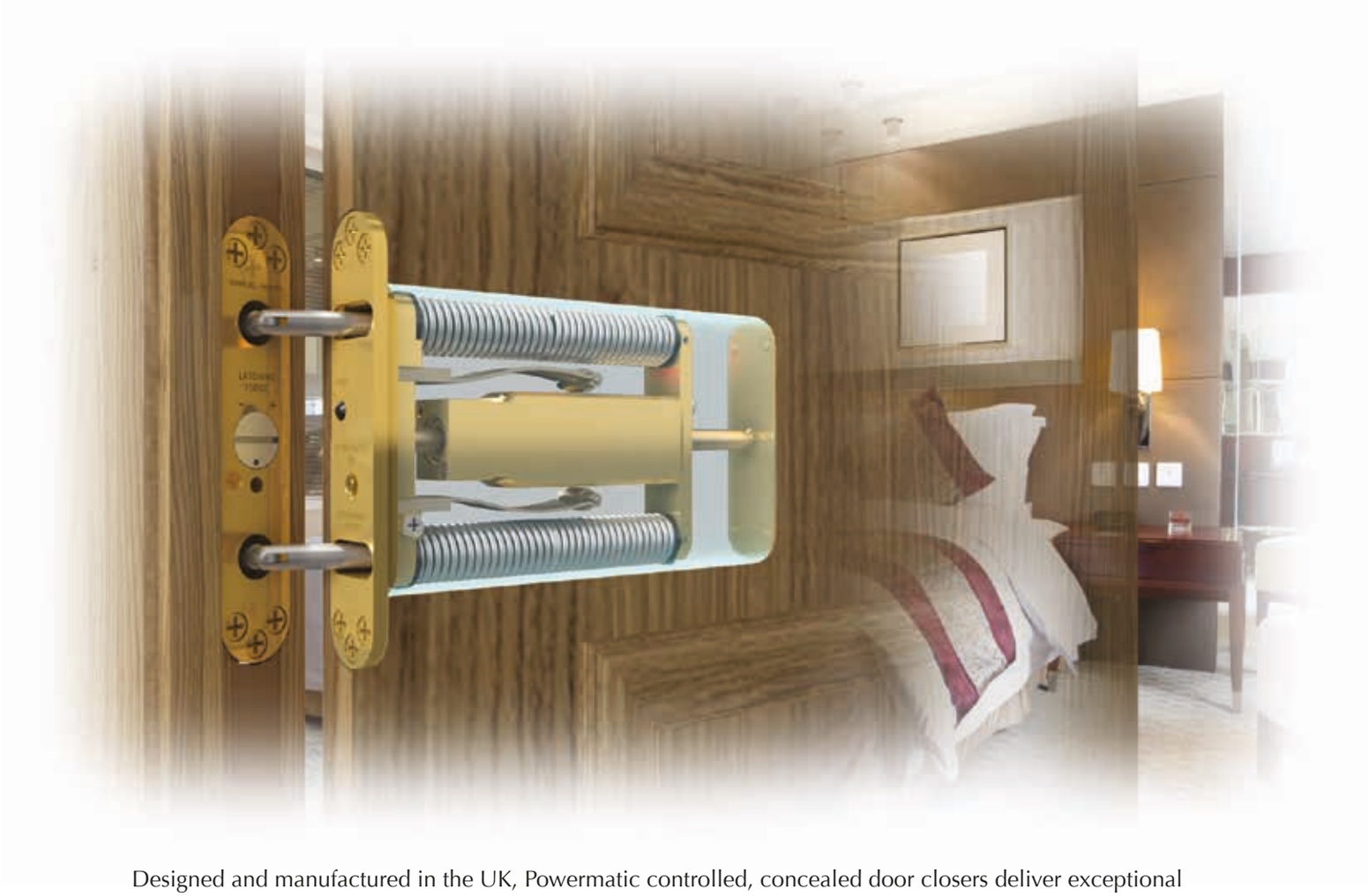

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Australian Islamic Centre, Melbourne

Glenn Murcutt has created a daringly contemporary mosque with rooflights designed to the traditions of shape, dimension and symbolic Islamic colours

Words: Pamela Buxton Photographs: Haman Elevli

Ninety-six golden lanterns adorn the roof of the extraordinary prayer room of the Australian Islamic Centre, designed by Glenn Murcutt in collaboration with Hakan Elevli of Melbourne practice Elevli Plus.

The prayer room, which opened this summer at Hobsons Bay in Melbourne, is the first part of the centre to complete. Initiated by the Newport Islamic Society, the centre will include a congregational hall, education room, imam's quarters, restaurant, and water garden. A key ambition is inclusiveness, with the centre open to all members of the public.

Murcutt and Elevli began working on the project more than a decade ago. It was an unusual commission in terms of both scale and nature for Murcutt, who is renowned for his individual house designs. He had however already chaired the jury of The Aga Khan Award for

Architecture – which celebrates the design of Islamic buildings – and was keen to work with an architect from an Islamic background on the project. Elevli had already designed a traditional mosque in Keysborough, also in Melbourne.

Murcutt was particularly drawn to the brief for a contemporary, Australian and inclusive mosque and was clear that the building should 'belong to today and to modern architecture'. This resulted in his early decision to avoid the traditional golden dome and minaret approach, and instead replace the single dome with the multitude of golden roof lanterns with different coloured glass. These create a striking, contemporary form from afar as well as providing lighting effects in colours and shapes that resonate with Islamic symbolism. Instead of a traditional tower, the minaret has become a massive concrete wall that forms one arm of the mosque's entrance zone.

Initially controversial with some of the elders, the lantern roof design was swiftly embraced by the younger members of the community. According to Elevli, although domes were traditional, there was no specific Islamic design requirement for a mosque to have a dome. What did matter was an orientation facing Mecca.

