PiP

RIBAJ

Products in Practice Jan/Feb 2020

Hard on the heels ...

...of the Richmond House debacle, which will see William Whitfield's Whitehall grade II* listed building pretty much demolished to squeeze in temporary Commons' and Lords' debating chambers, Michael Hopkins' nearby Portcullis House has been refused spot listing. Part of the Parliamentary estate, it was willingly posited by its architect as a suitable candidate for the very function being foisted on Richmond House. Now remodelling of the 2001 building is set to lose the water features in the atrium (part of the original fire strategy) 'to increase its capacity' – all because it is 'hugely popular' for users.

Something that certainly can't make that claim is Japanese architect Tadao Ando's 2002 scheme in Piccadilly Gardens, Manchester. It was never popular, and this garden cum urban interchange remains blighted, says the local press, by negative user feedback and anti-social behaviour. Ando's concrete, more suited to the strong light of Manchuria than Manchester, sits ill here; so his curved wall may be turned into a green one, or part demolished – to create a more 'family friendly' space with food and beverage outlets. Not a very Ando-ish concept.

Of course, re-use and re-purpose are real buzzwords now but both examples show how such apparent logic might result in perversity. The popularity of one precluding its repurposing to obviate demolition of another, and the lack of popularity of the other eliciting a knee-jerk reaction to remove public space and hand it over to prettification and commercial interests. But we are a fickle society and, as the Chinese curse goes, we live in interesting times. ●

Jan-Carlos Kucharek, editor

JACK HOBHOUSE/ARCHITYPE

GARETH BYRNE

ANDY MATTHEWS

More online...

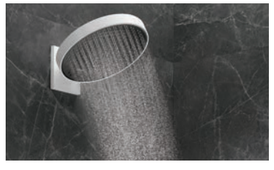
There's lots of innovation in the wood industry, but it's not readily available. We thought, let's build a service to make that knowledge available to all

Stephen Cousins hears about Metsä Wood's Open Source Wood initiative: ribaj.com/opensourcewood

PiP's on Pinterest! See the latest products on our Pinterest feed: pinterest.co.uk/productsinpractice

Cea1 bath mixer and shower head by Ceadesign

Zero centre nesting tables by Désirée



Rainfinity shower head by Hansgrohe

Meta side table by New Tendency

Cover image: Timber gridshell roof by Shigeru Ban at Swatch HQ, Switzerland. Photograph: Swatch

Compendium

UPCOMING
For Pasiv Prague Exhibition Centre, Czech Republic 07- 09 Feb
Surface Design Show Business Design Centre 11-13 Feb
Bauen & Energie Messe Wien, Vienna, Austria 20-23 Feb
Futurebuild ExCel London 3-5 March

Corporate muscle
There's a sense of 70s heroics in architect CPMG's new HQ for British Sugar parent company Associated British Foods, on Cygnet Business Park at Hampton, outside Peterborough. The robustly-named Samson Place building allowed for the relocation of nearly 400 staff from other sites, with the addition of purpose-built conference and training facilities and a showcase reception and atrium area. Kawneer curtain-walling systems were specified on the building, including the striking vertical glazed brise soleil, contributing to the office's 'A' energy efficiency rating.

3D by degrees
Ceramic tile firm CTD Architectural Tiles is going all 3D on us with its latest range of tiles. The Shapes, Murals Lines and Kenzo ranges all cut into or extrude the ceramic surface to create a bold dimensionality. With the Kenzo range, it results in white tiles with sharp arabesque patterning. Murals Lines offers subtle shifts in the surface to generate delicate shading effects in light with a hint of 1950s aesthetic. But the real geometrical punch is saved for the Shapes range (pictured), which pulls out tiles' surfaces in various colours to create three dimensional walls for a bold, future-retro feel.

Silent disco
It would be a rare thing indeed to catch two of these music icons in a room together; and impossible to see all three; but Belgian easy listening radio station Joe seems to have done it without needing Freddie to, in his own immortal words, 'live forever'. To 'radiate playfulness and openness', the fun rotating partition walls at the Brussels-based station's HQ bring some much-needed Tina to their reception area turners, while Hunter Douglas Architectural's HeartFelt acoustic ceiling system, with its high sound absorbing performance, seems to have quelled even the decibel-busting abilities of Mars and Mercury.

Sleight surfaces
London based kitchens supplier Moiety has carved itself a niche in the specification of Kosher kitchens, ensuring cabinetry and appliances are installed to separate meat and dairy products during food preparation. But it's added an allusory string to its hygiene bow with luxury island units whose mirrored facing on the island structure inside creates a striking floating effect. Specifying Blanco products as part of its kitchens' German specification, these are the only 'sinks' in the whole gravity-defying ensemble.

Hot-tub cool
Knurling. It's a word that makes your tongue roll around the walls of your mouth like a particularly satisfying gobstopper. It's half of PiP's draw to Duravit's D1 faucet line, whose rotating handle, in contrast to its single lever option, is delicately knurled to ensure pinpoint water temperature precision- even with soapy hands. The range, designed in collaboration with designers Mateo Thun and Antonio Rodriguez, certainly sets itself up as a statement piece, looking not unlike the diving boards at Zaha Hadid's London Aquatics centre in Stratford. The sensor cylinder of the D1e electronic version also lights up in signal blue to orange and red to inform users of the water temperature, leaving your hands free to cut some moves in your bathrobe.

Are you sitting comfortably?
Manufacturer Aeris' numo chair was this month awarded the 2020 Design Award for Furniture by the German Design Council at the Frankfurt consumer goods fair Ambiente. Designed by Andreas Ostwald, it combines a classic modern design with what the PR calls its 'unusual movement mechanism.' It doesn't only lean backwards, but forwards too, making picking up your dropped pen as natural as musing with it between your teeth while reclined. The chair comes in three frame variants, including timber and steel, and in five different colours, with a 120kg capacity, high-quality polypropylene seat and optional arched seat cushion. Aeris did the Zebedee-like 3D motion Swopper chair; and you can rock 'til you drop on this latest model.

