**Products in Practice**  
**Sept/Oct 2013**

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All Kaldewei baths and shower trays come with a 30-year guarantee and are masterpieces of bathroom design. Combined with the ESR installation frame, Kaldewei’s 3.5mm steel enamel shower surfaces create stunning wetroom floors which are hygienic and guaranteed not to leak.

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...along with the RIBAJ, and only three issues in, Products in Practice has been redesigned. Some might find that a bit worrying – like joining Isi Metzstein’s infamous ‘Rubble Club’; where, if your buildings got demolished in your own lifetime, the lovely old curmudgeon would send you a consolatory bottle of The Macallan. Metzstein said the experience was like losing a child; though this redesign was more like giving birth, with the midwives only telling you to ‘push’ if they liked what they saw.

Our designer Matt Willey, who’s used to more consumer-facing magazines, liked the way PIP looked; so his approach was to gently ‘induce’ the design rather than start again. We seldom disagreed – except over the title. Those big letters of his made me think of the Building Regs, so I suggested he drop it down the page to emulate them; he obligingly said he’d give it a try – before simply forgetting about it. Similarly, he ignored my request to take the ‘J’ of ‘RIBAJ’, rotate it and turn it into a ‘P’. And when I mooted the idea of making the mag more upbeat by inverting the ‘I’ into an exclamation mark, his eyes rolled so far back into his head he looked like Carrie about to have a turn. Architects, it transpires, aren’t magazine designers. So here it is; Matt’s (and my!) Products in Practice – PIP – Slàinte!

Jan-Carlos Kucharek, Editor

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Cover image: Averbode Abbey by Pol de Wilde

Product in Practice September/October 2013
Hope springs eternal
Water management, plumbing and drainage system supplier Wavin has teamed up with water specialists from Unicef to help children in Bhutan. Providing Essentials for Children (PE4C) is a joint initiative between the two organisations to give children in poor countries clean drinking water and proper sanitation. The firm has committed to improve sanitation in 38 schools and install water storage systems in 26.

Glazing Spain
There’s a welcome transparency to the legal process in Madrid now Technal has rolled out its Geode-MX curtain walling for the city’s new 6800m² Fuencarral police HQ in the El Pardo district of the city. Voluar Arquitectura has created a bold form of cantilevered glass-fronted boxes that protrude from its double-skin envelope, break up the facade and provide raised terraces and patios. Random perforations on the outer skin’s mesh screens control the depth of field and light penetration, providing a degree of privacy and solar shading throughout the day; and creating a constantly changing facade. Internally, a full height glazed atrium at its centre unifies all the buildings’ different administrative functions and spaces.

Hurrahs for GAGAs
PIP’s editor has judged the Galvanisers Association Awards (the GAGAs) for the last few years, and the quality of entries this year has been as high as usual. A worthy winner was this year’s ‘Galvanising in Engineering’ recipient – Bourne Construction, which oversaw the ‘hiding’ of a huge water treatment works the size of three football pitches in the middle of the South Downs. With a grassed roof and berms all around, the works referenced the prehistoric architectures of Britain’s Long Barrows.

No schlep to the Schloss
One of over 800 castles in the region, Burg Schloss in Germany's South Tyrol has clung to its rugged crag for almost 1000 years. But today’s tourists face a steep 45-minute walk up the mountain to reach it. Now that has all changed: local forge and metal working shop Schwärzer has built a bespoke iron staircase, with railings made from Mevaco untreated steel crimped mesh. Having been around since 1648, the firm obviously knows the area and mountain very well, which must have come in handy when operatives had to abseil down the crag face to fix the stair directly to the bare rock. ‘The client wanted a light, almost floating design,’ said company director Priska Schwärzer. Whether the fabrication floats or not, the fabricators definitely did.

Eyes on the prize
Nope, it’s not a fitting for a new designer wimple, it was architect Niall McLaughlin’s attempt to give the client of the Stirling-shortlisted Bishop Edward King Chapel a view of the completed building. McLaughlin created a scale model and cut a head-shaped opening into its card base so nuns could ‘insert’ themselves into it. Such imaginative approaches to the design and its communication are probably what won him the commission in the first place; but we’ll have to wait and see if the strategies convince the prize jury as much as they convinced the priory.
**Frac-ing creates turbulence**
A government funded arts and architecture programme for the French regions, patronised by the likes of Paul Virilio and Claude Parent, has built up a collection of more than 600 works, 800 models and over 15,000 architects’ drawings. Now French/New Zealand duo Jakob+MacFarlane has reconfigured a former military supply depot in the city of Orléans to create the 3000m² FRAC Centre. Forming permanent galleries, temporary exhibition spaces, education zones and archive, the whole lot is crowned by its ‘Turbulences’ - a 500m² reception area, auditorium, public cafe and bookshop that bursts like three strange glass, steel and aluminium tubers from the inner courtyard of the original building.

**Bristol’s lighting gets ship shape**
As the only UK city to have been shortlisted for the 2014 Green Capital Award, Bristol’s been proving it’s serious about reducing its carbon footprint. As part of that, GE lighting is replacing its high pressure sodium street lighting with more efficient CMH Streetwise ceramic metal halide lamps. In Phase I over 8000 lamps were replaced and Phase II sees a further 12,000 fitted in the city’s residential areas. All have a working life of 24,000 hours and dimmable ballasts, meaning they can be turned down between 7pm and 6am to save more energy. The initiative will help save the city 4.2mkWh a year in energy, or £0.5m.

**UPCOMING**
- **London Design Festival** Various London locations, 14-22 September
- **Energy Efficiency Exhibitions** Various UK locations, 10-22 September
- **Timber Expo** NEC Birmingham, 24-25 September
- **Eco Showcase** Various UK locations, 24 September-3 December
- **MADE Expo** Fiera Milano, Rho, Italy, 2-5 October
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+44 (0)7956 173351 or loretta.sales@timber-expo.co.uk
Hulliotropic

Hull based Ciralight is wringing a bit more from the UK’s overcast skies now it is sole supplier of the US developed ‘Active Skylight’, which tracks the sun’s movement to optimise internal lighting levels for large spaces, reducing the need for electric lighting. The skylight is housed in a rooftop plastic dome and uses a GPS controller and a microprocessor to calculate and track the position of the sun. It reflects sunlight via a mirror array down into the space via a highly reflective integral light well. Called the ‘Suntracker’ in the US, the firm sadly felt that low UK expectations of the weather meant that name could be successfully marketed here. Instead, it hopes the energy-saving potential of its revolving rooflight will turn heads and turn off lights.

Edible Mechanical

If you’re tiring of the sleek minimalism of current kitchen design and prefer yours to look like it’s made of Meccano, you could do worse than check out Forza’s showroom on London’s Great Portland Street. As part of the London Design Festival this month, the Italian furniture, kitchen and lighting showroom is giving part of its ground floor to displaying the new demode ‘Meccanica’ kitchen range by Valcucine. Built of a steel framework, all the jointing is mechanical and uses no adhesives at all. Shelves, jumbo drawers and worktops can be in wood or metal and are fully deconstructable so the system can be dismantled, moved and reconfigured, or just recycled. For a premium they will construct it for you – but where’s the fun in that?

Cleanliness next to Godliness

The 1300 year old Lindisfarne Gospels almost made it back home this summer when Europe’s oldest surviving book went on display at Durham University’s Palace Green Library, on loan from the British Library. Environmental engineer Desco created the exacting climate controls, dust-free environment and specialist lighting necessary to display the priceless book that has survived everything from Viking raids to national turmoil. The exhibition runs until the end of September.

Mumford and Wood

British Formula I legend Stirling Moss, no less, launched Mumford and Wood’s new Conservation windows at the Building Centre last month. After signing autographs, and telling the guests how happy he was with the firm’s sashes in his London home, the 85-year old moved to tales of his racing achievements. ‘You find yourself staring straight into people’s faces close-up as you go round,’ he told us of Monte Carlo, adding: ‘Although it looks like a straight run, the scariest bit is the harbour side tunnel. You’d go from bright to dark suddenly at 130mph and it would be difficult to get a sense of the road’s apex’. Last month, the sister car of the Mercedes-Benz W196 in which Moss won the 1955 English Grand Prix sold for £19m, but you feel money’s never been his priority – unlike today, he said, drivers even had to buy their own race tyres. ‘I couldn’t be doing with being dragged off by sponsors for a post-race press conference like Hamilton is now,’ he confided; adding racily, ‘In my day you’d just pop the champagne, step from the podium and be off chasing the crumpet...’
Timber Expo

It would probably be an uphill struggle for the PR guys at Timber Expo against the established Julian calendar, but with their annual expo coming up at the end of this month in Birmingham, it would have been a real marketing coup to rename the month Septimber. In its 3rd year, the move to the bigger NEC perhaps reflects the exhibition’s ambition to become the UK’s most important timber show; and with over 150 stands this year, the organiser claims that it’s attracting more international exhibitors than ever. Beyond the trade presence, the ‘Timber Talks’ series will concentrate on hot topics in the industry.

Highlights include architect Richard Partington debunking myths about lightweight timber construction and thermal mass, Cambridge University’s Patrick Fleming discussing the future of engineered wood; and Simon Hodgson, CE of the Forestry Commission, looking at the creation of a domestic supply chain for timber products. Meanwhile Waugh Thistleton’s Andrew Waugh, designer of the UK’s tallest timber tower, will look at how we can push the construction limits of timber design further. The series will be complemented by smaller Toolbox Talks throughout the event.

With over 400 projects entered, this year’s Wood Awards has seen the highest submissions yet and the Timber Expo will be devoting two seminars to going through some of the shortlisted projects in detail. That should involve some sifting as the quality is high. This year Wilkinson Eyre’s Mary Rose Museum is up against Living Architecture’s Dune House in Thorpeness and Niall McLaughlin’s Stirling Prize shortlisted Ripon Chapel. They’re all worthy contenders, but my money’s on outsider Alex Haw’s Atmos Studio, with his bizarre and slightly surreal CNC-cut timber installations – something he’s developing a real penchant for.

They’re all on display at Timber Expo, but we’ll have to wait until the end of November before we find out the winner...

Timber Expo runs at Birmingham’s NEC from 24-25 September

With over 150 stands this year, the organiser claims it’s attracting more international exhibitors than ever

PIP takes a look at a selection of products exhibiting at this year’s show

**Fire protection**
Lonza
Lonza has been developing fire retardant wood protection systems for over 60 years and is one of the leading names in fire protection, used on buildings such as the Welsh Assembly. It’s tried and tested Dricon and Non-Com exterior fire retardant treatments are designed to inhibit the start and spread of fire on construction timber to allow more time to allow for evacuation and damage limitation. Both products, say the makers, have assured fire protection backed up by over 40 years’ experience and independent fire testing.
Stand D5
fireretardanttreatments.com

**Panel fixings**
Button Fix
Wondering about how to fix veneered timber panels or MDF to each other without the use of glues? Button Fix has patented a neat plastic fixing that’ll do the job for you – with a satisfying click. The fixings are available in two types. Type 1 can be surface mounted or rebated and engages with a vertical or sideways sliding action – ideal when loadbearing is a priority. Type 2 connects panels at 90° with a simple push/pull assembly – better for ease of fit/removal.
Stand X8
button-fix.com

**Insulation**
Sylvacis
Architectural technologist Ian McDonald is personally installing Actis’ eco-friendly wood fibre insulation Sylvacis for the house he is building for his family in Aberdeenshire. The product is made from 100% recycled sawmill offcuts from sustainably maintained forests. The dry process used to manufacture it consumes minimal water and energy, and the product can be recycled at the end of its life – or combusted sustainably to generate further energy. Its low thermal conductivity means it can be used in both hot and cold climes.
Stand A14
insulation-actis.com

**Wood Protection**
Sioo
Sweden-based wood protection firm Sioo Impregnation has developed an environmentally friendly, water-based decontamination and protection agent for wood – be it new or old. Forming permanent silicon crystals deep within the wood, it is also open to ‘diffusion’ (ventilation), which, the firm claims, means that no splinters or cracks will occur. After initial application, the coating will go from a yellow-brown to a lighter silver grey hue after 8-10 weeks, and is designed for a 10 year life.
Stand F7
sioo.co.uk
Tell us what you want

Being a BIM consultant gives me an insight into a large number of architectural, engineering, contractor and owner opinions of what Building Information Modelling is. The truth about BIM is... you've been doing it for some time already. Yet when you get the call from a client asking whether you can deliver a project in BIM, you panic and say yes. Well panic no more, you're already on the BIM ladder – Level 0 means you produce 2D drawings. If you've re-used information by using blocks/cells/components then you can probably call yourself Level 0.5.