The lantern-topped prayer hall roof stretches 42m by 28m with in-situ poured concrete walls and an independent steel roof structure supported by 24 steel columns. The initial design had proposed lanterns rising 2.2m high, but when it became clear from models later in the process that their effect was being lost, the height was raised to 3m above the parapet line.

The lanterns are triangular in plan with one glazed vertical panel, and are topped by a golden canopy. There are two widths of lantern – 3330mm and 3170mm – with both sizes weighing more than one tonne.

The rows of lanterns are carefully oriented so that the glazed panels catch the light at different times of day and funnel it down into the prayer hall. The triangular shape was chosen in sympathy with Islamic geometry.

'When Glenn started processing Islamic architectural theory he discovered that everything was built on the geometry of odd numbers. He realised there were triangles everywhere within mosques. Our grid was based on 3s and 5s and we used triangles for the lanterns,' says Elevli.

Murcutt researched Islamic symbolism and this informed the choice and positioning of the coloured glass. Green, which represents nature, was used on south-facing lanterns with blue for the sky on those facing north. Red, which

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represents blood/strength, is on the west with yellow (paradise) for the east. There are 27 each of blue and green, and 21 each of red and yellow.

Each lantern was formed using a metal stud frame with marine plywood, which was clad with interlocking Zincalume sheets fabricated specifically for the lanterns. This metal sheeting was then hand painted with two layers of undercoat topped with a metallic gold top-coat, a colour chosen to give a traditional Islamic feel to the contemporary roof form.

For the lanterns' glazed panels, the architects chose 11.52mm thick, Landson laminated safety glass with Vanceva tinted PVB interlayers. Pane sizes vary depending on their location on the roof, rising to a maximum of 2809mm by 1997mm. Each lantern has a canopy over the glass that comes down 600-650mm from the top of the lantern at a 75° angle, finishing 230mm-250mm from the pane.

The lanterns also have a vent that opens automatically when the temperature reaches a certain level. The inside of the lantern is plastered and lit with LEDs.

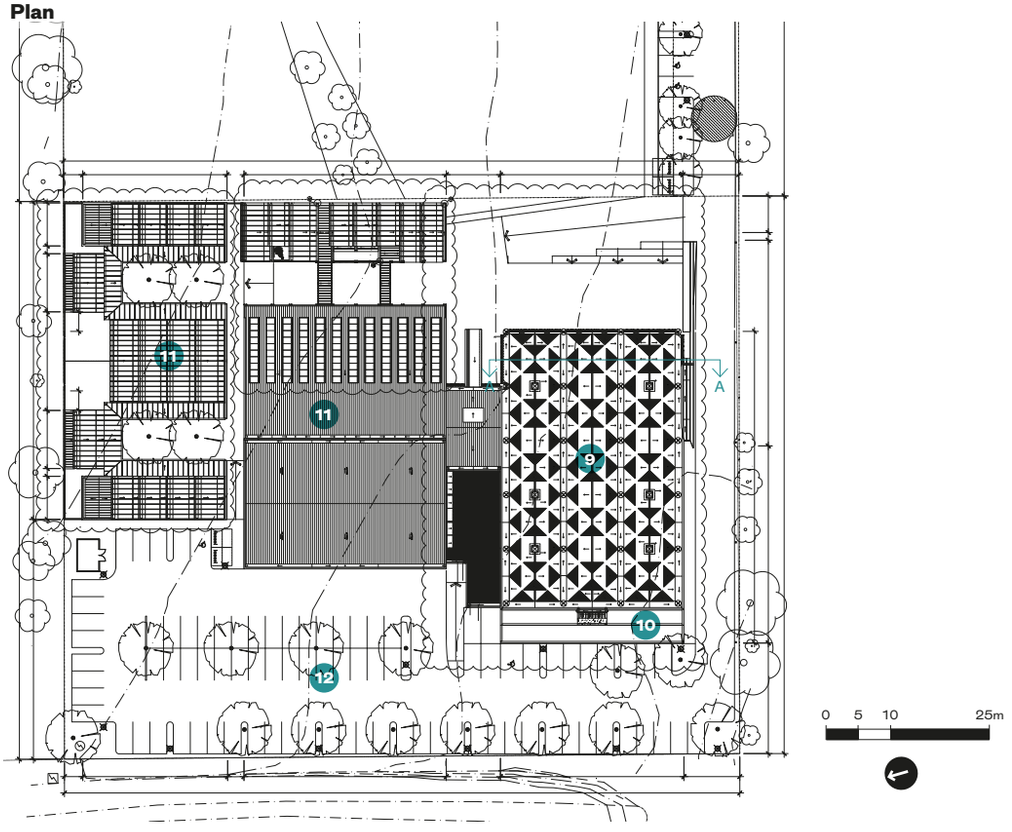
Each lantern was handmade on the floor of the prayer hall before installation. Off-site prefabrication had been considered, but the community was happy to build them on-site, says Elevli, in the spirit of the donations of both time and money that have enabled the construction of the centre.