Officers' moss
If the words 'partition specification' have you reaching for the Red Bull, Planet Partitions may have an adrenaline shot for you in the form of its biophilic 'moss wall' partitioning solution. Yes, that's real moss you see in their Clerkenwell showroom; a fact confirmed by PiP's editor running his own hand through its damp, dark, bryophitic thickness. The firm says the walls are easy to maintain post-installation and act as an excellent sound-absorbing material. And in the cut-throat corporate jungle, leaning back against this takes you back to your childhood most bestest day out ever.

Faience fave
Announced this month, the winner of the 18th Spanish Ceramic Tile Manufacturers Association (ASCER) Tile of Spain Awards was Santa Creu & Sant Pau Hospital Research Centre in Barcelona by PICH architects & 2BMFG Arquitectes. The jury awarding the project the €17,000 prize highlighted its 'innovative use of the ceramic material and the context in which it was used, with its capacity to blend into the surroundings'. That was partly due to the 'permeable ceramic envelope' that the designers employed, using thousands of multi-coloured glazed tiles, which created an ever-changing, partially transparent veil through which building users could engage with the context. Continuing a national tiling tradition that was embraced, in particular, by the designers of this city; the judges, who included MVRDV's Jacob van Rijs, considered it a worthy winner.

Housing could learn most from car factories

Despite the oft-quoted benefits of offsite production aspects of the car industry, one of its more important lessons for construction relates to the transition to a new fuel source. It's clear that, for the medium term, electric cars will become the main way to decarbonise road transport, with car manufacturers investing vast sums to keep up with technology leaders like Tesla.

What is notable is that the number of moving parts in a typical electric vehicle is around 20, whereas internal combustion engines have around 2000. This is a vast simplification in a car's 'hardware'. The counterpoint is that an electric car's software plays a vital role in optimizing battery operation to maximise efficiency and deliver the required driving range.

An extension of this migration of complexity from hard to software is that software can be improved in situ, unlike hardware, which is fixed at the point that the car leaves the factory. For example, Tesla has pushed updates to its cars giving owners more power, improved range and reduced charging times.

Housing could profit from such an approach, simplifying hardware and using more sophisticated control software. This could allow us to challenge the conventional approach to heating a home. As building fabric efficiency increases, rooms respond more quickly to heaters; so we can consider using a more advanced control system which, for example, only heats rooms when occupied.

Such an advanced control system might be more expensive up front than a conventional thermostat, but much as electric cars simplified the hardware required, so too could electric houses reduce the complexity of building systems. The removal of wet heating systems and the associated pipework could more than make up for the costs involved in control.

With a more advanced control system deployed, the performance of homes could be continually improved as algorithm software was refined. For example, machine learning can be applied to ascertain which rooms are occupied most frequently and when. Rooms could be heated ahead of use and the system's response would become imperceptible to the user.

Like transport, extensive electrification of the built environment is the likely route toward decarbonisation in the UK, with clean renewable electricity sources being key. The grid's carbon emissions fell by around a half in the last 10 years and the government has announced a ban on new gas connections in five years' time.

An electricity grid with a significant amount of energy generated from renewable sources such as wind turbines needs to be controlled differently. We can't control the wind so need to match demand to the availability of power. And more advanced control software could switch off heaters if there is a drop in wind power output.

A world where our entire built environment is connected, via the 'internet of things', is still some way off. But when developing new infrastructure it's important to lay the foundations for systems where control can make the most of more advanced and evolving digital technology. ●

Dan Cash is a building services engineer and Director of Consulting at Atamate

Books

Buy at ribabookshops.com

EnerPHIT: A step by step guide to low energy retrofit
James Traynor. RIBA Publishing
182p HB £45

The author is the managing director of eco-conscious architectural practice ECD Architects, which has been championing energy efficiency in the industry since it was established in 1980. That means the firm has developed real expertise in this field. With a preface by Passivhaus' Dr Wolfgang Feist, Traynor's book is an invaluable guide to retrofit for those less knowledgeable than the author about the EnerPHIT standard. Moving from definitions and general guidance through to best practice in both commercial and residential retrofit, and with numerous case studies of both from here and abroad, the text is accompanied with copious diagrams and photos to see both novice and expert through an optimised energy retrofit process.

Mass Housing in the Socialist City: Heritage, values and perspectives
Barbara Engel ed. DOM Publishers 240p PB £24

In a post-Thatcher society, with the once-heretical idea of state-funded housing now experiencing a resurgence in the golden dawn of the Stirling Prize-winning Goldsmith St, there might actually be an audience for Engel's book on social housing in the former eastern bloc. But, unlike the capitalistic housing need in the late 19th century to simply deal with the influx of workers, the guiding urban principles of Soviet urban housing were primarily ideological. This book gives the historical context and provides analysis of existing estates in Russia, Ukraine and former East Germany, positing proposals for their possible futures. The attractive and expert layout of text and images helps, as the subject matter seems curiously alien.

Robotic Building: Architecture in the age of automation
Mollie Claypool, Manuel Jimenez Garcia, Gilles Retsin, Vincente Soler. Edition Detail 128p HB £46

The authors work collectively as the Design Computation Lab at London's Bartlett School and so have a pool of knowledge regarding computational design and automated fabrication methods. But while a flick through the book evidences clear pulling together of some compelling and very cutting-edge digital techniques – I'm particularly drawn to the digitally laid brickwork of Philip Yuan's Chi-She Gallery in Shanghai – the overall layout of the volume is curiously uninspiring. Images seem incidentally placed and there is a gnawing repetition of its pages' two-column text format. The overall effect is one of impenetrability – despite the obvious interest of the subject matter. Perhaps they should release it as an App.

MATT BROWNE / SPORTSFILE

Right There are 34 primary trusses in the roof structure.

Cantilevered grandstand roof

What: Cantilevered roof
Where: The Curragh, Ireland

People have been horseracing in the Curragh since before 1727 when the first recorded event took place. It is one of the pre-eminent flat courses in the world, with fantastic drainage and the base for many international horses.