This of course is not what most might consider ‘BIM’ – My girlfriend often says: ‘While I'm out, can you do some housework, please?' I empty the dishwasher and return to the sofa, satisfied with my applaudable contribution. As I have discovered, what is meant by this statement is not just ‘some’, it's a full spring clean. Yet the same scenario can be seen in the construction industry. When an owner/operator asks for BIM it's typically because they either want to reduce the budget or they want some kind of tool to help them manage their building in their preferred FM software. When the architect and engineers hear the acronym they want to deliver the same thing – but by allowing more of the budget to be spent on letting their creativity run wild instead of just drafting and co-ordinating.

If I get sent to do the shopping, I'm inevitably going to wander around the shop filling my trolley with a plethora of delectable treats aimed at scintillating my taste buds. My current priority is to ensure we are never without BBQ food. I'll come home to find out that, actually, what the girlfriend wanted was bleach, toilet paper and cling film. Management of a building is the same. If you have the architect’s information – doors and windows, for example – the size will be there but not necessarily the manufacturer’s name and part number, which is what the FM team will need to order a replacement.

BIM has always been seen as enabling co-ordination, but this was typically thought of as being between the design teams. If all the interested parties, from client down to manufacturer, got together earlier in a project and collaborated on what was required – or even possible – we would start seeing the real benefits. Like my girlfriend's shopping list, if the government's BIM requirements are to be met in 2016, we will all have to explain a little more precisely exactly what it is that we expect when requesting a project in BIM.

Daniel Heselwood is associate director at BIM consultancy Evolve

Books

**Construction and Design Manual: Wayfinding and Signage**
Philipp Meuser & Daniela Pogade eds
DOM Publishers 304pp HB £65

In a world dominated by time-saving, we are increasingly pressurised to make decisions quickly with only the information to hand. This affects the design of everything, from a website to our physical environment. The general rule seems to be that the easier they are to navigate, the more successful they are. The second edition of DOM's book on the subject – in handy shocking pink in case you misplace it. After some neat introductory essays, it provides some beautifully ordered case studies (as you'd expect really) of signage and wayfinding across Germany and Austria. Visually seductive, the book does beg the question of how your average Italian, Spanish, Chinese or African would respond to this Teutonic visual rigour. That is the subject for another title perhaps, but you know what they say, ‘Vorsprung durch Technik’...

**Designing Circulation Areas**
Christian Schütt ed
Edition Detail 176pp HB £65

The circulation area in western architectural thinking has shifted from being a means to an end and in itself. But it has almost become a type of its own, since deconstructionist theory created spaces so fluid that it’s hard to know where circulation technically stops or starts. Edition Detail's latest book on the topic initially interrogates these conditions in seven short, intriguing essays covering all types of vertical and horizontal circulation. This is followed by 27 short building studies by the likes of Piano, Snøhetta, Delugan Meissl, Morphosis and 3XN, each well illustrated with photos and or technical details. The book’s not cheap, but it’s an authoritative look at contemporary circulation approaches by architects at the top of their game – a freeze-frame of a subject that, one feels, still has far to run.

**What Colour is your Building?**
David H Clark
RIBA Publishing 263pp PB £35

Clark's book is a no-nonsense guide to answering a basic question the author asked himself. ‘What is the contribution of operating, embodied and transport energy to the whole carbon footprint of buildings?’ Part 1, What Colour? puts the three components into perspective for offices and proposes a simple methodology to assess the whole carbon footprint. Part 2, Changing Colour, provides guidance to help everyone in the project team reduce the whole carbon footprint of buildings. It's simply written, but bear with it – the validity of the points are better communicated through the clear telling. This is further helped by the book being copiously illustrated with graphs, photographs and diagrams. Clark's core argument is that building design does not need a radical overhaul, 'just a healthy dose of common sense and good design principles'.

**IT/Books**

Products In Practice September/October 2013
Desert

What: Assa Abloy Megadoor
Where: Stratolaunch Systems Hangar, Mojave Desert USA

Legendary business magnate, aviator and OCD recluse Howard Hughes would not be happy. Although the 1947 maiden flight of his huge H-4 Hercules, at little more than a mile, was its only one; the 97m wingspan of the ‘Spruce Goose’ officially remained the longest in the world – until now. In the USA’s arid Mojave Desert Stratolaunch Systems, a firm half-owned by Microsoft co-founder Paul Allen, is to build a one-off carrier aircraft that can piggy-back commercial payloads into space. In its massive hangar, the company is about to start sewing together two Boeing 747 fuselages in parallel, with six huge engines, creating – with a wingspan of 117m and weight of over 540 tonnes – the largest commercial plane in the world.

Based at Bakersfield’s Kern County Airport, Stratolaunch’s ‘very large’ ‘T Hangar’ opened recently, two months ahead of schedule. The 8600m² facility, built by specialist contractor Wallace & Smith, uses over 1500 tonnes of structural steel, formed into thin beams, to give a 128m clear span; leaving 5.5m either side of the carrier aircraft to allow it to be guided in.

‘The main benefit of the vertically dropping Megadoor is that sliding horizontal doors would necessitate a rectangular building, which increases the volume and the cost,’ says Assa Abloy project manager Pierre Varlamoff. ‘With the T hangar, the portion that needs to fit the wings is wide, but also lower. It even narrows for the front of the dual fuselage – hence the “T” – which all makes for cost savings,’ he adds.

‘The doors perform well thermally as the Megadoor’s translucent PVC fabric has an air gap between the outer and inner layer. However, Varlamoff says the problem is not about thermal conductance through the fabric, but around it. ‘Peripheral heat transfer around the mullions is the main problem,’ he says. ‘The Megadoor has a system where the descending curtain envelopes the side guides, pulling tight against the side seals and jambs so there’s no infiltration of desert air and dust.’ With extremely sensitive monitoring equipment for the prototype aircraft inside the hangar, dust would always be a prime concern, especially here. This may be why they’re used at Cape Canaveral as well.

‘The doors effectively provide a hermetically sealed environment,’ says Varlamoff reassuringly. Now that’s something Howard Hughes might have been pleased about.

Assa Abloy Megadoor S1500

| Opening speed: | 0.15 – 0.25 m/sec |
| Size range: | Any |
| Windload: | Any |
| Electrical system | Power supply: 3-phase 400V-50Hz (other options available on request) |
| Control voltage: | 24V AC |
| Fabric data: | PVC coated polyester |
| Unchanged pliability: | -35°C to +70°C |
| Tensile strength: | 2700/2500 N/5 cm acc. to DIN 53354, EN ISO 1421. |
| Resistance to light: | UV-stabilised |
| Flame resistance: | Yes – acc. to SIS 650082, ASTM E84-94 class A, DIN 4102 B1 |
| Surface treatment | Bottom profile and mullions: Aluminium: Sandblasted and primed |

Megadoor on the T hangar

The Stratolaunch’s seven Megadoors open and close using a Venetian blinds principle, performing the task in less than two minutes. The hangs of PVC coated polyester are run through at 2m horizontal intervals with aluminium bars that pull the fabric tight as it drops. These bars run down between 590mm square aluminium mullions attached to cables that are connected to a motorised winch in the head steel, allowing them to retract as the door opens. The tallest central door here, at 20.7m, is also the widest at 19m. Door size is a cost issue; the widest dimension as a single leaf is currently 36m. The self-sealing jamb detail was essential to ensure a dust-free internal space in this challenging environment. As part of the air conditioning strategy, four large exhaust fans have been installed at low level within the Megadoor. The double skin PVC coated polyester has other benefits beyond thermal performance. ‘With only 10% pigment to the fabric, there is a high level of light transference, which saves on operational energy,’ says Varlamoff. ‘It’s also a soft, diffuse light, which is great for the mechanics who are working there,’ he adds.
ARCHITECTURE WITH RHEINZINK
Titanium Zinc Alloy for Roofing and Wall Cladding
If the boy who stuck his finger in the dyke and saved Holland from flooding was a company, it would probably be a brick firm. In fact, if it wasn’t actually turning a healthy profit, you could argue that a firm like Wienerberger was a model of selflessness – since most of its factories are likely to flood at some point. That’s because nine of the firm’s 15 Dutch plants lie outside the country’s protective dykes – here the geographical equivalent of being sent into exile – but there’s a particular reason for it.

‘Holland is basically a delta and our proximity to the river is no coincidence,’ explains Patrick Jansen, export manager for Wienerberger. ‘We dredge the river for its clay, the raw material that forms our bricks. This keeps the river beds clear, controls their water levels and helps keep all our feet dry.’ But he adds that for perhaps a week a year, workers may have to boat over from the nearby Winterdyke; and ‘while we can still take orders and keep the kilns running, there are delays in getting the bricks out as the access road’s – well... underwater...’

And the firm has to pull out a lot of clay from the rivers, so it’s just as well that Wienerberger has a 50% share of the 600m-brick domestic market. At its Kijfwaard West plant, on the banks of the Rhine near the German border, the factory is dedicated to brick paver production, and part of Jansen’s job is to try and convince the market that traditional clay is the future. He explains that the 600m bricks amount to only 15% of the total domestic paver market, the other 85% going to concrete products. Jansen’s looking at incremental shifts. ‘A 3% rise in market share would have an enormous effect on our business,’ he explains, ‘and we’ve decided that it’s better to try and wrestle that share from the concrete industry than our brick competitors.’ Part of that strategy is to prove to the likes of you and me that aesthetics, performance and longevity win out in the long term over initial cost.

His argument is helped by the fact that Jansen’s a ‘brick head’, and loves the stuff. He came to the industry young and lights up when talking about the small paved squares of old Amsterdam. ‘They look good when they’re new, but when they are two or three hundred years old, with moss in the joints between the cobbles, they’re beautiful!’ he says excitedly. No wonder that, with UK sales manager Steven Hook, he is the one charged with trying to increase the UK’s take up of Dutch pavers. Currently the firm exports about 15% of its production, a market with a turnover of around €20m. The UK was previously dominated with sharp, orthogonal extruded red clay pavers – the darling of 80s style private developments – but the country is moving towards a richer colour palette and the ‘rustic’ look provided by tumbled blocks.

The Kijfwaard factory produces 20 different colours in four size formats, using standard firing techniques and ‘blue braising’. The
Far left: Changes in Dutch Health and Safety Regulations have meant a great emphasis on automated processes — embodied here with the Tiger-Stone paver layer.

Top left: The Kijfwaard West factory in summer, sitting alongside the Rhine, and below left in winter, sitting in it.

This editorial is supported by Wienerberger and look all the better for the deluge…

- been bathed in the Rhine’s waters often enough, brick pavers outside Kijfwaard’s offices have
- become a flood. And why shouldn’t it? The
- accent colour,’ he notes, in the hope this trick –
- fied at London’s new King’s Cross Square as an
- a public realm made up of richer colours.
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- a public realm made up of richer colours.

‘A strong green paver has just been specified at London’s new King’s Cross Square as an accent colour,’ he notes, in the hope this trickle becomes a flood. And why shouldn’t it? The brick pavers outside Kijfwaard’s offices have been bathed in the Rhine’s waters often enough, and look all the better for the deluge... ●

This editorial is supported by Wienerberger
wienerberger.com

latter involves running bricks through the kiln a second time, but in an oxygen starved environment. It produces interesting results. Red bricks go black or grey, while yellow turn green. ‘The process is permanent and the colour change homogeneous through the paver,’ says Hook. ‘But what’s amazing is that if you run them back through the kiln with standard oxygen levels, they revert to their original colours.’ Hook thinks the UK market, used to a limited palette (although the firm still produces Staffordshire blue pavers in the UK), is warming to the idea of a public realm made up of richer colours.

‘A strong green paver has just been specified at London’s new King’s Cross Square as an accent colour,’ he notes, in the hope this trickle becomes a flood. And why shouldn’t it? The brick pavers outside Kijfwaard’s offices have been bathed in the Rhine’s waters often enough, and look all the better for the deluge... ●

This editorial is supported by Wienerberger
wienerberger.com

1. TIGER-STONE PAVER LAYING MACHINE

Dutch health and safety legislation means that if more than 500m² of paver area is laid, it must be done using a mechanical process.