After construction, the lanterns were

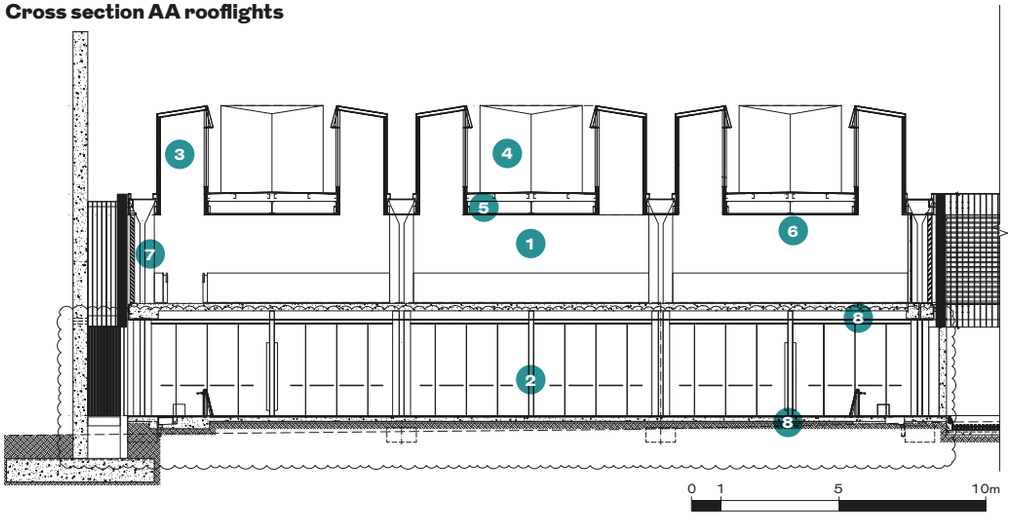
Top 96 golden lanterns face the four corners of the compass, their colours representing nature, the sky, blood and paradise.
Above The result: lighting mood changes according to the time of day as individual colours become more dominant.
Left Steel studs and marine ply form the body of the lantern; it all sits on steel C-sections.
Below 24 steel columns are seamlessly integrated into the design.

Initially controversial with some of the elders, the lantern roof design was swiftly embraced by the younger members of the community

Plan



Cross section AA rooflights



1 Female prayer area
2 Verandah
3 Coloured lantern interior, paint finished
4 Steel framed roof lantern
5 Waterproof membrane over 20mm ply at 1° pitch with insulation and reflective foil sarking under
6 Acoustic panels on furring channel under roof framing
7 Steel columns and custom made rainwater heads
8 Concrete slab
9 Main mosque block
10 Reflective pool
11 Future staged build
12 Car parking

Above One minaret replaced by many lanterns.

craned up through the centre of the roof before being lowered into place on steel angles within the roof beam structure, and fixed from the underside. They were then further secured by a welded, 5mm thick Cosmofin waterproof PVC-P membrane on top of 20mm marine grade ply.

While the lantern roof gives the prayer hall its distinctive form, it's the lighting effects inside that make the biggest impact. These change throughout the day from, for example, a show of gold light in the morning, greens by midday, and as the sun comes round in the afternoon, red.

'A beautiful soft light comes through, but not to the point where it is distracting,' says Elevli.

When approaching the centre during the day, he says, the first thing you notice is the gold of the lanterns, while at night, when it's internally lit, you see the colours. Inside, however, the effect at night is a white light, symbolising purity.

As for the elders who had initially wanted a traditional dome, they're now the lanterns' biggest advocates, says Elevli.

'They absolutely love it. They talk about it more than the youngsters. They're very proud of their mosque,' he says, adding that he's already been contacted by other communities interested in contemporary, and inclusive, mosques.

Crowdfunding is being sought to help complete the ambitious project. At an event to mark a recent exhibition about the project at the National Gallery of Victoria, Murcutt expressed his hope that the design of the centre will promote greater links with the wider community.

'Through its planning strategy, the building itself reaches out and the community will follow – that would be my great hope,' he says. ●

more than just a rooflight

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Costed

Aaron Wright, head of infrastructure data at RICS, looks at roofing costs

The roofing market has fared well in recent years, following a slowdown in 2012/13. Tiles account for around 40% of the market by value, with concrete the largest sub-sector in both value and volume, closely followed by clay. Fibre cement and natural slates have far smaller market shares. Welsh slate, cheap in the 19th century, is now one of the most expensive options. Metal sheet roofing is almost as large in value terms as roof tiles. Applied and flexible membrane has the smallest market share in terms of value and volume but is increasing year-on-year.

Green and brown roofs are becoming popular as they can provide amenity for building users, create visual impact and foster wildlife habitats. Intensive green roofs require a depth of soil to grow larger plants and are labour intensive. Extensive green roofs are designed to be virtually self-sustaining and low maintenance. Brown roofs use local soils and recycled materials as a growing medium. Emerging technologies, which combine roofing materials with renewable energy solutions, such as Tesla's solar tiles, may ultimately prove cheaper and more resilient than traditional options.

A roof is typically a major capital investment. Replacement is usually required every 20-30 years, but this varies. Factors for consideration when deciding on roofing are capital cost, life expectancy, maintenance, weight (structural support), and appearance. A roof's enemies are largely natural, which should be borne in mind when making a choice. ●

These guide prices, as of 2Q17 for a UK mean location, are from the BCIS of RICS. They are based on a medium-sized residential project for products in the low to upper-middle specification range. They assume a pitch of between 35° and 49° unless specified