When Grimshaw answered the open call competition to redesign the visitor experience, however, the racecourse's buildings didn't match its global reputation. The grandstand comprised two basic mid-century shed-like structures with sight-blocking columns holding up a tinny roof, while the pre-parade and parade rings stood in a line along the track. This left them constrained and the whole area congested, particularly on derby days. The site needed to function for up to 3000 people at normal capacity events but also be enjoyable for 30,000 visitors on busier days too. Grimshaw's approach, therefore, was to re-plan the site, moving the rings away from the track to free up space for spectating. The centrepiece is, of course, a new grandstand.

Whereas many grandstands become quite vertical around the finish line, Grimshaw wanted to create a single uniting horizontal building that would be becoming of the course's surrounding open plains. It opted for a three-tier structure that gently curves to focus sightlines on the track. As well as open-air 1,366-seat spectator terracing, the solid brick base contains the tote halls, jockey changing facilities and back-of-house areas. The central glazed section offers new bars and VIP hospitality suites and an external viewing platform for racing patrons. This is topped by a huge soaring cantilevered horizontal roof designed to visually hover above the landscape and protect most racegoers from the prevailing elements while offering unobstructed views of the track.

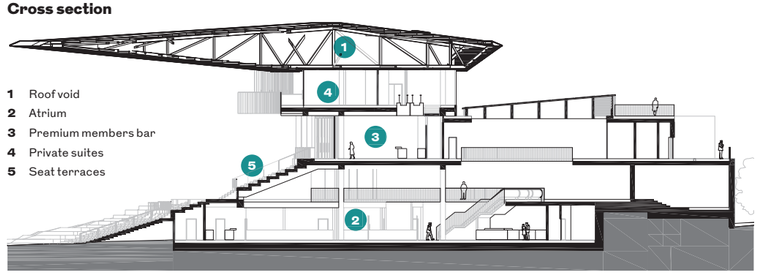
In section the roof is an irregular pentagon, with one long leading edge over the seating terraces. The trusses and cantilever follow the curved grid and then tie to a series of pier columns at the back. These in turn are supported by the concrete raker beams of the lower terraces. A 42m by 175m structure, the deepest cantilever stretches 45m. As spectators are positioned so close to the roof, it is both over and underclad to create crisp finished edges, accentuate the floating effect and leave no truss exposed. This technique also means the plant can be hidden in the attic space.

Inspired again by the building's natural setting, Grimshaw selected a copper-coloured cladding for top and bottom. The underside uses a panellised undulating perforated aluminium. Joints are placed in the seam to reduce their visual impact and enhance homogeneity. The transparency adds a lightness. Meanwhile, the roof is standing seam aluminium also in copper-colour. Rainwater is dealt with by perimeter guttering inset into the roof and directed back on itself vertically down through the building.

GARETH BYRNE

Above The roof also cantilevers over the rear to protect spectators of the parade ring.

Cross section



1 Roof void
2 Atrium
3 Premium members bar
4 Private suites
5 Seat terraces

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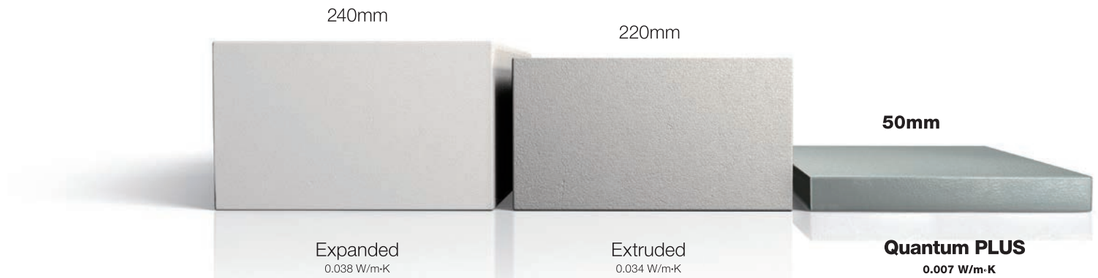

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Swatch HQ, Biel, Switzerland

Shigeru Ban's snaking timber gridshell for Swatch reflects the transparency, flexibility and fun of the watchmaker's brand

Words: Stephen Cousins Photographs: Swatch

Pritzker prize-winner Shigeru Ban is a master of experimentation with building materials and his latest project, the headquarters for Swiss watchmaker Swatch, in Biel, Switzerland, pushes the physical limits of glulam to create one of the world's largest and most complex hybrid timber structures.

At 240m long, the cocoon-like double-curved gridshell facade incorporates 7,700 unique pieces of timber engineered to a precision of 0.1mm to fit perfectly onsite.

Swatch challenged Shigeru Ban Architects (SBA) to develop a building that combines elements of its brand, such as transparency, movement, and unexpected and surprising details, with a sense of fun and playfulness.

The 11,000m^2 vaulted structure rises gently towards a glass entrance before bridging a street to meet a five-storey building, also designed by SBA and completed in 2017, which houses the Cité du Temps museum and exhibition centre and the Omega Factory.

Carlo Giordanetti, creative director at Swatch, explains: 'The intention was to create a dialogue and a juxtaposition between tradition – as represented by [parent company] Omega and the rational architecture of its new building (inspired by the firm's historic HQ building) – and the dynamism and innovation of Swatch, where a completely new architectural gesture is accomplished.'

SBA's idea for the timber structure has its roots in a previous collaboration with Frei Otto to create a cardboard and paper gridshell for the Japanese pavilion at the 2000 Hannover Expo. Engineered timber gridshells were explored

Left The Swatch headquarters in Biel seen from the air: 7,700 pieces helped create the 11,000m^2 timber vaulted structure.

on subsequent SBA projects, including Centre Pompidou Metz and Aspen Art Museum.

Visitors pass through the main entrance into a triple-height atrium lobby where three storeys of office space, a zigzagging white staircase and glass elevators are enclosed by the vortex-like wooden roof. The self-supporting gridshell spans the entire reinforced concrete frame used for the core and floor slabs.

At third floor level a glass pedestrian bridge extends back through the entrance facade and over the street to connect to the Cité du Temps. At the 'tail' end of the building office floors step down towards an open plan area on the ground.

Timber was chosen for its sustainability and speed of construction, and because it can be processed flexibly and cut to very precise dimensions.