The Tiger-Stone paver layer, into which pavers are inserted, lays suburban streets just like a carpet. Hook knows it will be expensive getting this technology into the UK without legislation driving it.

This is a shame, as Jansen says the pavers pull up like a dream. ‘In Holland all our utilities run underground, but as there’s only sand between them; remove a few key blocks and the whole lot can be taken up and put back down just as easily,’ he says.

2. RAW MATERIAL

Wienerberger dredges 70% of the raw material for this plant from nearby rivers, with the rest mainly sourced from central and eastern Europe. Compounds are added to create colours, and lava stone additives to act as a plasticiser. These are added to huge hoppers ready for mixing and processing. Despite delays caused by war-time ordnance in the river, the factory processes nearly 1m tonnes of raw material a year. ‘We’ve already found three German grenades this week,’ says production manager Richard Klomp. ‘You have to stop the belts and call the police when that happens.’

3. MIXING/HOMOGENISING

Made of different sized particles and additives, the mix first needs to be homogenised. ‘It has to be ground in stages so the mix becomes finer and finer,’ says Hook. This involves huge mechanical grinding wheels and mangles. At this stage water content will be about 15%, but getting it precisely right is critical. Once ground down, the moisture content of the mix is measured by checking its electrical resistance. If there is too little water, steam is pumped in under pressure to ensure perfect malleability for the moulds.

Pavers go through the kiln at a higher temperature than wall bricks, to drive more moisture out and make them harder and stronger.

4. FORMING THE PAVERS

Mass moulds wait to receive the wet clay mixture. Before this they are sprayed with water and may be dusted with dry sand to ease removal. Water-struck bricks are not, which accounts for their slight ‘clump’ — the result of the drag of the clay in the mould. The Kijfwaard plant produces four different sizes of paver, the main size being the Slimpave, 200mm long by 50mm wide by 85mm deep. Replacing the mould template and cleaning the machine to change paver size can take nearly a day. After moulding, pavers are checked for inconsistencies and either reprocessed or lined up in drying chambers to settle before being arranged on the kiln cars, ready for firing.

5. FIRING

Cars take 96 hours to move from one end of the 200m long firing kiln to the other. Each car contains 10,000 pavers and the kiln can fit in 60 — enough material to pave 85 football pitches. As the pavers move through the kiln the temperature rises to reach about 1100°C about two thirds of the way in; this is done gradually to reduce the likelihood of bricks cracking as they fire. Those on the inside of the cars shrink slightly less than those on the outer faces, but as they are mixed on the pallets, this means no qualitative difference. This huge kiln will burn 60 tonnes of gas an hour at working temperature and is rarely turned off, even during floods.

6. SORTING AND PACKING

Given that about 70% of the domestic paver market relies on automated laying, pavers must be sorted into their requisite laying patterns on the palette so they can be placed properly on site by the robotic ‘grab’ installed on the site plant machinery. This previously manual process has been completely automated. One robot picks bricks off the production line, while the next arranges them into the correct laying patterns — usually an ‘elbow’ diagonal arrangement. From the raw clay mix being loaded into the hopper to the pallets being sealed in plastic, the pavers will have spent around two and a half weeks in a factory set up to run for 16 hours a day.
Averbode Abbey
Belgium

An ancient rural abbey has been transformed by adding a mirror pool to its new courtyard

Words: Jan-Carlos Kucharek  Photography: Pol de Wilde

When God made it out to Averbode Abbey in the small village about 60km outside Brussels, he must have hitchhiked. Belgium may be the administrative heart of the EU, but it feels pretty remote once you've left its Brussels towers and are trying to thumb a lift back to them. Certainly using public transport is a devilish affair; as PIP discovered on a six hour journey back from the recently completed reinvention of Averbode Abbey courtyard, which has just won Belgium's 2013 ‘Best Public Space’ Award.

Founded in the 12th century, Averbode has had a tempestuous history, starting with the original church being destroyed by lightning in 1499. It prospered in the first half of the 16th century but its occupants were then decimated by bubonic plague. By 1672, with over 80 monks re-established there, a new library and priory buildings were constructed alongside its grand baroque abbey, designed by Jan van de Eynde, and the abbey flourished again. Before WWI it was the largest employer in the area, with a printing works (sold off only 15 years ago), a dairy and even a bank. Scaling down its commercial activities in the 1960s, but still making its Speculoos biscuits, the abbey retains a special place in the lives of Averbode's tiny population.

Situated on the edge of the village and perhaps due to its former commercial activities, the abbey courtyard, set beyond its 14th century gatehouse, effectively remains a public space. ‘It was cobbled, but was mainly just used as a car park for visitors,’ says Omgeving project architect Luc Wallays. He adds that the abbey is also a popular rest point for the many amateur cyclists who whizz across Belgium of a weekend – some of whom are from the practice. Over time their passing conversations with the monks on the general low quality of the space must have hit home, because in 2011 the abbot charged the architects with proposing a vision for the courtyard. And the Lord provides; after they had seen it, the abbey estate also stumped up the €800,000 they needed to carry out the master plan for this 5000m² site.

‘Our basic idea was to do as little as possible,’ recalls Wallays. ‘The courtyard has lovely buildings around it, so we wanted to add to the space without competing with them. We also wanted it to be a meditative space; so in the end we decided to introduce a shallow mirror of water to reflect both them and the forms of those who come to visit.’ This concept of reflection is key – there was never any consideration of a fountain to disturb this stillness, or for any stagnation to cloud the water's surface.

The 850m² shallow pool that the firm designed in the new granite cobbled courtyard is the aesthetic centrepiece of the scheme. No more than 150mm at its deepest point, it tapers to a mere 20mm deep at its perimeter, and forms the mirror-like surface in which the abbey's main facade and surrounding buildings are reflected. The pond is fed by four attenuation tanks that sit beneath the grassed area to the south, which have the capacity to hold over 15,000l of water. ‘The engineer decided that run-off from the square around was clean enough to be fed directly into the pond before the filtration that occurs as it is pumped into and back out of the holding tanks’, says Wallays. This also turns it into a form of balancing pond. ‘For the bed of the pool there's a change from cobbles to smooth ashlar granite – which, he explains, was a conscious decision. ‘We looked at continuing the cobbled surface, but strangely it seemed to distract from the quality of the reflection.’ That wasn't the only reason though. In normal mode the pool is fed from the centre and drained from the edges, but Wallays adds that it's possible for the whole pool to be drained from the feed point and turned into a smooth working floor for outdoor events.
Below left: View looking north east to the main entrance of the abbey and its adjacent library building.

Below: A monk contemplates the courtyard, which is transformed by the pool by night.
The new cobbles are predominantly of Portuguese granite, augmented at key points with existing ones from the former square, notably in front of the gatehouse. Black basalt cobbles are laid where trees are planted next to the abbey’s main facade to complement the existing mature lime trees. At this point, and where grassed areas delineate the seven allocated parking spaces from the more tranquil central area, raised granite kerbs have been installed. On those by the abbey, if you crouch down, you can even read its motto carved into their vertical face.

The furniture for the square, such as bins and bike racks, was bespoke – designed by the firm. Signage is laser cut sheet steel coated in a Cor-Ten effect painted finish. It’s discreet when used at low level for the parking bays, bolder on the backlit information ‘monolith’ at the entrance – its rusted look perfectly matching the reddish-brown hue of the gatehouse stone. Benches, designed with designer Stefan Schöning, are made of larch sourced from the woods around the abbey that had formerly served the area’s mining industry.

LED lighting was a fundamental component of the new design. Previously completely unlit, it was Omgeving’s idea to transform the space by night and make the courtyard truly come into its own. Flush to the cobbled surface, waterproof strip luminaires now run alongside the old stone ditch drain of the library and buildings across the square opposite, washing their walls with a soft cream coloured light. Flood fixtures illuminate the west facade of the abbey, now reflected dramatically in the dark pool that sits in front of it, transforming the courtyard and imbuing the whole space with a dreamy, magical quality – one made all the more powerful both by being precisely contained and arising out of the darkness of the densely wooded approach road beyond the abbey complex.

Apparently the locals are proud of their new rural square and are to be found there as often by night as they are by day. Wallays explains that even though the space was always effectively public, it was never really used as such. That has all changed now and the gatehouse’s huge door is never closed. As importantly, the changes have had an effect on the abbey’s dwindling community of 35 monks.

‘They have always kept themselves to themselves, but in a sense the design has helped them to reconnect to the real world too – and to draw them into the social life of the village,’ concludes Wallays. Yet strangely, the courtyard seems to belie that newfound sense of dynamism and purpose – by night the pool is a still of reflected tranquillity; while by day its grey granite cobbles form their freeze-frame of ripple interference.

**Designer:** Omgeving, Berchem  
**Lead designer:** Luc Wallays  
**Client:** Abdij der Norbertijnen, Averbode  
**Contractor:** Stratica NV  
**Suppliers:**  
- Subcontractor for the Water Mirror + pumps: Automatic Spraying Systems, Alken  
- Landscaping furniture design: Stefan Schöning, Antwerpen  
- Lighting supplier: Philips  
- Stone supplier: Van Camp Natuursteen  

**Left:** Averbode Abbey’s motto is carved into the vertical faces of the raised granite kerbs.  
**Below left:** Bins, bike racks and benches have all been bespoke designed.
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Städel Museum
Frankfurt

A subterranean extension to a museum creates a garden that’s a work of art in itself

Words: Jan-Carlos Kucharek  Photography: Norbert Miguletz
It looks like Frankfurt’s Städel Museum is expecting – a bigger collection at the very least. The museum and art academy, founded on a bequest in 1816 from Johann Friedrich Städel, is dedicated to both the creation and collection of art so expands continuously. The third and latest extension of the 1878 building was through an invited competition in 2007, and almost doubles the previous area of 4000m². Local firm Schneider+Schumacher beat the likes of UN Studio, Diller+Scofidio and SANAA to win, with an intriguing subterranean €34m proposal that inserted all the new accommodation beneath the museum’s courtyard. Opening last year and accessed via a grand new stair from the museum’s original foyer, the result is a strange and beguiling courtyard of grass and circular roof-lights that bulge at the courtyard’s centre – the only surreal evidence that something strange and interesting is going on beneath.

Inserting a new basement below the courtyard walls of a 19th century museum was not without its challenges. Existing foundations had to be stabilised and underpinned using high pressure injection techniques. Elaborate provisional structures to protect the upper floors were only removed once the foundations and new concrete 75m by 52m basement box had been constructed. The proximity of the River Main required the use of waterproof concrete throughout, a 500mm thick basement floor slab to resist upthrust and 13m-deep reinforced augur piles were used where there was no toploading in the form of walls or columns.

Measuring 55m by 48m in area, the concrete grid shell roof of the subterranean Garden Halls is crowned by a distinctive 26m diameter bulging concrete dome at its centre, raising the internal soffit from 6m to 8.2m. The roof’s form was designed using parametric software Rhino to resolve the circular dome and 12 internal perimeter columns that transfer the load to the concrete box. Engineer Bollinger+Grohmann used ANSYS for the structural optimisation. Cast in place, the flat roof structure and dome slab were pre-stressed with the tensioning rods assuming the curved line of the formwork as a result of their own dead weight. Complexity was increased by the fact that, with the architect demanding there be no suspended ceiling, all services had to be integrated into the concrete roof, to ensure a smooth soffit.

So it is the 195 roof lights, evenly spaced across the grassy hillock of the courtyard, that form the main visual element of the museum’s underground extension – as much a landscaping feature as structural signifier. Predominantly 1.5m in diameter, they increase to 2.5m towards the centre of the courtyard to accentuate the curvature of the dome. Lying flush with the
grass surface, they are all safe to walk on. The rooflights are double glazed, formed of two layers of laminated safety glass – an outer pane cold-formed to a spherical curve and a flat inner pane. To be usable by pedestrians, the outer curved layer has a non-slip surface and requisite strength of 5kN/m², as well as sufficient bearing capacity in the case of breakage.