Cladding coverings (sloping area measured)	**Range £/m²**
Sheet roofing	
Natural finish, corrugated fibre cement to BS EN 492; single skin covering, inc ancillary items: profile 3/profile 6	34-39/29-33
Acrylic finish, corrugated fibre cement to BS EN 492; single skin covering, acrylic finish, inc ancillary items: profile 3/profile 6	40-46/37-42
Plastisol coated steel composite roof panel fully bonded; coloured topside, white soffit, 1000mm cover x 80mm thick core, inc ancillary items	67-77
Polyester powder coated aluminium composite roof panel fully bonded; coloured topside, white soffit, 1000mm cover x 80mm thick core, inc ancillary items	59-68
Slate and tile roofing	
Concrete tiles; single interlocking, perimeter and alternate courses fixed; 38 x 25mm treated sawn softwood battens and breathable sarking felt, inc ancillary items	
Ludlow Major	24-28
Mendip	25-28
Modern	25-29
Wessex	32-37
Interlocking resin slate tiles, perimeter tiles mechanically fixed; main body not; 38 x 25mm treated sawn softwood battens and breathable sarking felt, inc ancillary items; Cambrian	74-85
Plain tiling; 265 x 165mm tiles laid with maximum 100mm gauge and minimum 65mm lap; every fifth course and all perimeter tiles fixed; 38 x 19mm treated sawn softwood battens and breathable sarking felt, including ancillary items	
Concrete / Clay / Hand made clay	75-86 / 88-101 / 136-156
Fibre cement slates, 90mm lap, 38x25mm sawn softwood treated battens and breathable sarking felt, including ancillary items	
600 x 300mm / 500 x 250mm	35-41 / 46-53
Natural slates, 90mm lap, 38 x 25mm sawn softwood treated battens and breathable sarking felt, including ancillary items	
600 x 300mm good quality salvaged	44-51
500 x 250mm good quality salvaged	58-66
400 x 200mm good quality salvaged	100-115
600 x 300mm imported	52-60
500 x 250mm imported	72-83
400 x 200mm imported	119-137
600 x 300mm best quality Welsh	110-126
500 x 250mm best quality Welsh	90-103
400 x 200mm best quality Welsh	124-142
Metal sheet coverings	
Milled lead sheet BS EN 12588; fixing with tinned copper clips, brass screwed and copper nails, laid on sheathing felt with patination oil finish, including ancillary items	
Code 4, flat / dormer / vertical	147-169 / 237-273 / 259-297
Code 5, flat / dormer / vertical	237-273 / 258-297 / 259-297
Code 6, flat / dormer / vertical	180-207 / 258-297 / 259-297
Traditional sheet copper roofing in 0.6mm copper to BS EN 504 material C107, Temper grade 0, fixing with copper cleats laid on sheathing felt, inc ancillary items	
Flat roof with standing seam / batten roll	192-221 / 201-231
Dormer with standing seam / batten roll	242-279 / 256-294
Vertical with standing seam / batten roll	252-290 / 252-290
Plain sheet zinc roofing, BS EN 501; Zinc gauge 14 laying to roll and cap system, laid on sheathing felt, including ancillary items	
Flat roof / dormer with standing seam	160-184 / 166-191
Liquid applied and flexible membrane roof covering	
Mastic asphalt BS 6925, black sheathing felt isolating membrane weighing 17 kg per roll with 50mm lapped joints, laid loose	
20mm Two coat work, solar reflective paint finish	54-62
20mm Two coat work, finished with 300x300x8mm tiles	133-153
Three layer felt coverings to falls and crossfalls and to slopes not exceeding 10°, first layer BS EN 13707, type 3G perforated; intermediate layer and top layer	
Mineral surfaced	60-70
Limestone chippings	67-70
Solar reflective paint finish	77-89
300 x 300 x 9mm fibre cement tiles as finish	184-212
Green roofs	
Three categories assume a pitch which does not exceed 10°	
Intensive / semi-intensive / extensive	175-210 / 165-190 / 140-180

Specified

1
Roofing membrane
Sika

When it comes to puzzles, Professor Rubik was top of the form at thinking out of the box. Well, yes, it looks sort of boxy, but his cube was more complicated than that. That's the thing about boxes, campers, they look simple but they're not. Hence the phrase 'box clever'. Just like Sika's Ewart Grove waterproofing job, shown here; it's a box, fair and square, but it was one hell of a puzzle to get it looking so simple, straight up. And just like a Rubik's cube, it incorporates precision, symmetry and uniformity on all four sides. Bet your precocious teenager couldn't do that in 30 seconds.
gbr.sarnafil.sika.com

2
JB Shingles
Marley Eternit

Arriving at Center Parcs, Sherwood Forest as a nipper, I was quite disappointed to find that our cabin wasn't situated under a large glass dome (a la Silent Running) only the swimming pool was. However, these tree houses with TV room, games den and en-suite bathrooms – and not forgetting Western Red Cedar Shingles – would certainly have perked me up if such things had been invented back then. However, I think I would have drawn the line at getting into a hot tub with my parents.
marleyeternit.co.uk

3
SkyView & Aero Access rooflights
Sunsquare

Are we alone? Is there life out there? Ah, answering the enigmatic but biggest question of all is going to take some bright young minds. To shed light on the matter, the powers that be at the '21st century' Sybil Andrews Academy in Bury St Edmunds have installed Sunsquare's SkyView, SkyView Multi Pane and Aero Access rooflights in the new Heart building to train any future Einstein's eyes on the skies. But until we find life on the planet Tharg, it looks like the little critters will have to make do with those B-movie UFO pendants invading the reception area
sunsquare.co.uk

4
Flushglaze rooflights
Glazing Vision

Going forward, our intentionality is to circle back and reach out to establish the potentiality of future synergies in an out-of-the-box glazing-systems conceptualisation environment. Or, for real blue sky thinking, we'll just specify Glazing Vision's sleek, efficient Flushglaze rooflights. In a wide variety of useful configurations, they all feature insulated double glazing in a powder-coated extruded aluminium frame with invisible fixings. Here we see a circular fixed Flushglaze squaring the circle of illumination expectational disruption in the stairwell space.
glazingvision.co.uk

5
Protective roofing sheeting
Icopal

When I asked you to arrange cover for Michaelmas term, headmaster, I wasn't expecting this. No doubt the boys appreciated Kederflex's climate shield protecting them from 'precipitous conditions such as rain and snow, as well as keeping out the sun's harmful UV rays,' but without a supply teacher in the Marlborough College English department, they seem to have turned the library into what they dub a 'jazzstep chill tower' and smoked all the Coleridges.
icopal.co.uk