SBA has long advocated the use of wood as the only truly renewable construction resource. Giordanetti adds: 'The carbon footprint of timber buildings is generally half that of concrete buildings and a third of steel. All the wood for the construction is Swiss spruce and despite the huge amount employed, the equivalent amount grows back in Switzerland in just two hours.'

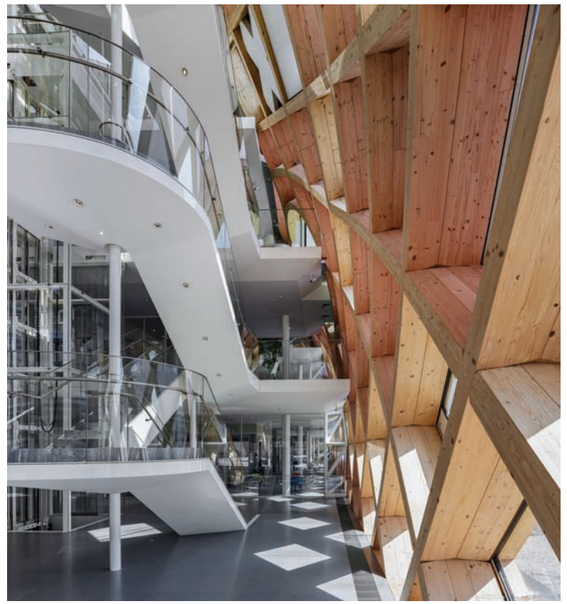
The building's facade lattice features 2,800 diamond-shaped elements, and glulam beam heights vary from 760mm to 925mm. The biggest beam cross section is 220mm by 925mm.

Each element has a different cover – either opaque, transparent or translucent – to control levels of light and privacy inside. Some can be opened for smoke extraction, others are equipped with photovoltaic cells.

SBA director Taro Okabe explains: 'Each facade element comprises multiple components. For example, the transparent glass element is a closed cavity system that contains a shading device in a sealed environment between glass panels. The cavity space is slightly pressurized with dry air to avoid condensation and to protect the cavity from any dust entering.'

Translucent diamond shapes cover 40% of the facade and each one contains an ETFE cushion with a polycarbonate panel fitted inside. ETFE was chosen for its playful organic shape and, crucially, to reduce the overall weight of the gridshell structure. The cushions are lightly ventilated to put them under tension with the strength to withstand the weight of snow or ice.

Significant development work was needed for the ETFE to meet thermal and acoustic performance required on an office facade. Okabe



Above Timber gridshell stretches over a highway to join up with Shigeru Ban's 2017 museum and exhibition centre.
Above left On the third floor a timber beam supports a glass pedestrian bridge connecting to the Café du Temps.
Opposite Over 2,800 diamond-shaped elements – opaque, transparent or translucent – populate the gridshell.
Left Swiss spruce used for the external structure counterpoints the high tech exteriors.

Top The gridshell tube contains a 'freeform open plan interior' .
Above The gridshell of the Swatch building complements the timber structure of Shigeru Ban's 2017 Omega building on the opposite side of the road.

comments: 'The low mass of ETFE made acoustic insulation a challenge and thermal insulation was not enough so we added the polycarbonate layer inside the cushion to solve both issues.'

There were a few headaches during design due to the need for the gridshell structure to discreetly integrate a complex network of services, including electric cables and pipes for sprinklers, air, and heating and cooling water. Beams were CNC milled to create precise spaces for services and to enable intersecting beams to tightly interlock.

Parametric design software was critical to co-ordinate the building services and define the precise shape and positioning of beams in the facade. All data related to the timber structure was input to a 3D parametric model, which generated timber elements semi-automatically to reduce manual design effort and duplication.

It is intended that the project's environmental credentials will serve as a benchmark for future buildings. A total of 442 individually-manufactured curved solar PV elements were inserted into the coffered structure of the facade, enough to generate around 212.3 MWh per year, equivalent to the average annual consumption of 61 Swiss households.

Autonomous operation of ventilation, cooling, heating and basic lighting in both the Swatch HQ and the Cité du Temps was achieved using a combination of solar panels and ground source heat pumps, which extract energy from nine underground wells, and two former oil tanks converted into water reservoirs.

Energy demand is reduced using technologies such as radiative cooling and heating with activated ceiling panels and water pipes cast into the concrete slabs to provide draft-free air conditioning. Charging stations, LED lighting and Velospot bicycle sharing add to the sustainable credentials.

As a showcase of low carbon construction and cutting edge design, the Swatch HQ is truly a building of its time. 'Working with Shigeru Ban we have learned a huge amount about new solutions, materials and processes, and witnessed the architect's fascination with Switzerland and the ability of Swiss manufacturing, ' says Giordanetti. 'We've seen the Swatch brand philosophy coming to life in a completely unexpected dimension and in architecture, which is unprecedented for us as a brand.'

PiP specifieds are compiled from supplied company press releases

Specified

1
Biodiverse Green Roof
Eco Green Roofs

‘I know we planted Eco Green’s roof to encourage biodiversity, but on reflection it may have been too successful. We always expected the sedums, grasses and wildflowers to attract a variety of insect life, but we never bargained on finding a small herd of Bob Flowerdews living up there. It’s becoming a real problem. Yes. We’re think we’re going to have to get them ‘off air’, so to speak. It stinks! Yes, and I know the drainage is excellent – I KNOW! But there are loads of them, all wandering about and doing their ‘nutritive watering’.
egr.co.uk

2
Apex Heritage cast iron guttering
Gutterworks with Alumasc

We regret to report that Alumasc’s stunning replacements for the cast-iron drainage pipework at the grade I Royal Albert Hall, though an undoubted improvement, have proved unnecessary. The individually sand-cast ‘Apex Heritage’ replicas are, yes, indistinguishable from the superannuated installation they supplant, and yes, perform beautifully. Turns out, though, that the ceiling mushrooms they were installed to eradicate are in fact 85 acoustic diffusers, installed to damp reverberating sound. Heads – unlike sound vibrations – will roll!
alumascwts.co.uk/