A steel frame around the perimeter of the glazed element secures it into the structure and houses the other automatic shading and lighting systems. Surrounding the rooflight are 44 luminaires, an equal mix of warm-white (2700K) and cool (5000K) LEDs. The whole system, which illuminates the galleries both naturally and artificially, is managed by a lighting BMS, achieving a constant level of illumination regardless of external conditions.

Being a garden itself, the roof forms part of its own SUDs strategy. The Garden Halls’ roof is inverted, with the insulation sitting on top of the waterproofing membrane, and the 400mm deep intensive green roof skirting the concrete upstands of the individual roof light openings. The architects needed a long-term and homogeneous waterproofing system that would be flexible enough to deal with the roof’s constantly changing contours and root resistant, and robust enough to withstand footfall.

In the end the contractor opted for a Kemper Systems cold liquid-applied waterproofing membrane. A drainage board is incorporated to divert excess water into the surrounding ground and land drainage systems. It’s also aided by the fact that the green roof is higher than the surrounding area, directing runoff away and preventing sumping. This is done via simple supporting gutters, cast into the upper face of the pre-stressed reinforced concrete roof form.

Architecturally, the design of the Städel Museum extension has reconciled two goals – the creation of an ideal space for art beneath beautiful public gardens while at the same time preserving the gardens themselves. In a sense it fulfils the original brief perfectly, which asked for a balance ‘between respect for the historical building fabric on the one hand and the aplomb, individuality and distinctiveness one would expect of a new object. As such, Schneider+Schumacher’s grassed hilllock with its bold roof lights actually becomes an abstracted landscape – a piece of art in itself. A strange subversion of the lawn – a grass sculpture that can be walked and laid on, and simultaneously a precision optical device creating the perfect viewing conditions for the artworks hidden beneath.

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**Developer:** Städelisches Kunstinstitut  
**Architect:** Schneider+Schumacher, Frankfurt  
**Construction management:** Hans Eschmann  
**Project management:** Drees & Sommer  
**Structural engineer:** Bollinger+Grohmann  
**Building services:** IPB, Freudi & Ruth, IBO Dieter Bohmann  
**Lighting design:** Licht Kunst Licht AG  
**Landscaping:** Keller + Keller  
**Building physics:** TOHR Bauphysik KG  
**Facade consultant:** OSD  
**Surveyor:** Grandjean & Kollegen ÖbVi  
**Geophysical:** Baugrundinstitut Franke-Meißner

**Suppliers:**  
- Rack systems/handrails/art-storage systems: Archibald Regalanlagen Johannes LB Donck eK  
- Elevators: Leis Aufzugsdienst  
- Metal construction: THORN Gestalternder Metallbau seit 1936  
- Natural and artificial stone work: BOLAT Natursteine  
- Tiling work: Bella ceramica  
- Fire doors: Hübenthal, Jansen Tore & Co KG  
- Skylights: Seele Sedak, Zumtobel Licht  
- Lighting: Zumtobel Licht  
- Emergency lighting: Zumtobel  
- Handle sets: FSB Franz Schneider Brakel + Co KG  
- Windows/window doors: HOTEC Holztechnik Thüringen UG  
- Wooden interior doors: Göbes Doors  
- Exterior doors: Sässer  
- Terrazzo: J. Wellenhöfer & Co KG  
- Terrazzo washbasins: R Bayer  
- Linoleum: Forbo Flooring  
- Plaster and thermal isolation systems: Wilhelm Pulver & Co KG  
- Security systems: Bosch Sicherheitssysteme
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1 Modified Wood
   Accoya

Glasgow has instituted the maxim ‘every fencepost tells a story’ with a fence that celebrates the city’s medieval history. The city council has used high performance modified wood product Accoya for the fence, which links the city’s medieval Nicholas Street to the historic High Street, and contains panels that impart historical nuggets about the city to passers-by. Accoya boards hold steel plates and shields conveying the city’s history back to 1210, when Nicholas Street was first established.

accoya.com

2 Street furniture
   Bailey Artform

Style is the order of the day in this range of street furniture from US firm Landscape Forms, launched in the UK by Cheshire-based Bailey Artform. The manufacturer says the design-led seating, chairs, benches, shelters, bollards, waste bins and LED lighting are intended to help architects and specifiers ‘bring their visions to life’, and their combination of elegance and resilience will surely mean that even the local disaffected youth, armed with tinnies and fags in the absence of anything better to do on a Saturday night, will leave them still looking sleek.

baileyartform.co.uk

3 Public seating
   Centriforce

Students from Manchester School of Art put their furniture designs through a Dragon’s Den-style panel for the Manchester International Festival, and came up with this brooding seating. Made with Centriforce’s Stokbord recycled plastic sheet and board, the pieces are intended to create an industrial look, and while they have clearly achieved that, comfort doesn’t seem to have been part of the brief. After they’ve finished half lying, half sitting on these unusually proportioned recliners, students can walk away with a nicely ridged pattern printed into their flesh.

centriforce.com

4 Rooftop planting
   Boningale Nurseries

The twin mantra of growth and green design has been realised in Birmingham, where Boningale Nurseries has supplied 10,000 contract-grown plants for two rooftop terraces at the new city library in Centenary Square. The indigenous, shade-tolerant plants were chosen to contribute to the building’s BREEAM Excellent rating. And alongside the Brummies, the bees of Birmingham will also be celebrating the planting of ‘a carpet of contrasting foliage, interesting movement and long flowering periods’ in the city, says Boningale.

boningale.co.uk
5 Urban paving
Hanson Formpave

This isn't just paving – it's also part of a rainwater harvesting scheme. Hanson Formpave has supplied over 2,000m² of the paving for Barratt Homes' Hanham Hall development of homes, shops and offices near Bristol, slated to be one of the first zero carbon communities in England. The company's sustainable urban drainage scheme (SUDS) paving will not only provide enough water per house to flush one loo but will supply sufficient for the washing machine too. It's a case of from SUDS to suds... hanson.com/uk

6 Raised flooring
Buzon UK

Adjustable screw-jack pedestals from Buzon UK will support raised floors carrying loads of 1,000kg and more, and made of 100% recyclable materials their life seems potentially unlimited. Boasting adjectives like durable, stable, strong and flexible, they can be used on anything from small rooftop terraces to large temporary installations. So while users can walk tall on a newly laid section, they won't need to worry about uneven surfaces or piped in services, which will all have been brushed under the carpet... or rather decking/paving/stone terrace etc. buzouk.com

7 Cycle hub doors
Dorma

Cyclists in Manchester now have a new cycle hub in the bottom of the City Tower in Piccadilly Gardens, Part of the Commuter Cycle Project, the hub is fitted with Dorma RST automatic space-saver doors. These swivel quickly and quietly in a tight space to maximise the passage width, giving commuters fast and easy access when parking their bikes and racing for the tram or bus. The city has seen a 90% increase in bicycle use in the last decade, a sustainable theme continued by Dorma's low energy swing door operators used elsewhere on the hub. dorma-uk.co.uk

8 Walls and floors
Burlington Stone

Jamie Dunstan brought a bit of Yorkshire to this year's Chelsea Flower Show with Burlington Stone's Broughton Moor and Westmorland Green products. Dunstan's 'As Nature Intended' garden won the Silver Gilt award with its unfussy and naturalistic style – appropriately enough from a son of the home of plain speaking. And the waterjet finish on the paving is suitably evocative of the rain lashed moors – without causing any discomfort to the garden's users. burlingtonstone.co.uk
Landscaping has four main elements: plants, terrain, manmade structures and weather.

It is important that the construction programme for landscaping works is tied in with the best times for planting and allows enough time for ground preparation.

Planting should generally be carried out in September or October. Deciduous trees and shrubs prefer October to March while conifers and evergreens can be planted in April or May. Any time is fine for container grown plants so long as the ground and weather conditions are favourable. Planting should be avoided in frosty, cold, windy, hot, sunny or drying conditions.

Cloud and drizzle are the ideal weather. Sustainable Urban Drainage Systems (SUDS) replicate natural drainage and reduce the environmental impact from surface water run-off. Local authorities increasingly require developments to include SUDS to reduce pollution and flooding risk, improve the environment and potentially reduce costs.

To shed water and leave a dry surface to eliminate ponding and icing, footways tend to require differing minimum falls. These usually occur in either cross-fall or camber. Paving slabs require the shallowest cross-fall, 1 in 70, while gravel needs an incline of 1 in 30. To be DDA compliant paved areas should have a minimum cross-fall of 1 in 60; for footpaths the range should be between 1 in 40 and 1 in 30.

Care should be taken when disposing material off site, especially topsoil and subsoil. In 2012, HMRC published a general guide to landfill tax identifying £64 per tonne for fine grade material. Such material is derived from the recycling of construction and demolition waste along with topsoil, subsoil and rubble used for landfill cover. Previously, recycled waste from construction and demolition (inert materials) had attracted a reduced land fill rate of just £2.50 per tonne.

Landscaping costs. VAT excluded. No allowance is made for sundry costs or related preliminaries costs

### Site preparation

- **Fell tree, grub out roots, dispose off site; 600-1500 girth**
  
  £150-£250 each

- **Clearing site of vegetation, shrubs and bushes**
  
  £0.50-£1.00/m²

### Excavation

- **Top soil for preservation/disposing, average cut 150**
  
  £0.50-£1.00/m²

- **Reduce levels not exceeding; 1m deep**
  
  £1.10-£2.80/m³

- **Trenches; over 300 wide; 1m deep**
  
  £5-£7.50/m³

- **Trenches; over 300 wide; 2m deep**
  
  £7-£10/m³

- **Disposal of inactive waste on site in spoil heaps**
  
  £2.50-£5/m³

- **Disposal of inactive waste off site**
  
  £15-25/m³

- **Disposal of active non-hazardous waste, off site, including Landfill Tax**
  
  £120-£140/m³

### Filling to make up levels

- **Arising from excavations from spoil heaps**
  
  £3.50-£6.50/m³

- **Imported topsoil**
  
  £25-£33/m³

- **Hardcore; obtained off site**
  
  £30-£37/m³

- **Granular fill type 1; obtained off site**
  
  £35-£45/m³

### Paving

- **Pedestrian grade coloured asphalt paving**
  
  £65-£70/m²

- **Self binding gravel compacted to 50 thick, to footpaths**
  
  £35-£40/m²

- **Concrete block paviors; 200x100x80; bed in 50 sand**
  
  £15-25/m²

- **Cobble paving; bed in cement mortar**
  
  £90-£110/m²

- **Concrete flags, bed in cement mortar on 25 laying course**
  
  £15-£20/m²

- **Tactile concrete flag paving, 50 thick; 400 x 400; MOT type 1 bed**
  
  £30-£40/m²

- **York stone paving; 50 thick**
  
  £100-£120/m²

- **Granite sets**
  
  £90-£100/m²

### Fencing/walling

- **Brick walling 1m high including foundation**
  
  £100-£140/m²

- **Chain link fencing 2.4m high**
  
  £60-£70/m

- **Cleft chestnut pale fencing 900 high**
  
  £10-£15/m

- **Timber close boarded fencing; 1800 high**
  
  £48-£55/m

### Planting

- **Selected grass seed; general surfaces**
  
  £2-£3/m²

- **Imported meadowland turf**
  
  £5-£8/m²

- **Cultivating beds inc topsoil, weed control, fertiliser, mulching.**
  
  £5-10/m²

- **Shrubs and plants, 4 to 5 per m²; form pit water refill**
  
  £25-35/m²

- **Sapling; not exceeding 3m high**
  
  £15-20

- **Specimen tree; excavate pit, plant, backfill, 2m stake**
  
  £150-£500

### Site furniture

- **Stainless steel bollard; excavation, concrete backfill**
  
  £160-200

- **Timber bench**
  
  £500-600

- **Cycle shelter; 6000x2500 wide**
  
  £3,750-£4,250

- **Tree grille; 1500x1500 with 600x600 clear opening**
  
  £650-£750

### Drainage below ground

- **Excavation for pipes, earthwork support, backfill with DOT type 1; soil disposal**
  
  £22.50/£30m

- **Pipes not exceeding 200 nominal size, depth 1m/1.50m**
  
  £40/£50/m

### Pipework

- **Cast iron pipes 100/150 dia**
  
  £50/£100/m

- **Vitrified clay pipes (dia) 100/150/225/300 dia**
  
  Extra over for fittings (say) 40%

- **uPVC pipes (dia) 100/150/225 dia**
  
  £150-£200

- **Precast concrete 1m/2m deep**
  
  £700-£1000

- **uPVC shallow access inspection junction**
  
  £150-£200

- **Polypropylene 450/600 dia; varying depths**
  
  £350-£500

- **Brick with concrete base; not exceeding 1m dp**
  
  £700-£1000

- **Septic tank; 18m³**
  
  £2500-£3000

- **Land drainage**
  
  £30-£45/m

- **Irrigation system for planting areas**
  
  £25-£35/m²
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NHS in transition

Revolutionary restructuring of the NHS will have a huge impact on its construction procurement

Words: Stephen Cousins

‘Things are a bit up in the air’ is a phrase you get used to hearing when discussing healthcare building with experts in the field. As government spending cuts and dwindling private sector investment bring a shift in the number and types of project coming to site, a great deal of uncertainty surrounds the likely impact of changes introduced under the new Health and Social Care Bill. These came into force in April, heralding the most dramatic restructuring of the NHS since its establishment in 1948.