6
Conservation Rooflight
Rooflight Company

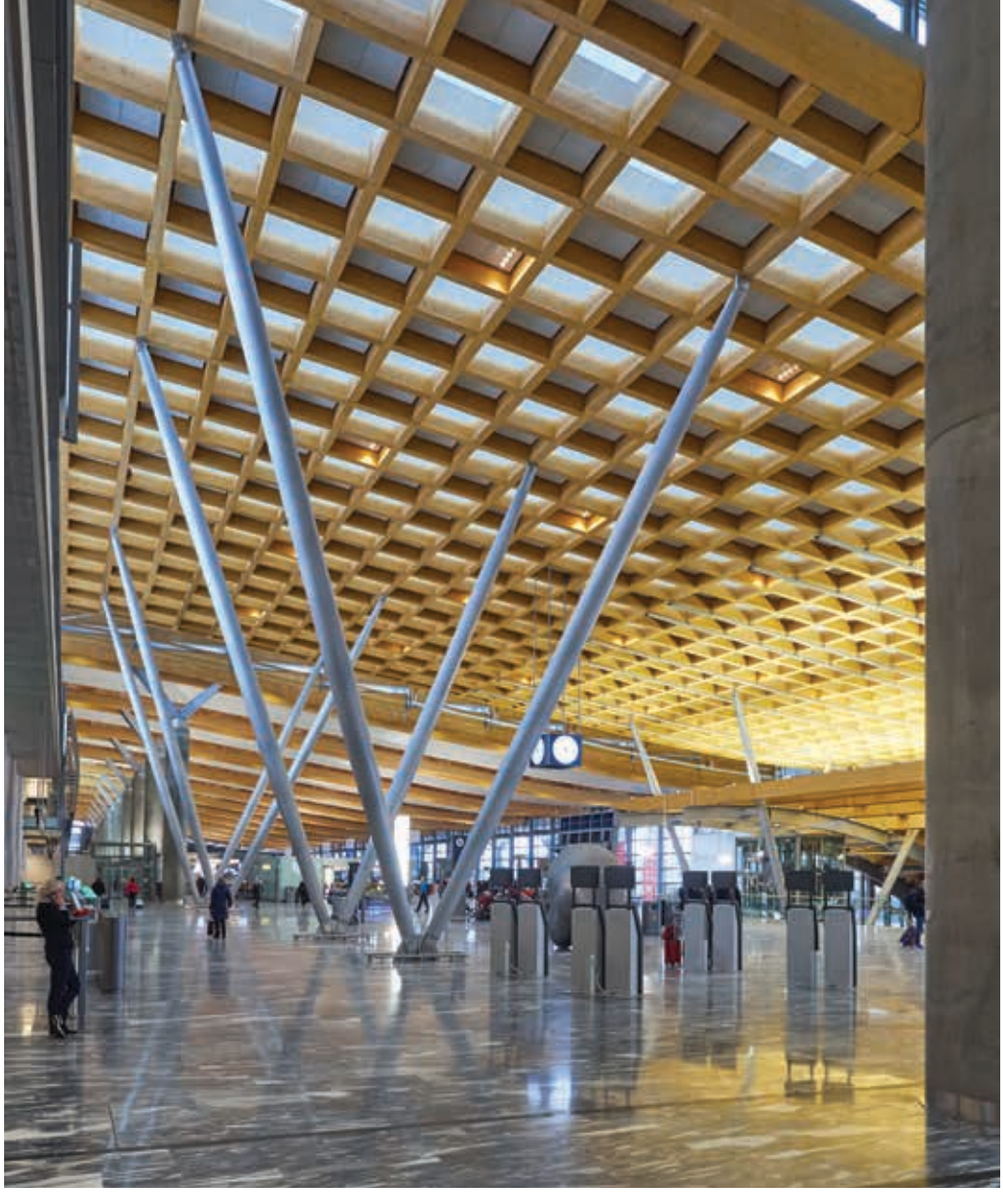
Tired of the daily commute? Sick of office politics? Had enough of Donna's analysis of last night's Gogglebox and Trevor Harrington's bonding initiatives? Feeling just like Lunchmoney Lewis and his oppresion by bills and work? Simply visit barns-R-us.com to find the perfect getaway, where in redundent rural barns converted to luxury accommodation you can lie on the recliner, gazing at the sky through Rooflight Company's Conservation rooflight, cares melting away. Of course, there'll be your account, sir, to settle, but that's the sort of blue sky thinking you need.
therooflightcompany.co.uk

7
Bespoke rooflight
Maxlight

The hamlet of Bradbourne in the Derbyshire Dales was first mentioned in the Domesday Book as belonging to Norman soldier Henry de Ferrers and was stated as being worth 30 shillings. More recently, it made its mark as one of the 51 'Thankful Villages', having suffered no losses of life during World War I. A trifle relatively speaking, but Maxlight's striking new rooflight on the eponymous street in London's trendy Fulham has been installed in an extension that must have cost significantly more than 30 shillings but which sans doute is making someone that little bit happier.
maxlight.co.uk

8
Multifunctional modules
Okalux

Welcome to Copenhagen's 'Science City' (SC), Copenhagen University (CU) on which Okalux's multifunctional modules (MFM) are being used to very good (VG) effect on Mikkelsen Arkitekter's (MA's) extension of the ISSN… I'm sorry, the Institute of Sports Sciences and Nutrition (ISS… no, I've done that bit (IDTB)) on the Nørre Campus (NC). And the MFM MA's ISSN extension in SC on the NC of CU comprises three different OKALUX products in one single façade element and our initial expectations are outdone.
okalux.com



KNUT RAMSTAD

IVAN BRODEY

Oslo Airport, Norway

Nordic – Office of Architecture's refurbishment and extension has set a green benchmark for the notoriously unsustainable aviation industry

Words: Tom Ravenscroft

Burning around 300bn litres of jet fuel a year, and contributing around 5% to global CO_2 emissions, aviation is not known for its sustainable credentials. The high-energy consuming, artificially lit, air conditioned, buildings that serve this industry in many ways reflect it.

While buildings in almost every sector are achieving greater energy efficiency, airports have largely resisted the drive to sustainable design. Nordic – Office of Architecture, however, has bucked this trend with Oslo Airport, which claims to be the world's greenest terminal.