3
Alkorsmart waterproofing
Renolit

‘Now I had been four months in Arabia continually on the roof. In the last four weeks I had ridden fourteen hundred miles by camel, not sparing myself anything to advance the war; but I wanted a bath, and something with ice in it to drink: fortunate indeed it was that the Renolit ALKORSMART ivory lightweight waterproofing membrane had Solar Shield technology, highly suited to the harshness of this clime, and had resisted the onslaught of the sun’s rays rather better than I.’
– TE Awrens, ‘Seven Pillars Of Beamwork’ (1926)
renolit.com/en

4
Heavy 3 slates
Cupa Pizarras

‘Hello, Tony? We’ve had a call from a Mrs ‘Bertha Mason’ on Jane Eyre Way, regarding the Heavy 3s on her arts and crafts new-build. Yes, Thornfield Hall. The site had been a total burnout, yeah…
‘Well, thing is… erm… she says the slates are very nice and all, and the mini dormers let her see out if she stands on a crate (yeah, bit weird…), but she says the slates are too good! Specifically, she’s saying there’s absolutely no draught up there now – ‘so nothing wants to catch light?’
She’s asking quite specifically for someone from the Medway branch to pop round and take a look…
cupapizarras.com/uk.

Industry takes the reins in faltering retrofit push

With government action to curb construction's contribution to climate change falling short, some in the sector are taking matters into their own hands

Words: Josephine Smit

Climate change was one of many battle grounds for the parties in the run up to the December general election. Though welcome, politicians' pledges to make the UK's existing homes more energy efficient and resilient were viewed with some caution, given the lack of recent political will and the disappointment over past government initiatives such as the Green Deal.

Almost a year ago, the government's independent adviser, the Committee on Climate Change (CCC), warned that the UK's legally binding climate change targets would not be met without the near-complete elimination of greenhouse gas emissions from buildings. Emissions reductions from the UK's 29 million homes had stalled, it reported, noting that 'current policy is failing to drive uptake of energy efficiency in existing homes.'

But even without national policy and a developed market, some in the sector have been working to foster the kind of deep housing retrofit the UK needs – addressing barriers in such areas as finance, installation, performance, monitoring and resident and supply chain engagement. The projects and initiatives under way in the UK today are relatively modest in scale, but they are foundations on which the sector is building knowledge and trust.

Making performance pay

In 2012 the government's Green Deal sold homeowners the vision that the cost of home retrofits could be covered by savings on energy bills. That deal was doomed, but a year later the Netherlands showed how it could work with Energiesprong. The Energiesprong standard enables net zero energy retrofit, paid for by the ensuing 30 years of savings on energy bills, and is based on a 30 year performance guarantee, which is confirmed by ongoing monitoring. The performance guarantee is broad ranging, covering maintenance, energy costs and consumption, comfort (set at a temperature of 21°C for living areas and 18°C for bedrooms), internal air quality and noise, and kerbside appeal. Energiesprong retrofits are also carried out without displacing residents and to efficient timescales – in the UK the target is 15 days per home but more experienced contractors in the Netherlands can retrofit a home in a day.

In three years it has been applied to 100 homes in the UK, mostly with the help of grant funding and all for social housing clients. In 2020, however, it will shift up a gear, with more than 1,000 homes in the pipeline, including retrofits self-funded by social landlords. It will deliver its first projects in the London mayor's Retrofit Accelerator programme, which is targeting 1,600 whole house retrofits in Greater London. 'It has always been the aim to make this commercial here, but to do that we have to help build the industry,' says Ian Hutchcroft, head of market development at Energiesprong UK.

> The UK initiatives are relatively modest, but they are foundations on which the sector is building knowledge and trust

To that end, in November it launched a competition for consultants, contractors and service providers, setting challenges for low rise apartment blocks. 'They are opportunities for the supply chain to form solution provider partnerships and invest in R&D, so when projects come to tender, providers are in a good place and the costs of tendering are reduced,' explains Hutchcroft. 'We need an industry that can build product cost-effectively.'

The challenge is similar to that faced by the offsite new build sector, but that has government backing that retrofit lacks. 'Government could help us by providing a very small amount of capital funding,' says Hutchcroft. 'There's a sector deal to be done here.' That has to be based on deep retrofit, rather than piecemeal interventions like insulation, argues Hutchcroft, for business reasons as well as to hit environmental targets. 'We can't do this by retrofitting homes incrementally – that won't work technically or financially. It has to be done through a whole house approach that delivers net zero in one go, because that gives the space to make it work.'

The UK's first Energiesprong homes include five semi-detached houses in Mundon Road, in Maldon, Essex, owned by housing association Moat Homes. They are a microcosm of the nation's housing stock and its idiosyncracies. Conventional and identical from the front, the homes have various rear extensions. 'We had to react to what was going on with each home,' says John Pratley, associate with Gardner Stewart Architects, which worked with contractor and energy supplier Engie on the project.

Routes towards zero

The architect advocated using the Passivhaus EnerPHit approach to deliver the Energiesprong net zero target and performance guarantee. 'We didn't have to use it to meet the Energiesprong performance specification, but the Passivhaus Planning Package (PHPP) modelling helped justify the measures and their energy and carbon savings to the client,' says Pratley. That package cost around £75,000 per home for these initial pilots and included overcladding homes with Mauer's prefabricated, super-insulated

GARDNER STEWART ARCHITECTS (2)

Below left Gardner Stewart Architects' refurb for Wilmcote House, originally designed by ECD Architects.

Left Gardner Stewart's retrofitted Energiesprong homes in Mundon Road, Maldon, Essex.

facade system and installing FactoryZero energy pods, containing electric powered air source heat pump, hot water storage cylinder, mechanical ventilation with heat recovery unit and photovoltaic electrical converter. The energy pods were docked onto the rear of the homes because, explains Pratley, 'The homes were so compact there was no room for the extra kit inside and we could also replace and maintain services without disturbing residents.'

Pratley says his first experience with Energiesprong was positive, and that the use of Passivhaus alongside gave confidence. 'As a designer, I would be nervous about going down a route that wasn't so considered,' he says.