If one thing is certain, it’s that the rapid expansion seen in the noughties, when more than 100 PFI hospitals and around 750 primary care centres were built, has come to an end. Although health was ring fenced by Chancellor George Osborne in this year’s spending review and the NHS budget for 2015/2016 will be £110 billion, up 0.1 per cent annually, the organisation’s capital budget has shrunk by 17% since the Comprehensive Spending Review in 2010. NHS trusts must also cut a further £20 billion in efficiency savings – the so-called ‘Nicholson Challenge’ – by the end of Parliament in 2015.

For architects targeting work in the sector these changes mean four things: more competition for a reduced workload; a greater focus on retrofit and refurbishment over newbuild; radical changes to the way projects are funded and procured – particularly following the recent abolition of Primary Care Trusts in favour of Clinical Commissioning Groups run by teams of local GPs – and a move away from the major hospital developments seen in the heyday of PFI to smaller, more community-based schemes.

‘The reality is that what we have architecturally as an NHS is largely what we’re going to have for some time to come,’ said Trevor Payne, director of estates and facilities at Barts Health Trust, Britain’s biggest NHS hospital trust. ‘Times are tight and NHS trusts are focusing on the building stock they have and the services they provide, which is limiting the size and number of schemes coming through ... from an architectural perspective, the focus now will be on retrofit and renew,’ he said.

Government commitment

Nevertheless, the government remains strongly committed to healthcare. In 2012 the Department of Health (DoH) was UK construction’s biggest client, providing £1.34 billion of work across 357 contracts, according to construction business intelligence unit Glenigan. However, the average DoH project value was just £3m, compared with an average £11m for the top 50 clients as a whole. This suggests that the squeeze on health capital funding is having an impact on large-scale capital schemes.

Within the acute care sector, trusts are reorganising and rationalising their estates in an effort to reduce duplication of services, and release land for sale or redevelopment. Several are merging; the largest so far is the amalgamation of Royal London Barts with Newham General and Whipps Cross, which is triggering a new wave of master planning and estate appraisals.

‘NHS heads are looking to engage architects to carry out a high level strategic evaluation across three or four major hospital sites to see how they can be rationalised to create better value and dispose of surplus facilities,’ said Jonathan Wilson, principal and healthcare sector lead at Stantec Anshen + Allen.

There are certainly savings to be made. A report into healthcare efficiency, published in April by consultant EC Harris, claims the NHS has unused or underused floor space equivalent...
to the size of London’s Hyde Park and could save £2.3 billion by off-loading or improving it. It adds that 12.8% of the NHS estate, equivalent to three times the size of Hyde Park, is functionally unsuitable, and urges the government to sell it off or invest to improve its efficiency.

Tension in austerity

In these austere times, tension is emerging between pressures to take money out of the system, and the ongoing agenda, driven by the likes of health regulator the Care Quality Commission and goals set out in the government’s Patients’ Charter, to make patient care and environment the top priority.

‘Until recently, it was all about the patient experience and 100% single bedrooms etc, but the industry has stalled on that and now the focus is more on re-using the estate and conserving space. In some cases this wouldn’t allow us to reach a 100% single bed solution,’ said John Knape, frameworks director and healthcare lead at IBI Nightingale.

The demand to do more for less can sometimes make it harder for architects to see design integrity through to project completion. This is especially true under PFI, where a main contractor’s concerns over long term costs and its investment increase pressure to cut time and money, said Ana Sa, project architect at Allford Hall Monaghan Morris. ‘The way I see PFI improving, funding aside, is for each project to get a design champion from the start, as we did with the Kentish Town Health Centre...Having someone with clout on the client side, pushing for better quality, helped us maintain our vision and the scheme has won awards as a result.’

Power to the GPs

Changes brought about by the Health and Social Care Bill will see management of the NHS, including the estate, decentralised, with more power handed to local GPs and clinicians.

Primary care trusts (PCTs), which were responsible for spending around 80% of the NHS budget, were abolished in March and replaced by clinical commissioning groups (CCGs), local groups of doctors, mainly GPs, who will have responsibility for most of the NHS funds for commissioning services – including construction.

What this means in terms of funding and procurement of projects is not set in stone as CCGs are still being established. However, their proposals for work overseen and assessed by the NHS Commissioning Board mean they will clearly influence the shape of future Local Improvement Finance Trust (LIFT), 3PD and other estate projects. The CCGs will also work in collaboration with the newly-established NHS Property Services, which took over management of PCT-owned property in April and has £125m earmarked for its 2013/2014 capital investment programme, to ‘build new projects’ and carry out ‘major refurbishments’.

The emphasis on GP-led commissioning is expected to encourage more co-operation between private and public care providers – a controversial subject that has led some to claim the NHS is on the road towards full privatisation – and a greater reliance on private sector funding for the procurement of construction work.

‘Around half the 8,500 GP practices in the country are considered not fit for purpose, but

The NHS has unused or underused floor space equivalent to the size of London’s Hyde Park and could save £2.3 billion by off-loading or improving it.
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100% Design

100% Design 2013 runs from 18-21 September 2013 at Earl’s Court, London. From the hundreds of products there, these nine caught the editor’s eye

Avro coffee table
Niche London
Un-steady Old Bean!
Mimicking bubble geometries in cubic frames, designer Graham Tulett’s coffee table gives orthogonal forms a compelling twist. The displaced, shifted structure has a perverse appeal - engineer Hoare Lea has chucked out ‘built-in redundancy’ and ordered them for its London HQ.
nichelondon.com

Disc sconce
Alex Meitlis for Hazorfim
Burning a disc
Since I first saw ‘Game of Thrones’ I’ve lit up at every flickering sconce I’ve seen. So this contemporary interpretation of the luminaire flicks all my switches. The shiny brass number comes in three sizes, always powered by just one candela.
alexmeitlis.com

Concrete basins
Low Info
Heavy water
Nowadays, if it’s made of concrete, it’s generally being demolished to make way for something more glassy or colourful. Thankfully, Low Info is bucking the trend with refreshingly deadpan concrete basins. With considered invisible wall mountings, is it the last hurrah for beton Britain?
lowinfo.com

Zartan eco
Magis
Second Nature
Uberdesigner Philippe Starck and Eugeni Quitllet have set their sights on sustainability in their new stacking chair for Magis. The frame’s of recycled polypropylene and natural fibres and the seat compression moulded in recycled jute or hemp. Available in grey or brown, you’ll always get green.
magisdesign.com
Gaveta table
WeWood
No pain no grain
Times are hard in Portugal right now – but it’s as if the country thrives in adversity. Luckily the wood’s softer; and from it comes local joinery firm WeWood’s new Gaveta table. Simply designed and jointed in French oak, it opens to reveal discreet and charming leather storage pockets – making it both table and tidy.
wewood.eu

Hooked lighting
Buster and Punch
The art of motorcycle illuminance
Inspired by ‘live fast, die young’ rockstar lifestyles, designers at B+P have taken guitar amps and smashed them into motorcycle design in their East End garage, to cook up the ‘Hooked’ lighting range. Something of the night about it but precision engineered, it’s a shot in the arm for home grown lighting design.
busterandpunch.com

Aiken lounge chair
James
Seating. With bells on
James Harrison’s new Aiken chair is about more than the simple form and turned timber that evokes Scandinavian empiricism – it’s that it looks like a sledge! Available in walnut, oak and black lacquer, the cushioned fabric seat and back is removable for all the Quakers out there; for Epicureans, it also comes in leather.
jamesuk.com

Mystile tiles
Kaza Concrete
Stone Me!
If it was good enough for the Moors, it’s good enough for you. Some of the greatest architecture in the world used great tile designs; now you can design your own. Kaza Concrete’s own fibre reinforced recipe will create any 3D design you want – or choose from its trendy designer range.
kazaconcrete.com

Harvey lamp
Inertia Projects
Stuck on you
Surely 150 people can’t be wrong. That’s how many people’s conviction and investment it took to found Inertia through ‘Kickstarter’ crowd source funding. They launched with this adjustable aluminium LED task lamp with an innovative magnetic joint which allows it to be moved into any position. It also has a neat leather dimmer switch.
intertiaprojects.com
Tent and Superbrands

Here’s a taste of more LDF goodies – at The Tent and Superbrands show at the Old Truman Brewery, Hanbury St, E1 from 19-22 September

Equal Chair
Beller Design
Running a tight ship
Lars Beller is designing more sustainably by designing out processes. For his timber and cast aluminium Equal chair he’s been inspired by the making of hand tools. With the wood forced into the metal sleeve when damp, it anchors it for good when it dries out.
beller.no

3 O’Clock
KnudsenBergHindenes
Saving time by cutting corners
The Norwegian trio have been putting their heads (and hands) together to produce their ‘kick-yourself’ simple clock face. With a vacuum-formed plastic base and hands in laser-cut aluminium, 3 O’Clock will look as good on your wrist as it does on the wall.
petterknudsen.com

Lanka Low Table
Ari Kanerva for Meritalia
He stoops to Lanka
Finn Ari Kanerva is working with the go-to material of the moment, tubular steel, to produce his distinctive low table. But he’s giving it an extra flourish by matching the glass colour with the steel to ensure it’s accentuated by its own shadow.
arikanerva.com

Ecco chair
Andrea Borgogni
Seating with a spring
Borgogni’s latest offering takes industrial steel tubing and twists it in on itself to create a beautiful and beguiling form that is both classic and highly contemporary. Available as a table seat and occasional chair, the heavier you are, the bigger the bounce.
andreaborgogni.it
Parlour Lighting
Donna Bates

The light stuff
Inspired by memories of growing up on her family’s dairy farm in Ireland, Bates has brought the milking parlour into the kitchen with her receiving jars turned lights. Available in six sizes, they’re even part-frosted to symbolise the collected milk.
donnabatesdesign.com

Arundel Pendants
Daniel Schofield

Blast from the past
Sheffield’s Arundel St, packed with forges and machine shops, used to be the heart of the city’s metal working industry. Only a few remain, and basing his design on traditional goblets produced long ago, Schofield is using their skills to keep the craft alive.
danielschofield.co.uk

Trialog Chair
Philipp Von Hase

Show some spine!
Philipp Von Hase has seen how sitters are prone to slumping, and is on a mission to save us from a life of back pain. The Trialog’s backrest can be a side arm support or lets you rest your elbows for reverse sitting a la Christine Keeler. It might be risqué but you’ll always have the correct posture.
philippvonhase.de

@ Chair
Toshio Kita for Ligne Roset

Surf and slouch
Kita designed the @-Chair for working specifically on computers, with a table on casters that slides alongside for the perfect working position. And, if you order the bespoke model, when you’re done working on the interweb, it can be reclined into a chaise longue for some well-earned downtime.
ligne-roset.co.uk

Nenuphar Coffee Table
Ginger & Jagger

Go with the flow
Cascading down in alternate slabs of walnut veneer and high gloss lacquer, Nenuphar is a bold statement piece that demands attention. If that wasn’t enough, the legs are made of acrylic, brass, copper or nickel to evoke the heady excesses of Memphis design.
gingerandjagger.com
Award winning paving at The Yard

Winner of the Best Outdoor Space award at the BDAs.

Herne Dark Brindled Slimpave bricks were used for staggering results.

Each paving brick is sized at 210 x 50 x 70mm.

90 paving bricks cover 1m².

At the heart of innovation.