The Oslo-based practice designed the original airport in 1998 and almost 20 years later, has completed a renovation that almost doubles its size and capacity. The expansion has increased the terminal from 148,000m² to 265,000m², with both arrivals and departure halls expanded to 52,000m². This raised total capacity to 32 million passengers a year from 17 million. Along with expanding the terminal building, Nordic – Office of Architecture reconstructed the train station and added a striking 300m-long pier.

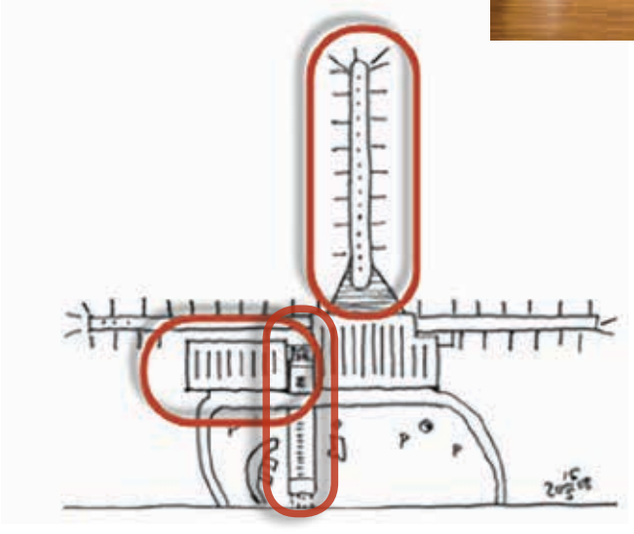
This time, however, there has been a far greater emphasis on sustainability, says Astrid Bugge Frøvig, interior architect at the firm. 'Not only has our view on contemporary architecture developed, respect to environmental matters and universal design has also grown.' The first airport to receive a BREEAM Excellent sustainability rating, this building, made from recycled steel, Scandinavian timber and volcanic ash-mixed-concrete, uses various eco-solutions. Most unusual is the use of snow for cooling.

In winter, snowfall ploughed from the runways will be collected in a system of reservoirs beneath the building and covered with insulating sawdust. Holding more than 2 million gallons of snow, these basins will be used as coolant for the building during the summer months. According to the building's architect, this is the first time the system has ever been used and it will save as much as 2GWh of energy each year.

While these basins are invisible, the overall sustainable agenda is highly visible in the

DAG SPANT

Far left Looking along the extended departures hall, the huge glulam timber lattice roof allows daylight to pour into the terminal building.
Left Newly incorporated access to the airport's rail station gives airport users greater visual legibility.
Right Curved glulam beams create the cylindrical form of the new 300m long piers that increase handling capacity to 32 million.
Below The architect's concept diagram simply explains the new interventions on its 1998 terminal building.
Below right From the exterior, limited glazing controls both excessive solar gain and heat loss.



IVAN BRODEY

form, materials and interiors of the new spaces. Although aesthetically the expansion of the central building is largely a continuation of the practice's existing design, the new north pier is differentiated with a unique expression.

'We let the existing design inspire, not restrict, our ideas. We wanted to create contemporary interiors in harmony with the existing. Simplicity, spacious volumes, and a Nordic impression have been key factors,' says Frøvig.

The form of the pier is the result of an intensive environmental and sunlight study. It includes a roof of curved glulam beams designed to minimise solar heat gain and loss and use throughout of recycled steel and environmentally friendly concrete mixed with volcanic ash. Inside, the new pier is entirely clad in timber from Scandinavian forests. This also gives the building a culture-specific feel, says Frøvig: 'The wood cladding creates a Nordic expression, together with other materials that express the cold winter climate with snow and ice.'

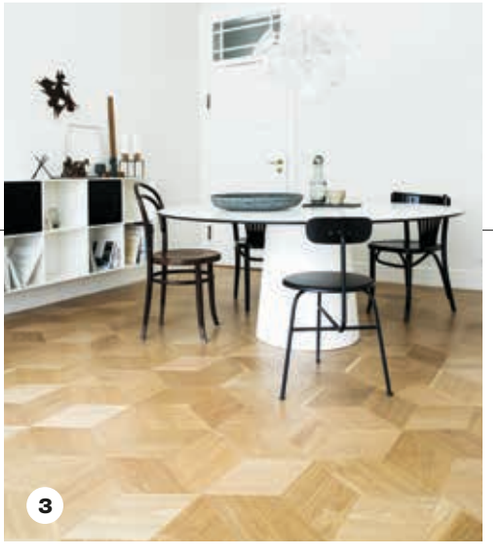
While the terminal does not have the vast glazed walls often associated with modern airports, the architect used glass in the facade and ceiling: 'The natural changing of daylight and shadow gives life to the interior and emphasizes the design, colours and surfaces of the materials and the Nordic impression,' explains Frøvig.

Artificial lighting follows the natural light, with diodes controlled to follow the hours of day and night, weather and the season. So grey as well as sunny days are reflected in the interior.

Nordic – Office of Architecture's new terminal is undoubtedly a sustainability success and a benchmark for what this often power-hungry building typology should be achieving. Although this is admirable, the focus on this strict agenda has potentially compromised the building's aesthetic, creating slightly bland and uninspired interior spaces.