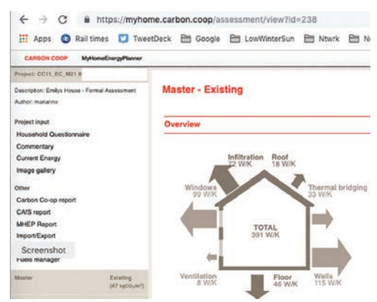
The benefits of bringing Passivhaus to domestic retrofit are echoed by James Traynor, managing director of ECD Architects, which Portsmouth City Council employed to design the retrofit in the refurbishment of Wilmcote House. The project was subsequently delivered by contractor Engie and its architect Gardner Stewart. Monitoring by Southampton University showed a significant increase in thermal comfort and reduced energy use, while a study of social impact of the work by the London School of Economics for Rockwool found the overall project cost was cheaper and less disruptive than demolition and rebuilding. 'ECD had worked on many tower block retrofits before and always tried to exceed Building Regulations, but the EnerPHit methodology and standard helped us understand performance far better,' Traynor says. 'The beauty of the approach is that, like Passivhaus for new build, it brings a more robust and reliable measurement methodology. SAP is very crude in comparison.'

ECD now routinely incorporates Passivhaus into all its feasibility work, and clearly advocates for the standard – confirmed by Traynor's authorship of a newly published book on EnerPHit intended to build broader industry understanding. 'Although most Passivhaus and EnerPHit projects are domestic – perhaps due to consumer demand – it is ironically harder to achieve than in larger buildings, due to the relatively high wall to floor ratio,' points out Traynor. He believes Passivhaus and EnerPHit are particularly appropriate where a client has a long term interest in building performance and stewardship of their assets, as in social housing.

Making the market

Standards alone, however, are unlikely to win over the 'able to pay', homeowners who could be retrofitting their properties, but aren't. 'For homeowners decisions about their home can be highly emotional and personal,' says Marianne Heaslip, associate principal at URBED. Over the past decade or so, URBED has worked with Manchester social enterprise Carbon Co-op to develop community-led routes to retrofit. Their latest initiative, appropriately named People Powered Retrofit, is one of six pilot projects backed by the Department for Business, Energy and Industrial Strategy (BEIS) that explore ways to develop local homeowner take-up and supply chains in energy efficiency retrofit.

Focused on Greater Manchester, People Powered Retrofit has researched its market, potential deep retrofit service and the needs of the supply chain. The supply chain wanted training away from classrooms, such as peer learning networks, while homeowners sought help in steering a course through the retrofit process. The resulting service is, therefore, comprehensive, having the functions of retrofit adviser, energy assessor, retrofit co-ordinator and service manager – some suited to sole practitioners and small practices, who could fulfil multiple roles.



CARBON CO-OP

The service starts with a whole house assessment, using the My Home Energy Planner tool developed by URBED and Carbon Co-op. Based on SAP, taking on board the PAS 2035 standard and including consideration of ventilation, the tool presents three costed retrofit scenarios; the last is the most ambitious, possibly extending to EnerPHit. 'Generally we want to get to the AECB Building Standard, with a focus on reducing space heating demand,' says Heaslip. 'Assessment is tailored to the homeowner, so if they want a loft conversion we will identify interventions they could add alongside.'

The service will work in up to 11 target neighbourhoods in this pilot programme, building on Carbon Co-op's track record of engagement in the region. The research identified neighbourhoods of around 30,000 homes as having critical mass of local builders and suppliers, as well as householders, explains Heaslip. 'A lot of people doing retrofit are community minded – they may be active in their local church, for instance. Disseminating information on what people are or could be doing to their homes works at that kind of level.' Ahead of advertising the service, around 15 householders were waiting for their assessment – which costs £500 – with around five new enquiries coming in every month.

The service does not promote particular systems or products but provides names of local builders and other consultants, including architects, says Heaslip. 'Part of the co-ordinator's job could be to tell a householder they'd benefit from an architect's advice and supply names.'

This is a hyperlocal answer to a national question, but it addresses the negativity engendered by stop-start government initiatives, poor quality installations and rogue traders, and could be scaled up across the country. 'There is scepticism in householders and in the supply chain, where companies invested in accreditation but work didn't flow. That's an important reason to build this up in a more organic way,' says Heaslip. 'The Green Deal promised a mass market but didn't work. This is based on local action and learning as we go. The idea is that it's modular and replicable, so we can scale to suit resources.' What this and other retrofit initiatives now need in order to scale up is a steady and supportive political hand. ●

Better housing needn't break the bank

Affordable post occupancy evaluation and stylish bathroom pods were the unexpected stars of PiP's recent housing seminar

Words: Ruth Slavid

TIMOTHY SOAR

It is always exciting to have one's preconceptions challenged, and this certainly happened at the PiP seminar on housing, held in October. We all know that post-occupancy evaluation, while important, is expensive and time-consuming. Not so, said Professor Fionn Stevenson, who has written a new book on the subject. And pre-manufactured bathroom pods? We know they're great for mid-range hotels and student residences, but you wouldn't want them in a high-end apartment building would you? Yes, you would, said Stephen Wade-Palmer, specification manager of Offsite Solutions. And he showed this with a case study of one of Europe's tallest residential blocks

Figures set the context

The seminar started, however, with not specifics but an overview of the UK construction industry and of housing's place within it. This came from Adrian Malleson, head of economic research and development at the RIBA.

In the three months to July 2019, UK private housing output fell by 43% and private housing repair and maintenance by a staggering 339%. Public housing starts went up, but are still a minuscule share of the total market at just 3%. The total housing market, in contrast, makes up 43%.

Private housing contributes 55% of architects' total revenue, and it's not evenly distributed. Not surprisingly private housing, particularly one-off homes, is far more important, proportionally, the smaller the practice is.

And the housing situation in the UK is dire. A house typically costs eight times average earnings, or 13 times if you live in London. The government pays £21 billion a year in housing benefit. And, with housing making up such a significant share of UK construction, it is important to get it right environmentally.

Left Tate Hindle's Aura development at Great Kneighton outside Cambridge – 229 homes delivered on a 2,300 home masterplan.