Seeing Wienerberger’s Herne Dark Brindled Slimpave bricks used by Henley Halebrown Rorrison architects and specialist brickwork contractor, Exel Construction, the BDA judges were “staggered” with The Yard when they visited.

Tel: 0161 491 8200
Email: office@wienerberger.co.uk
Web: www.wienerberger.co.uk
Twitter: @wienerbergeruk
Air quality in Passive Houses

Building performance evaluation is demonstrating the success of the Passive House approach. But better building regs would help the wider industry

Words: Justin Bere Image: Tim Crocker

Recent research from the UK Technology Strategy Board’s (TSB) Building Performance Evaluation programme shows that UK Passive House buildings can provide valuable lessons in how to build homes that reliably deliver exceptionally high air quality. Yet while certified Passive House buildings that have been the subject of analysis appear to be performing excellently in terms of air quality, reports (including in PIP, Feb/March 2013) suggest that some low energy buildings are failing to perform as designed, with blame falling on the under-performance of heat recovery ventilation units.

Quality records

One of the earliest and most striking results to come from Building Performance Evaluation studies of Passive House-inspired Retrofit for the Future projects and certified UK Passive House buildings was their optimal indoor relative humidity (RH) levels. Whether summer or winter conditions, retrofit or new build, research has found optimal conditions of 30%-60% RH have been consistently achieved, one of the most important factors in maintaining very high air quality for comfort and health.

Following reports in the press about damp air associated with clothes-drying in some non- Passive House but still relatively draught-free buildings, architects carried out research to see whether the same problems would occur in a certified Passive House. The investigations took place at two Passive House-certified social housing pilot research houses for BRE, the Larch and Lime houses at Ebbw Vale in Wales. Both houses air dry clothes indoors several times a week. Clothes drying and showers were distinguished by checking water use (see graph, page 39). Showers were found to have more of an effect on humidity than clothes drying, although in neither case did RH exceed the optimal range and RH spikes from both sources cleared within three hours.

Further evidence of air quality came from Dr Ian Ridley (UCL and RMIT) who reported in January 2013 that ‘the living room RH in Lime House lies in the recommended range of between 30%-70%, for 71% of the time. The living room RH in Larch House lies in the recommended range of between 30%-70%, for 75% of the time’, concluding, ‘the ventilation systems are performing well in removing moisture.’
Likewise, CO<sub>2</sub> levels have been found to consistently remain at optimal levels in both buildings. For example, CO<sub>2</sub> levels at the Larch House in Ebbw Vale in Wales – a three bedroom house of just under 100m<sup>2</sup>, housing two adults and two children – were never found to reach 1400ppm (optimal levels are ≤1500ppm), and generally CO<sub>2</sub> levels were consistently well below 1000ppm – a result that is unlikely to be matched except in the most draughty ‘naturally ventilated’ houses.

Further, air quality tests carried out by Derrick Crump of Cranfield University for berearchitects, and funded by the TSB, may provide some early indications that a combination of air-tight window seals and heat recovery ventilation systems may significantly reduce levels of harmful particulates. It is quite difficult to make comparisons because the study was small and there are of course a lot of influences, but comparing the Passive House at 4 Ranulf Road in north London with a conventional house in the same street, harmful PM2.5 particulate levels inside the Passive House are approximately half those of the conventional house.

VOC levels were also found to be low in all three certified Passive Houses tested, an important factor in air quality.

**Flawed regulations**
Andrew Farr of the Green Building Store is one of the UK’s most respected experts in the correct design and commissioning of ventilation systems. He says crucial faults in the Building Regulations encourage bad practice among inexperienced designers and house builders.

Farr points out that current guidance makes no requirement to design for pressure loss inside the ducting. Ducting with high resistance will cause increased energy consumption and potentially inadequate air supply in some rooms while over-ventilating others. And poorly designed systems with high duct resistance create unnecessary noise pollution, which may lead users to turn off systems.

Farr adds that by measuring the intake air pressure and comparing it with the room supply terminal measurements, it is possible to detect defects due to poor workmanship in the supply ductwork. Similarly, by measuring exhaust air pressure and comparing it to room

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**Optimum relative humidity for air quality**

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**Right:** Peaks in water consumption help to distinguish where relative humidity spikes are caused by water use (eg showers or baths). Eco shower 10litres/min Standard shower 18litres/min Washing machine 12litres/min Bath 38litres/min
extract air terminal measurements, it is possible to detect workmanship defects in the extract ductwork. Making such methods standard practice would help contractors check for ductwork defects, a common cause of problems.

Crumpl, who works with the Zero Carbon Hub group on MVHR and indoor air quality, has said the group’s latest report (to be published soon) ‘highlights many problems observed on a number of developments aiming to deliver energy efficient homes in the UK, and although examples of bad practice are documented there is evidence that certified Passive House homes may perform OK’, adding that ‘the essential message of the MVHR/IAQ group is the need to change our ways rapidly’. He concluded that the ZCH report evinced a ‘need for more performance evaluation data and that IAQ (as well as energy performance) should be a key aspect of that.’ He highlighted the importance of good design and quality control throughout construction, commissioning and lifetime maintenance.

**Maintenance**

Maintenance is crucial for all aspects of building performance and filters must be changed in heat recovery ventilation systems. Peter Dyment of filter manufacturer Camfil Farr, discussing intake filters, pointed out that visual analysis alone can be misleading. The large particles that quickly become visible in the filters are not necessarily what stop the flow of air; it’s the slower build-up of fine particulates trapped in a fine grade pollen filter that is the main factor affecting maintenance intervals. Research on filter change intervals should focus on pressure loss across the filters as the key determinant of expiry.

In the meantime here: architects are concentrating on facilitating filter changing on our own projects. A solution, developed for the as-yet-unbuilt Chestnut House at the BRE in Watford, has been manufactured and installed as a prototype for testing in a Passive House building. It is designed to allow filter changing intervals to be extended up to two years and for the operation to be carried out without entering the building. Making maintenance cheap and easy to achieve, potentially under an annual maintenance contract, is an important step in scaling up applications.

I hope that the conclusions some readers may previously have arrived at might now be modified in the light of the new evidence of exceptionally high air quality being consistently achieved in well designed, commissioned and maintained certified Passive House buildings. This is in stark contrast to the poor air quality and cold, damp conditions that are found in many ordinary houses in the UK, both existing and new build.

We would argue, therefore, that the reported failures in the ordinary UK housing stock could and should be addressed by improvements to the UK Building Regulations as outlined above. The opportunity for improvement is well documented in some of the Technology Strategy Board’s Building Performance Evaluation case studies, and there is an urgent need to improve the regulatory standards surrounding the ventilation of buildings. The only other option would be to abandon people to cold, draughty and energy profligate homes that are unaffordable to keep warm, dry and healthy in the cold winter months. Such a scenario would also mean abandoning all hope of reducing our CO2 emissions; and that is surely an unacceptable prospect.

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**Larch house – interior relative humidity (%) over one month period in winter**

- **Windows opened in bedrooms raises RH levels**
- **Spikes in RH due to showers dropping rapidly in a correctly functioning Passive house**
- **Clothes drying in the airing cupboard and the upstairs bathroom—lower impact on RH than showers**

- **Hot water volume**
- **Living room RH**
- **Bedroom 3 RH**
- **Upstairs bathroom RH**

**12/1/12**
**18/1/12**
**25/1/12**
**2/2/12**
**8/2/12**
**15/2/12**

**Hot water consumption in kW/minute**

Products in Practice September/October 2013
Specified

1 **Acoustic panels**
   
   **Soundtect**
   
   If you’re sinking beneath a deluge of noise then waves might, strangely enough, be what you need more of. Soundtect’s acoustic A Wave panel will reduce sound levels with some style and, with an eye on saving the planet, is made of recycled plastic bottles to keep a high sustainability rating. Each panel can be painted any colour to suit the user, mixing practicality with a completely flexible aesthetic. So when sound levels rise, customers should find themselves not drowning but Waving.
   
   [soundtect.com](http://soundtect.com)

2 **Energy saving rooflights**
   
   **Brett Martin**
   
   Rooflights can alleviate the difficulties of bringing light into wide-span buildings such as factories, warehouses or recreation centres, and Brett Martin Daylight Systems feels it has the perfect answer. Its Energysaver composite panel rooflights sit flush with the roof profile and deliver a consistent diffused daylight to the activities below. With a nice neat internal finish, they should achieve the ideal balance of enabling building users to see what they’re doing without ever noticing the reason why.
   
   [brettmartin.com](http://brettmartin.com)

3 **Acoustic plaster**
   
   **CMS Danskin Acoustics**
   
   CMS Danskin Acoustics probably wants to shout about its imaginative sound-reduction work in Liverpool’s Picton Reading Room, but since it’s a library they’ll just have to make do with a penetrating whisper. Cutting noise levels in a domed 19th century room lined with bookshelves was never going to be achieved using the usual methods, so the firm sprayed its Fellert ‘Even Better’ acoustic plaster into the soffits beneath the balconies of the upper shelving areas. Just the subtle sort of approach that a library needs.
   
   [cmsacoustics.co.uk](http://cmsacoustics.co.uk)

4 **Blade panels**
   
   **Spectral**
   
   With a bit of vertical thinking Spectral has produced a different type of sound-absorbing baffle with double the benefit. The firm’s Blade panels hang vertically from the school, college or office ceiling, handily incorporating a light fitting on the underside. The panels are particularly aimed at noise-generating bare concrete interiors, matching the stripped-back aesthetic with their own simplicity. From a performance point of view it’s less ‘son’ and more ‘lumiere’.
   
   [spectral-lighting.co.uk](http://spectral-lighting.co.uk)
5 Translucent cladding Rodeca

It’s glass 3mm, but not as we know it... Magdalen College School’s new multi-function Studio – for sports, dance and other potentially spectated activities – is clad in Rodeca Kristall panels punctuated with feature windows in coloured glass. The 50mm thick translucent panels admit up to 65% light while guarding against heat and sound transmission, allowing the activity inside to be comfortably delivered only to its chosen audience, unhampered by the rest of the school running riot outside.
rodeca.de

6 External wall protection Rockwool

2013 meets 1968 with Rockwool’s energy-efficient REDart, an external wall insulation that gives acoustic as well as thermal protection, and has a truly flamboyant decorative finish. Drab concrete or brick buildings can burst into life during their retrofits, as finishes of flowers, pop art or psychedelic patterns and colours rekindle the hippy atmosphere of flower power and the Summer of Love. So turn on, tune in, light your pipe and get in the green groove.
rockwool.co.uk

7 Multifoil Insulation Actis

Self-builder Daniel Sowerby is sleeping easy whatever the weather, having used Actis Triso Super 10 to insulate the roof and walls of his new home. He says his winter heating bill (gas and electric combined) is down to £320 while the loft room stays cool when it’s sunny, giving him a satisfying ‘win, win, win: well insulated, no draughts and no solar over-heating’. But although he’s justifiably delighted with the impact of all that multifoil at Chez Sowerby, let’s hope he’s going to do a bit of decorating before he moves the family in.
insulation-actis.com

8 Tapered roof boards Kingspan

You have to take your hat off to the Jerwood Gallery, which has lifted the unassuming seaside town of Hastings out of the cultural backwaters and plopped it down in the middle of fine art’s super highway. But it’s not just its award winning aesthetic: Kingspan’s Thermataper TT47 LPC/FM insulation makes the building cool too, so it’s both energy efficient and protected from anything that the coastal climate, fishermen or holidaymakers that share its beach location might throw at it.
kingspaninsulation.co.uk
Doors, Windows & Blinds

**FABER** Pace Gallery showcases imaginative blinds

David Chipperfield Architects’ redevelopment of London’s Pace Gallery included adaptable exhibition spaces. FABER supplied a bespoke solar shading system of screens and blackouts to secured windows on a tensioned bottom-up specification. Two motorised roller blinds were fitted in each window space, black out the rear with screen to the front, both drawn upwards by tension cables with the fabric running in recessed side channels.

www.faberkblinds.co.uk

**CRITTALL** Galvanizing know-how wins plaudits at Sussex University

Leading steel window manufacturer, Crittall, an expert in Duplex galvanizing protection where paint is factory applied as a topcoat to a galvanized product has won an award from The Galvanizers Association. Crittall won the ‘Best Duplex’ in the Association’s 2013 competition for the hot rolled galvanized steel profiles and cold-formed galvanized steel doors it supplied for the refurbishment of the Basil Spence-designed Palmer House at the University of Sussex.