However, just as Oslo Airport is considered a gateway to Scandinavia, Nordic – Office of Architecture has forged an entry point to smart sustainable design for the industry. ●

Specified



1
Puro set wide bath
Kaldewei

To bath, or not to bath? That is the question. Whether 'tis nobler in the mind to stand and shower, secure on the non-slip coating afforded by one's outrageous fortune, or to lie up to the neck in a sea of bubbles and by reposing make full use of the versatility of Kaldewei's new Puro bath, with its extra-wide rim, central waste and vastly configurable tap, control and handle positions to end the heartache and the thousand natural shocks that flesh is heir to. For in that tub of steel, what dreams may come?
kaldewei.co.uk

2
Glazed partitioning
Ocula Systems

If it's critical for your client's people to keep their eyes on the prize, then maybe avoid Ocula's partitioning systems with flush glazed doors for your next visually porous modern executive interior. Striking back-painted safety glass is face-bonded to an aluminium frame in a variety of designs, colours and configurations, entirely customisable to suit your suite. As it were.
So eyes down for a full house – hopefully.
oculasystems.co.uk

3
HexParket
Junckers

Oh, what a glorious thing to be,
A healthy grown up busy busy bee!
Whiling away all the passing hours
Pinching all the pollen from the cauliflowers.'
– Arthur Askey, 1938

...and in 2017, coming home to Junckers' rather smart kiln-dried oak Hexparket, each three-piece hexagon 20.5mm thick and 370mm across. Sanded to 150 grit and grooved on all sides with loose tongues supplied, it's ready to lay. Stick some of that in your pollen basket and smoke it.
junckers.com

4
Metropol Mixers
Hansgrohe

Women and men, let no-one miss today–!
Death to the machines–!!
– Metropolis, 1927, Fritz Lang

Death to the machines, that is, with the sole exception of this: Hansgrohe's Metropol mixer. Freder Fredersen has lost his heart to it, and fights to save the striking floor-mounted model. Maria's new relationship is with Pinot and chocolate. A cleansing flood is unleashed, and Grot is overwhelmed. Freedom to the workers of Metropol!
thewaterstudio.co.uk

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The collaborators

PIP's regular section showcasing inspired partnerships between manufacturers and architects

Hi-Macs puts poetry on the street

CNC technology cuts Konstantin Biebl's poems into SolidSurface facade in Prague

The facade of the Bieblova residence project, built using HI-MACS® Solid Surface, was designed by P6PA+Architects as a tribute to Konstantin Biebl, the inter-war Czech poet who lends his name to the Prague street where the building is located.

The construction of this poetic façade arose from the need to create a frontage with contemporary aesthetics that would fit in with the original decorations of surrounding buildings, which date from the first half of the 20th century.

The main expressive element of the building – which comprises two basement and seven upper floors – is found in the impressive facade. This was built using white panels of HI-MACS®, chosen for its excellence in cladding large structures. The large size of these panels (2.6m by 1.1m), along with the graphic work on their surface (using perforated letters), enables backlighting to give the building a different appearance at night. Read diagonally from the upper left to the lower right-hand corner of each panel, the letters spell out different titles of poems by Konstantin Biebl: Zlom (Turning point), K Lesu (The way to the forest), Havran (The rook), Akord (The chord) among others.

The letters were milled into the HI-MACS® surface using CNC technology; each has a unique design. The facade is formed by different layers carried on a hidden steel structure.

www.himacs.eu
01892 704074

HI-MACS® Natural Acrylic Stone
LG Hausys

Dry surfaces at Gateway to Preston

Gatic keeps it discreet at Queens Retail Park with its CastSlot surface drainage system

Gatic's CastSlot drainage system has been installed at Queens Retail Park, a new 6.5ha retail development in Preston. The 7,500m^2 shopping centre has parking capacity for over 800 visitors. Designed by architect Cassidy + Ashton, the project is known as 'Gateway to Preston' as it develops into a highly visible entrance to the city.

The area required major works of the external soft and hard landscaping and Gatic's CastSlot drain with a Treadsafe option was specified here.

Working with Castle House Construction and supplied through specialist civil merchant JDP, CastSlot was a perfect fit for the prestigious new development. Ideal for car parks, the innovative slot drainage system is designed with an unobtrusive profile that sits discreetly in concrete, asphalt or block paving. Its Treadsafe option reduces the slot opening from 30mm wide to 2mm by 9mm wide slots, making the channel safe to cross for pedestrians without affecting intake capacity.

Andy Lyon, project manager at Castle House Construction said: 'We were impressed by Gatic's CastSlot Treadsafe system – it's easy to install, reliable and cost effective. Gatic's technical support was impressive too. The team was on hand to help with any technical issues and worked closely with us. The finished site looks great and the scheme obtained a BREEAM Very Good rating.'

Ryan Ogden, architectural technologist of Cassidy + Ashton added: 'We were involved from the feasibility stage through to construction. Throughout the construction phase I worked with suppliers including Gatic, who I found to be very helpful, especially its technical team.'

www.gatic.com
01304 203545

GATIC®

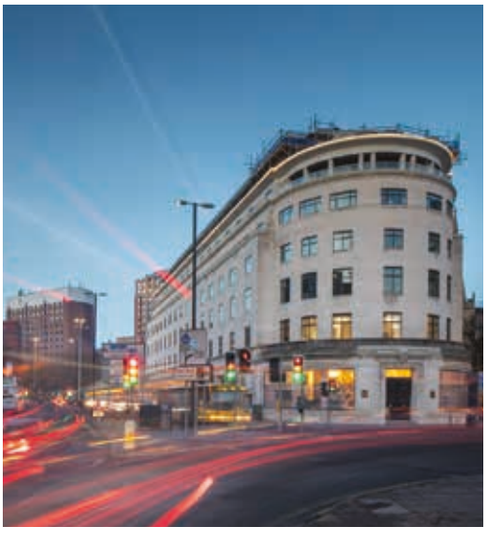
High impact U-values, low impact intervention

A Proctor Group maintains heritage features while insulating inhabitants of converted Electricity House

Spacetherm Wallboard has been supplied by A Proctor Group to mitigate thermal bridging for the historic Electricity House building in Bristol, recently converted by Crest Nicolson into luxury flats priced at £230,000 to £530,000. Sir Giles Gilbert Scott, creator of Battersea Power Station, designed the original Grade II listed building.