Buildings are, after all, responsible for 32% of global energy consumption.

These factors are why 'the RIBA is so forthright in its views,' said Malleson, calling for radical change to address quality and choice, affordability, and supply.

We must go back

Stevenson believes that, however good our intentions, we are still 'flying blind', because we have so little information about what happens to homes after completion. 'If we go back after three years,' she said, 'we will find problems.' She showed examples such as a chair wedged under a door to provide cross-ventilation, and a filter so filthy and clogged that the ventilation system had been switched off to stop the noise.

She reported that 4.5 million homes overheat in summer, and 5.4 million people have asthma caused or exacerbated by their living conditions. Most shockingly, new buildings typically use twice as much energy as they were designed to do.

Stevenson believes the answer is POE (post-occupancy evaluation) and says it does not need to be expensive or difficult – just done correctly.

Ten years ago she thought there was a need for a book on the subject. Now she has written, and RIBA has published, Housing Fit for Purpose: Performance, feedback and learning. It sets out to be as practical as possible – she described the primer at the back 'the most useful part'.

We need two types of data, Stevenson told delegates. Hard data looks at physical factors, pollution levels, fabric and technology performance, energy use and water use. Soft data tackles such issues as perceived human needs and capacities, comfort, control and satisfaction.

POE should start with a light touch, probably only costing £5,000 to £10,000 for a development. Technology is much cheaper now; for instance thermal cameras are highly affordable. And if this preliminary study shows that everything is as expected, then stop there she said.

But if such work does uncover a problem, then one can move to diagnostic POE – and if that is not conclusive on to full-scale forensic investigation. As that could cost upwards of £50,000 it should only be used when necessary she said, but it has a dual value: it would allow errors to be put right and stop architects repeating mistakes.

Stevenson's book is admirably clear. It has, for example, an entire chapter on ethics, since carrying out POE on somebody's home can be invasive, and even offensive if handled wrongly.

One way to minimise the problems that may be picked up by POE is to maximise quality

OFFSITE SOLUTIONS

control. This is what Offsite Solutions does, making bathroom pods in a factory. This saves time and waste and ensures that any waste can be re-cycled. The company tests rigorously in the factory and schedules well ahead of need.

Quality popping pods

Specification manager Stephen Wade-Palmer described the company's work on South Quay Plaza in London Docklands, designed by Foster + Partners for Berkeley Homes. This confounded expectations by showing that it was possible to create bathrooms of the very highest quality and to suit individual requirements – there were more than 60 variations. These even included bathrooms where, after installation, an entire wall was removed and replaced by glass.

The seminar also included discussions of two exemplary, and award-winning projects. Benjamin Robinson, associate with PRP Architects, discussed the imaginative and yet contextual design of Willow Barns extra-care development in Stoke on Trent. And Mike Jameson, design director of Tate Hindle, showed his practice's work at Great Kneighton, helping to create a new area of Cambridge. In particular, he showed how the design challenged elements of the original masterplan to make a more connected neighbourhood.

OFFSITE SOLUTIONS

Above Berkeley Group's South Quay Plaza by Foster + Partners.

Left Bathroom pods for South Quay Plaza were all developed by Offsite Solutions.

Harris Academy, Sutton

The UK's largest Passivhaus school placed high demands on its doors and windows, to bring as much natural light as possible into the building without compromising insulation levels

Words: Jan-Carlos Kucharek Photographs: Jack Hobhouse/Architype

Architype's new Harris Academy in Sutton, Surrey, is part of the proposed £2 billion regeneration of the 20ha former Royal Marsden Hospital site. Once restored, the derelict 19th century hospital will form the nucleus of the London Cancer Hub, a joint Royal Marsden/UCL initiative to attract top cancer researchers to London. At the site's north west edge, the new school expects its science specialisation to gain from its proximity to the centre.

The first Passivhaus secondary school and largest Passivhaus school in the UK, the academy will form one small component of one of the world's centres of cancer learning. As if in anticipation, Ab Rogers has just completed his Maggie's Centre south of the £38 million, 1200-pupil school.

And given the school's science bias, the design's Passivhaus principles seemed to resonate with this educational objective. As Architype project architect Christian Dimbleby explains, 'Passivhaus isn't just an energy but a comfort standard and you're using environmental conditions and building physics to create a place that performs well in an empirical, provable way. It was felt those scientific methods complemented Harris' aspirations.'

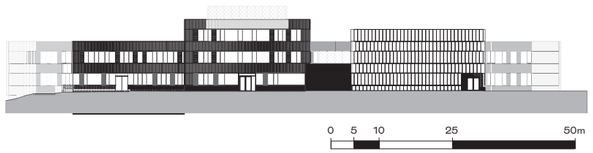
Architype was already on Sutton's framework to help develop a more sustainable school-building programme for the One Planet Living council and, when appointed in 2014, was already busy with the borough's Hackbridge Primary – a Passivhaus Plus school with net zero carbon emissions. While Sutton is less onerous performance-wise, it is also on a greater order of scale, so Architype partnered with Willmott Dixon, which had cut its Passivhaus teeth on Leicester University's George Davies

Right Sutton Harris Academy looking west. The UK's largest Passivhaus secondary school nestles comfortably into its low-density suburban landscape.
Below Douglas fir fins, bricks, copper cladding and aluminium windows make up the formal language of the school.