www.crittall-windows.co.uk

**GEZE** Turning heads with the ECTurn Inside

The UK’s leading door and window control system manufacturer, GEZE UK, is launching a highly versatile, concealed automatic swing door drive. Discreetly mounted inside the door frame, the ECTurn Inside automatically opens and closes doors ‘invisibly’, making it ideal for entrance areas, offices and conference rooms. Its touchless operation also equips it for healthcare environments and it is suitable for users with restricted mobility.

info.uk@geze.com

**MUMFORD & WOOD** Period-style timber windows and doors

Replacement period-style timber windows and doors from Mumford & Wood’s Conservation range have been specified for the refurbished junior boarding houses at Cheltenham Ladies’ College. Manufactured from engineered, knot-free and sustainable sourced timber, high specification Conservation range windows replicate timber sliding sashes in older buildings while lending a traditional appearance to new build properties. Energy rated and BSI accredited.

mumfordwood.com

Timber Expo

**A PROCTOR GROUP** Silverwood showcased at Timber Expo

At Timber Expo, A Proctor Group will be showing Silverwood, a factory-finished painted timber cladding for a modern aesthetic look. Established for over 20 years, Silverwood offers a range of colours, appearances and profiles. Extensive warranties are included and the product has a unique secret-fixing solution for an easier more cost-effective solution. Easy of installation and low maintenance make it ideal for new builds and renovations.

www.proctorgroup.com

**TIMBER EXPO** Over 5000 visitors expected at the UK’s national timber event

Timber Expo, on 24-25 September at the NEC Birmingham, is in its third year. Over 5000 visitors are expected, including architects and designers, engineers, contractors and local authorities. An exhibition of 170 companies will highlight the latest products and developments, alongside the definitive Timber Talks specialist seminars organised by TRADA, Toolbox Talks, Timber Buyers Forum, Timber Accord Pavilion, the ProTimber Industry summit and 2013 Wood Awards showcase.

www.timber-expo.co.uk/book

**COASTAL JOINERY** Weatherproofing makes Lift & Slide door most popular

Coastal Joinery Hardware now offers the Siegenia HS Portal, Lift & Slide door system for timber joinery. Lift & Slide is the straight sliding door system most often chosen because it is fully weatherproofed and very easy to operate and open. The timber profiles are designed to give the sliding door a weatherstrip top and bottom as well as the locking edge. With 10 schemes available, an 18.5m opening capacity and a 10 year guarantees, the HS Portal deserves a closer look.

www.lift-slide.com

**COASTAL JOINERY** Coastal catalogue now available

From Colford sliding doors to high security euro cylinders, from Tempe Weatherseals to Tritus Flush Casement Systems – whatever you are looking to source in joinery hardware, you’ll find it in the new VOS Catalogue. An essential source of information for all architects nationwide, you can download your online version or request hard copy now.

www.coastal-group.com
Floors

HECKMONDWIKE Colourful carpet adds design flair to primary school

Colorful carpet from Heckmondwike FB is helping pupils at a new Warrington school identify their classrooms. Chapelford Primary is using 1000m² of Supacord Fibre Bonded Carpet in 10 colours to create the vibrant floor design. Steel Grey is the base colour throughout the school, while magenta, violet, blue, willow (green), aquamarine, heather, purple amethyst and mulberry were used as accent colours in the corridors and all 14 classrooms.

www.heckmondwike-fb.co.uk

UZIN Sustainable and recyclable packaging

UZIN is especially focused on innovating new environmental solutions and has introduced the Cube It Simple recyclable packaging, to give:

- 77% less CO₂ – It allows more weight and units to be put on a pallet, reducing transportation and so discharging less CO₂.
- 87% less waste – Only the liner is made from plastic, which can be returned and disposed of. The box is made from recycled and recyclable cardboard, also saving contractors disposal time.

www.uzin.co.uk

TILE OF SPAIN Icaria stone effect porcelain range by Grespania

Icaria is the new stone effect porcelain range by Spanish tile manufacturer Grespania. Injet technology and a structured surface provide a realistic stone appearance with all the advantages of porcelain - reduced porosity and water absorption with enhanced frost and slip resistance. Icaria is suitable for both indoor and outdoor flooring and comes in four colours - blance, beige, anthracite and ocre - and four sizes 50 by 50 cm, 30 by 60 cm, 45 by 45 cm and 60 by 60 cm.

www.grespania.com

NORA Norament 926 satura rubber floor covering gives two worlds of colour

Developed with architects and designers, the new Norament 926 satura rubber floor covering offers two worlds of colour. Perfectly harmonised, 16 neutral architectural colours range from warm beige to cool shades of grey, while 16 chromatic accentuating colours work for bright, vibrant schemes. The new product is part of the certified floor covering system, noras system blue, which combines low emission rubber floor coverings with low emission installation materials.

www.nora.com/uk

Bathrooms

HANSACROHE Push-button operation on ShowerTablet Select 300

Hansgrohe’s innovative Select collection includes Raindance Select hand showers, overheard showers and showerpipes with ShowerSelect and ShowerTablet thermostatic bath/shower controls – all with simple push button select operation. The company’s ShowerTablet Select 500 is an attractive, generously dimensioned shelf for storage, in a unit that also does the work of a thermostat. A new shut-off valve turns the water on and off by simply pushing a button.

www.hansgrohe.co.uk

KALDEWEI Secure Plus shower surface

Blending design and functionality, Kaldewei’s innovation to a whole new level. As a world first, Secure Plus is the new anti-slip finish for enamelled shower surfaces that is virtually invisible. Available in the selected matt colours of Kaldewei’s Co-ordinated Colours Collection, it is made of a quartz and mix that is fired permanently onto the shower surface, including the outlet cover. The resulting seamless surface ensures durable safety and comfort underfoot.

www.kaldewei.co.uk

ROCA Water-saving W+W product helps Arcola Theatre go carbon neutral

Arcola Theatre in Hackney aims to be the first carbon neutral theatre in the world. In a converted paint factory, its green credentials include impressive water-saving credentials thanks to Roca’s innovative W+W (water closet and washbasin) product. W+W uses waste water from the basin to fill the cistern, saving up to 25% more water in a typical household compared with dual-flush systems.

www.uk.roca.com

LAUFEN Kartell’s plastic/ceramic mix gives a super-stylish bathroom finish

The Kartell by Laufen collection brings plastic and ceramic together for a super-stylish finish in the bathroom. The range has stools, shelving and accessories available in a range of bold, transparent colours, washbasins made from Laufen’s revolutionary SaphirKeramik material to make them extra thin and extra light, and a bidet which offers spa-like well-being.

www.uk.laufen.com
Insulation

**STYROFOAM** Insulation for the mass market

A new multi-purpose insulation from Dow Building Solutions is setting up Styrofoam’s excellent strength, moisture resistance and long-term durability to a wider audience. Styrofoam extruded polystyrene board is used to insulate floors, walls and roofs on projects such as schools, hospitals, retail outlets and cold stores. Styrofoam 150-It makes the material more accessible for smaller projects across the new build refreshment and self-build sectors.

www.styrofoam.co.uk

**KINGSSPAN** Permanent exhibit at Jerwood Gallery

Kingspan insulation’s high performance Thermapanel TTP712C/PM insulation was specified as part of the £6 million, award-winning Jerwood Gallery on the edge of a fishing beach in Hastings. The insulation was specified for the roof build-up as the tapered insulated boards supplied the required fall and excellent U-values. Kingspan Thermapanel LPC/PM Systems come in thicknesses of 30-165mm and are factory tapered and pre-cut for an instant roof finish.

www.kingspaninsulation.co.uk

**CELOTEX** PL4000 ensures Orion Homes meets performance standards

To help maximise saleable space while meeting U-value targets, Orion Homes has specified over 5,000m² of Celotex PL4000 PIR insulation bonded to 12.5mm tapered edge plaster board for its new Sunnyvale Gardens housing development in West Yorkshire. Offering a lambda value of 0.029 W/mK, Cigs16 approval and BBA certification, it gives high levels of thermal efficiency and can be installed internally using direct bond or mechanical fix techniques.

www.celotex.co.uk

**STO** Improved insulation and aesthetics saves tower blocks

StoTherm Mineral external render, finished with white or black brick slips on the ground floor and render above, has been specified in the refurbishment of three residential tower blocks in central Manchester. The result is an impressive U-value of 0.16 W/m²K and a totally revised aesthetic for the building. Environmental responsibility was central to the CRISP-funded scheme so StoTherm Mineral was specified at a width of 200mm to insulate the towers.

www.sto.co.uk

Landscaping & Drainage

**ULTRASCAPE** Ideal paving foundation for rigid and bound bases

Ultrascape Pre-Bed 115 is a fine bedding mortar manufactured by Instarmac, which can be laid from 5mm to 75mm. The product creates the ideal foundation for laying paving elements where a rigid or bound base is required. It is available in bulk sacks or 25kg bags, and an eco version is also available containing 20% recycled material.

www.ultrascape.co.uk

**KINGSSPAN** Essential 100-page products catalogue published

Kingspan Environmental has published The Essential Products Guide, detailing all its products and services across sustainable water and environmental management, and renewable technologies. It includes information on product types, sizes and specifications, and advice and support for customers. The guide is available in print and as a downloadable ebook. To claim a free copy email leguide@kingspan.com stating your name, business and address.

www.kingspan.co.uk

**YEOMAN RAINGUARD** Stylish, cost-effective and durable copper systems

Yeoman Rainguard has been providing quality rainwater systems for over 30 years and offers a comprehensive choice of stylish, cost-effective, low maintenance products. The range includes copper systems, which have been successfully used for many generations and have proven durability through natural oxidation, to deliver an almost unlimited service life.

www.rainguard.co.uk

**ACHESON & GLOVER** Special paving flag for Canterbury’s new theatre

Acheson & Glover (A&G), a leading supplier of premium hard landscaping products, has developed a new paving flag to meet KWA Architects’ specific requirements for the £25m Marlowe Theatre in Canterbury. KWA wanted a value engineered alternative to the flame finished natural granite stone of the hard landscaping, TerraPave® Natural Aggregate Flag in a Florence (Marlowe Special) textured finish was chosen as a high quality, cost effective option.

www.achesonglover.com
General

**KERAKOLL** Building chemicals company completes green research institute

Building work is complete on GreenLab, Kerakoll’s new eco-sustainable research and innovation institute for Kerakoll UK’s parent company, the building chemicals manufacturer. The project won Legambiente’s prestigious GreenLife Award and was included in the 153rd Venice Architecture Biennale. This is the first service sector building in Italy to be constructed solely from sustainable solutions and materials with an investment of about €1.5 million.

info@kerakoll.co.uk

**AQATA** Luxury walk-ins and shower screens

Aqata has an extensive collection of luxury walk-ins and contemporary shower screens with hinged panels, which have been designed specifically to create seamless wetroom style showering areas. This stunning Spectra 57464C enclosure has clean minimalist lines and a practical 55mm hinged panel, which folds through 180 degrees to deflect overspray and provide ease of access.

www.aqata.co.uk

**JOHN BRASH** Sustainable housing scheme picks Western Red Cedar shingles

The pioneering social housing development of Sinclair Meadows in Tyneside has been heralded as the UK’s first Carbon Zero project. Western Red Cedar 3B Shingles, chosen for the roof covering, can deliver very high thermal conductivity (K=0.1047 W/m°C at 17 percent moisture content). The naturally sustainable building material is recognised as the best thermal insulator among the most commonly available softwoods.

www.johnbrash.co.uk

**JUNKERS** Black oak floors make a statement

Dark black coloured oak is formed when logs lie for hundreds of years in a bog, giving the wood its special, dark shade. Junkers has recreated this process by drawing the dark stain deep into the planes of its solid oak floors. Black Oak Variation has an overall black colour with substantially lighter tones along the line of the grain – a true statement floor.

www.junkers.co.uk

**SR TIMBER** Beware of 100% safety claims for battens

100% safety claims for roofing battens are lulling roofer into a false sense of security, warns SR Timber, one of the leading distributors of specialist roofing battens. Even graded battens, which are much safer than ungraded battens and save both waste and time, remain a natural product that could carry potential faults and cause danger. Roofers and builders must always rely on full arrant systems and duty of care.