Used here as a window reveal board, Spacetherm Wallboard was developed to prevent thermal bridging through a structure's component. Spacetherm Wallboard, a high performance laminate consisting of Spacetherm Aerogel insulation blanket bonded to plasterboard, is ideal for use where low U-values are required, and space is at a premium.

As planning requirements stipulated that the original window opening aperture sizes had to be maintained, thin insulation was crucial to alleviate thermal bridging on the reveals. Spacetherm's superior thermal performance meant the contractor could provide high performing thermal conductivity of only 0.015 W/m^2K with just 17.5mm thick insulation overall.



Engineered for unsurpassed thermal performance in space-critical applications, Spacetherm offers exceptional thermal conductivity, plus breathability allied to hydrophobic characteristics.

Proctor Group

www.proctorgroup.com
01250 872261

Easy access keeps students moving

Revolving, swing and sliding doors give warmth, security and help the flow of 40,000 students and staff

GEZE UK is welcoming students at one of Europe's newest super colleges – the £228 million City of Glasgow College in the heart of Glasgow.

The technical and professional skills college has been called a 'college of the future', with industry standard and state-of-the art facilities.

Contractor Sir Robert McAlpine chose GEZE products for the entrances at Riverside, which faces City Campus on the other side of the River Clyde. The cutting-edge, contemporary building with almost 1000 learning spaces, needed a statement entrance while keeping practicalities and safety in mind. The west and south elevations have imposing glass and steel framed facades with manual revolving doors and automated swing doors to one side.

With functionality key to accommodate 40,000 students and 1300 staff, the TSA 325 NT manual revolving doors are spacious yet easy to operate. They provide an effective draught-free lobby, keeping noise, dirt and dust out, while a control system ensures users cannot be forced to speed up by anyone behind them.

Alongside, the Slimdrive EMD-F electro-mechanical swing doors incorporate assisted opening via an operating button with guaranteed constant opening and closing speed.

The RIBA Stirling prize nominated campus at Riverside incorporates a Slimdrive SL NT single sliding automatic door on the entrance to a 198-bed student accommodation block.

www.geze.co.uk
01543 443000

GEZE

Sign Up

Jerry Tate, partner at Tate Harmer, gives us three of his specification favourites

RICHLITE – SOLID PAPER COMPOSITE

Collaborating with artists on a temporary outdoor co-working space for Hoxton Square we were asked to produce a striking design which was cheap to manufacture, structurally sound and could be assembled and disassembled as required. Our TREExOFFICE proposal used Richlite compressed paper fins to form the structural frame; the mottled texture and black finish contrasted sensitively with the square. Richlite, which is manufactured from layers of paper set in resin, can be cut to a variety of forms, is durable and suitable for outdoor use. We like it so much we used it for our office table!
richlite.com

COMPACFOAM INSULATION

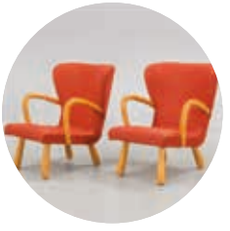
We have a passion for low energy designs and the fabric first initiative requires us to pay particularly close attention to detail. Our most recent Passivhaus, now on site, features bay windows doubling up as internal seats. To achieve the desired design while meeting stringent U-value requirements, we specified Compacfoam, a high density thermoplastic insulation. Passivhaus projects tend to avoid extrusions on the facade as it places additional pressure on the fabric performance, but Compacfoam allowed us to meet an incredibly efficient U-value of 0.022W/m²K in the bay window construction.
compacfoam.com

DEFENCE DOORS – FULL HEIGHT FLOOD DOOR

When creating a new opening in the existing historic sinking shaft at the Brunel Museum, we had a very particular set of constraints to resolve. The London Overground system runs directly below the space and the proposed doorway was set to be lower than the potential flood level of the nearby River Thames. We worked closely with Defence Doors to create an interface with the existing historic fabric and provide a single 1.5m wide watertight sealed door that was flood proof to its full height; with a robust aesthetic that was appropriate to the industrial nature of the museum.
defencedoors.com

...Sign Off

Jan-Carlos Kucharek enjoys three of this issue's out-takes



LAST LEGS

With regard to IKEA, the legendary Swedish lifestyle brand, an architect friend gave me two pieces of advice. 1: Whatever your client's high-end worktop is made of, don't bother trying to find cheaper kitchen carcasses than IKEA's – they don't exist. 2: Never try to replace one of your Diploma presentation drawings in its RIBBA frame – they deconstruct instantly and are only good for kindling. But things come in threes, so here's another: According to Barneby's Auction Aggregator, if your 1956 Åke range Clam chair, designed by Danish architect Philip Arctander, made it in one piece into this Millennium, it could be worth £50K. Yep, read between the lines – they're that rare!

BALL AND BEAR MARKETS

When, says Oxfam, 1% of the world population now owns over 50% of its wealth, it can be hard for the idle rich to decide what to spend their money on. So it's a big 'Like' for Clarus Glassboards' Balance luxury ping pong table for offices of multi-national tech giants. In a limited edition of 25, this corporate plaything come glassboard allows you to dash off in marker pen your latest global App concept while facing a zealous No.3 from product development. You can erase it too, just like online, overcoming libel/plagiarism issues. And when you tire of the App's grossly inflated share price you can bounce a ruddy great ball bearing on it and watch the bottom drop out of the market.

DOUR HANDLES

And for those aspiring to the sine qua non of door furniture, designer Allesandro Dubini's 'Juno' door handle 'breathes life into concrete, and projects an object into the Olympus of contemporary design'. The concrete handle of a steel core cast in a mould, has a pitted surface that, the PR states, relates to the Roman Goddess of the lunar cycle by looking like the surface of the moon. For Italian manufacturer Mandelli1953, could this be a little bit of genius, appealing to both the Pawson Minimalists and Lasdun Brutalists? Or, with its overthought and over-philosophised symbolism could it just turn out to be the ironmongery equivalent of jumping the shark?

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