www.sr-timber.co.uk

**TENSAR** European route wins first CE Mark for Stabilisation Geogrid

Tensar International, a global leader in soil reinforcement and ground stabilisation technology, has ensured even its most unique products hold CE Mark status. Its triangular geogrid structure performs a function not yet covered by a harmonised standard. Tensar has followed the alternative approvals process of the European Organisation for Technical Approvals (EOTA) to win CE Marking for its patented TriAX technology.

www.tensar.co.uk

**SIMONSWERK** Leader in the field exhibits again at 100% Design

Leading hinge manufacturer Simonswerk will exhibit again this year at 100% Design (Stand R19). The company will showcase the latest developments in its portfolio including a new fire-rated hinge and products with a new PVU corrosion resistant finish. There will also be one-to-one demonstrations of the firm’s online advanced Product selector Information system for architects, ironmongers, specifiers, and interior designers.

www.simonswerk.co.uk

**REDLAND** Integrated PV system for newbuild and retrofits

Redland is launching InDies, a cost-effective integrated PV system that can be used on roofs in both new build and retrofit contracts. InDies is supplied as a package complete with fixings and flashing in individual modules. Low weight and few parts make for quick and easy installation. Modules provide the same levels of weather-tightness and resistance to wind uplift as roof tiles, and have been tested to deliver one of the most efficient power outputs on the market.

info@redland.com
General

SIKA SARNAFIL Flexible roofing fits intricate Exeter design

Sika Sarnafil’s flexible single ply has crowned landmark Exeter building, Oxygen House, the 44,000sqft headquarters for statistical research company ATASS Group. A mixture of S317-12EL and G410-12EL single ply membranes have been used for the 2,910m² roof, as well as lead grey bolted ridge features, inlaid with light grey panels, for the intricate roof detailing.

www.sarnafil.co.uk

CEMBRIT Slates are a healthy choice for care centre roof

Cembrit, a specialist in natural and fibre cement slates, has supplied 3,000 Doorland fibre cement slates to Eagle Wood, a new Neurological Care Centre in Peterborough. On the steeply-pitched roof, the Doorland slates complement the soft-toned brickwork and timber features. The slate is manufactured with a smooth surface and dressed edge to give the appearance of a natural slate from ground level, while retaining all the fixing benefits of man-made slate.

www.cembrit.co.uk

ANCON Technical literature updated with CE Mark

Stainless steel fixings specialists, Ancon Building Products, has updated its technical literature to highlight the products that now carry CE Marking under the Construction Products Regulation. The new Ancon publications, which can now be downloaded from www.ancon.co.uk or are available in hard copy on request, are Wall Tie and Restraint Fixings, Masonry Support Systems and Lintels, Window and Parapet Posts and Tension and Compression Systems.

www.ancon.co.uk

ASSA ABLOY Security doors delivering the place

Following its work on The Shard last year, Assa Abloy Security Doors is supplying its high security steel doorsets to its sister building, together, they form the 2milion m² London Bridge Quarter development.

More than 500 fire and acoustic steel doorsets will be installed at The Place, which is due for completion later this year. The bespoke doorsets, successfully certified to BS 476 – 22, will provide fire protection to British and European standards.

www.assabloy.co.uk/securitydoors

IBSTOCK BrickShield external wall insulation wins BBA certification

BrickShield, the unique external wall insulation system by Ibstock Brick, has received accreditation from the British Board of Agrément (BBA), making it an ideal choice for those looking to create energy efficiencies under the Energy Company Obligation (ECO) and the Green Deal. The accreditation comes after three years of rigorous testing, making it the only real brick slip external wall insulation system to achieve this BBA recognition.

www.brickshield.com

CENTAUR Technologies takes flight at RAF Cosford

RAF Cosford in Shropshire was the impressive setting for the launch of a new force in liquid roofing - Centaur Technologies Ltd. The Lancashire-based firm has been founded by Jeremy Gorick, Phil Richardson and Bob Stanfield, formerly MD, marketing and technical director, and R&D director respectively at Liquid Plastics. Centaur Technologies unveiled Centtech PU at the event, the world’s first hybrid polyurethane roof coating system.

www.centaurroofing.co.uk

MAPEI Inspiration for designers at 100% Design

Mapei will show environmentally friendly products at 100% Design (Stand E1), including Silicoloc protective and decorative wall coatings system, MapeiFloor; resin flooring system and Ultragres Industrial cementitious flooring. Ultragres Industrial is a high quality and technologically advanced product for levelling and smoothing concrete and screed substrates, designed for heavy pedestrian traffic and rubber-wheeled vehicles.

www.mapei.co.uk

MARMOX Conversion at Hackney’s Village Green

The Village Green is a shopping and cultural development in east London. Initially incorporating five local small businesses, the development has undergone a transformation project, to build a new mezzanine floor structure above the shops and to ensure that the interiors of the shopping area were quiet and intimate.

Herklichkeit Wood Wool Panels were used as the cover material and as the final decoration layer. Multipurpose Herklichkeit panels can be used internally or externally on walls, floors and ceilings.

www.marmox.co.uk
**General**

**IDS Added versatility with Avonite Foundations’ new 12mm thickness**
IDS has added the Avonite Foundations range of acrylic solid surfaces to its portfolio for domestic, commercial, leisure and retail interiors. The surfaces come in choice of 5mm, 6mm, 9mm and a 12mm thickness in sheet size 3660mm by 760mm. The choice of veneer thicknesses increases creative and fabrication flexibility for both horizontal and vertical applications. The 5mm veneer allows cost engineering without compromising on looks or performance.

www.avonitesolidsurface.co.uk

**Kalzip Kalzip XT specified for new bus station**
Kalzip’s aluminium standing seam system has been used on Stoke-on-Trent’s new city centre bus station. Double curvature XT-profiled sheets were installed on the main building, for another facing roof canopy that sweeps and curves in plan and elevation. Kalzip also designed a bespoke rainscreen for the bus drivers’ accommodation block. To give non-planar seams there is a shadow gap at ridge level where the roof battens up to the inner facing canopy using straight and tapered Kalzip sheets.

www.kalzip.com

**Fiberweb Terram Truckpave upgrades busy industrial depot**
Fiberweb’s robust and durable porous paving, Terram Truckpave 105, has been used to stabilise the depot yard surface at Oldham Broadway Business Park, Oldham. A free draining granular stone sub base, the product is simple and quick to install. Each paving weighs only 12kg and complies with HSE manual handling limits. The pavers butt together and the series of cells in each unit offer a void area of 35% which can also be filled with angular gravel or topsoil and seeded.

www.terram.com

**Sika Sarnafil Leeds Arena roof is pitch perfect**
Sika Sarnafil’s single ply roofing system has been used for Leeds Council’s striking new arena. Proximity to residential areas meant the roof had to meet Part E of the building regulations. Acoustic performance was achieved using the SSB7-18EL Copper Pathina system along with suitable insulation for the 7500m² main auditorium roof. With its honeycomb external facade and kaleidoscope lighting, the “fan-shaped” arena is one of Yorkshire’s most iconic buildings.

www.sarnafil.com

**Kähr Paperchase chooses Kährs floors for its new UK stores**
Kährs Oak Siena has been specified throughout the UK’s new Paperchase stores and shop refurbishments. Chosen for its high performance features, aesthetics, the FSC certified three-strip wood floor will be laid throughout retail and counter areas. Recent installations include Paperchase’s third flagship store in Glasgow. Oak Siena is an even grained wood floor, offered with a durable satin lacquer, matt lacquer or brushed matt lacquer pre-finished.

www.kährs.co.uk

**Bison Precast products get CE Marking approval**
Leading precast concrete manufacturer Bison Manufacturing Ltd has become one of the first British precast companies to receive CE Marking for its hollowcore and reinforced concrete products. CE Marking is part of the Construction Products Regulations (CPR) scheme, which became mandatory on 1 July 2013. The scheme ensures that products used in Europe meet harmonised European standard or European Technical Assessment requirements.

www.bison.co.uk

**Timoleon Interdeck underfloor heating system for fixed flooring**
Timoleon’s InterDeck system for suspended floors, is a way of fixing paviors to the floor that is already in place. The installation is carried out from the floor below. High density wood panels, fixed to the underside of the flooring, have a heat diffuser on the side which is placed against the fixed floor deck, and pre-routed channels at 155mm centres, which accept the 12mm pipe on the underside. The pipe is then pushed home into the channels starting from the manifold.

www.timoleon.co.uk

**Armstrong Ceilings Curved Optimas complement canopies portfolio**
Leading interior solutions provider Armstrong World Industries has added a unique curved system to its range of canopy ceilings which can be used as a convex or concave element. Manufactured from 80% recycled content, it is highly light-reflective at 87%, enabling architects and interior designers to factor in energy savings over artificial light. Acoustically designed to Sound Absorption Class A, Optimas canopies can cater for various heights and angles.

www.armstrong.co.uk
Sign Up

Luke Tozer, director of practice Pitman Tozer, gives us three of his specification favourites

KEBONY SUSTAINABLE TIMBER
We’ve used Kebony on a few projects, most recently as external cladding for Lateral House in London’s Notting Hill: it’s a softwood from Norway that can be used outside due to Rebosimation. Sustainable wood like Kebony is made more durable, harder and more stable using liquids from biowaste. Treated products resemble teak and other tropical woods. It is dark brown, and left untreated acquires a silver grey patina over time. You can preserve the colour by treating with a clear UV protection oil. It is used on ships and in marine environments for decking. We have also used it for fencing and seating. kebony.com

COLOURED ARTIFICIAL TURF
With limited external space – a garden being a luxury in many parts of central London Namgrass’s Living Colours is a product that can have a big visual impact in a small space. You don’t need a footy pitch or white lines marked out to take advantage of it. We’re using artificial turf for the flooring of winter gardens in our Peabody Housing scheme at Bethnal Green. It comes in a variety of colours, from bright green, orange and pink to more muted greys. It’s intended to give winter gardens a durable surface that feels external namgrass.co.uk/artificial-grass-products/namgrass-living-colours.php

STO LOTUSAN SELF CLEANING PAINT
We first used this on our Gap House and six years of rain and shine later it still doesn’t need a repaint or touch up. This self-cleaning, exterior paint has the ‘Lotus leaf’ effect, where water is unable to grip the surface, and dirt simply washes off in the rain, keeping the facade clean and dry for longer. It’s moisture permeable and available in a variety of colours – we used white on Gap House. It’s good for urban environments and where access difficulties make cleaning problematic stoshop.co.uk/products/item/stolotusan-color

...Sign Off

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

RESTORATION MAN
It’s always good to support campaigns that help young people get solid construction skills, and which bring benefits to the community. This makes the ‘Build-It’ initiative, and Sika’s support of it with 1500 hi-vis vests, laudable. And the lengths it’s gone to recruit ambassadors is similarly eyebrow-raising. In wake of this year’s release of the ‘Behind the Candelabra’ Liberace biopic, they seem to have summoned none other than the famed ivory tinker from beyond the grave. Given that the guy’s been dead for nearly 30 years, we think he’s scrubbed up wonderfully; either that, or his plastic surgeon’s put him through some radical Restoration...

ALL DOLLED UP
Pupaphobia sufferers might want to avoid London’s Design Museum during its “The Future is Here” show. In its look at 3D printing, it’s focused on UK firm Makelabs, who, for £99, will fabricate a one-off, 10in high ‘Makie’ look-a-like plastic doll for you, based on a virtual portrait you compose on its website. There’s real potential for architectural egos here – and judging from its current customer base, business is booming. After the scandal of Prince Harry’s Vegas strip poker pics, the man’s no stranger to folding with a pair, and Cameron’s effigy looks more proactive than the real thing. Whatever next? A puppet government?!

REGRESSED HANDLES
Is ironmongery firm Olivari getting all Freudian with its latest recessed door handles, which solicit the full gamut of human emotion? Its Dante range is decidedly anthropomorphic, if oddly titled; would you naturally gravitate to a brand name more associated with people screaming for all eternity in Hell? Anyway, now you slide a door open or closed, you can laugh, be surprised or cry along with it, just like you do in reality when you’re snogging the door. Perhaps they should do a ‘Stirling’ range, fashioned from the faces of the losing architects when the winner’s announced. I’d pay for that.

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