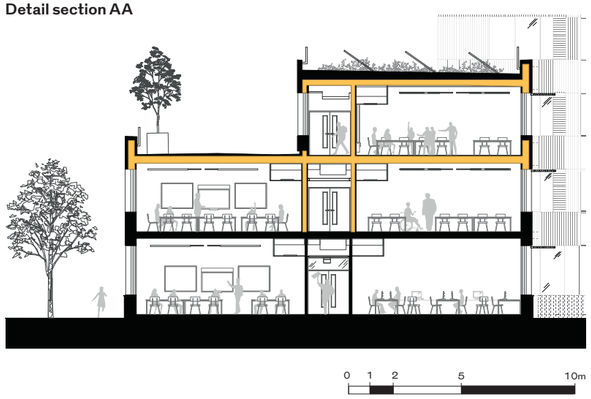
Site plan

1 Student entrance
2 Visitor entrance
3 Reception
4 Library
5 Refectory and kitchen
6 Main hall and stage
7 Classrooms
8 Gymnasium
9 Male/female changing
10 Sprinkler tank room
11 Plant room
12 Terrace

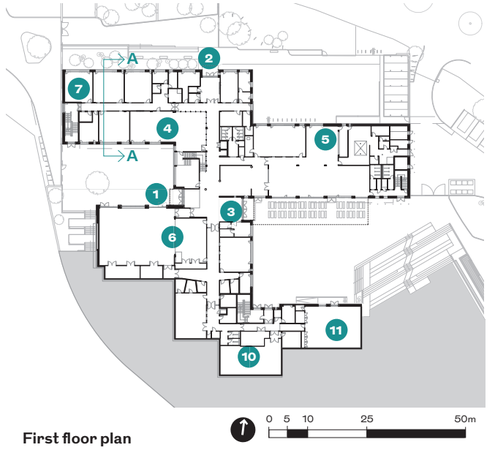
South elevation



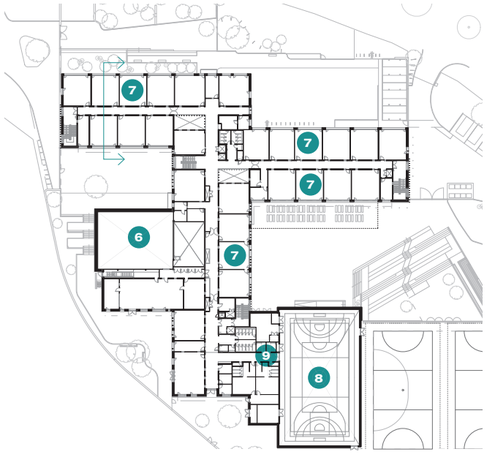
Detail section AA



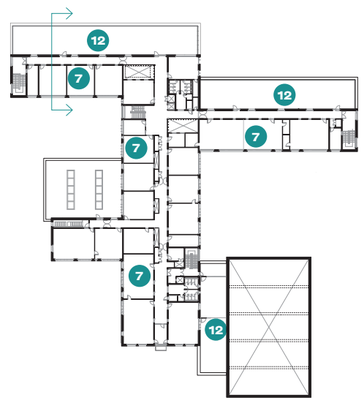
Ground floor plan



First floor plan



Second floor plan



Medical centre, and educational consultant Lloyd Wilson to develop the school's specific brief. Architype worked up the design to take on board the concerns of local planners and immediate residents as well as its place in the borough's broader masterplan.

The result is a timber-clad building that hunkers into the sloping site, hiding the copper-clad main hall and gymnasium in the hill to the south and stepping down on the north, residential, side to mitigate the impact of the classroom blocks. On the main west entrance side, a public promenade accesses the main site to the south. Dimbleby says the school's form went through a few iterations: 'A building has a context so you need to accept that the final form will not always be ideal,' he adds. 'The north/south facing aspects of the design are fine, but we had to concede that its east/west classroom arrangements were not optimal for Passivhaus.' But it was accepted that design solutions creating 'overshadowing' of the east and west courtyards and external spaces, even if performing better technically, were not tenable. The final form sees classrooms either side of a corridor arranged in three spurs spinning off a core reception and library area. This is the school's central focus, overlooked by the radiating circulatory corridors themselves.

With its sustainability credentials, Architype opted for a CLT main structure with acoustically insulated concrete slab floors, clad in Wienerberger's Forum Charcoal brick, Douglas fir and copper cladding. Internally, value engineering contributed to pared-down but satisfactory exposed concrete soffits with acoustic rafts, and less satisfactory grey carpet throughout. These are offset by exposed CLT corridors attenuated by attractive larch ceiling soffit strips, but the real punch is delivered by cut outs in the corridor slabs, which allow daylight to stream from Lamilux rooflights into the depths of the section, producing subtle, rhythmic pools of light. Installed with actuators, the specialist triple-glazed panels are designed to open automatically when internal temperatures rise.

Window design was important to ensure observed space as a prelude to the more open playground space beyond.

Above left Students can look down into the triple-height library from the timber-lined corridors.
Above right The composite langfenster windows were, naturally, all triple glazed.
Bottom left On the academy's east face, a 'private' courtyard provides a protective,
Below The library space, overlooked by all these circulation levels, brings an active focus to the school.

they performed as part of a Passivhaus strategy to reduce artificial lighting – and context was key. And it wasn't just about optimising the g-value of the triple glazed panels to ensure equivalent heat gains and losses; Dimbleby says ground floor classroom ceiling heights were increased by 300mm to 2.9m, to compensate for shading from surrounding trees. All the Lang Fenster aluminium composite windows tilt, or hinge open if behind louvred external vents. Dimbleby says their sheer height involved efforts to meet their specification. 'Most UK manufacturers follow the general guidance that places the handle midway up the tilt frame, which put them out of reach in this scenario,' he explains. 'Placed off-centre, as they are here, it needed a stronger piece of ironmongery, and one that Lang Fenster was prepared to install and warranty.' He confirms that with dedicated MVHR manual operation should be rare; but a handy, simple red and green light signal by each teacher's desk notifies users if the temperature rises enough to merit opening them.

Optimising levels of daylight in teaching spaces affected the specification of the 350mm deep window reveals too. The specific light grey shade of their polyester powder-coated aluminium was critical in ensuring the requisite level of reflected daylight into classrooms. To mitigate the effect of longer, lower light on the east and west facing classrooms, Architype extended vertical aluminium fins in the window reveals too, coloured to match. But the strategy worked. 'Even on a horrible, rainy day, you rarely need the lights putting on,' says Dimbleby, adding that sensors are in place to trip them off when light levels become adequate again.

With this ironmongery, and with the more robust stainless-steel doors – used for the main entrances, exits and refectory and main hall courtyard – as well as the 1.5m deep brises soleil on the south elevation, keeping a keen eye on the RAL numbers was critical. 'Different manufacturers have different versions of the same RAL colour,' Dimbleby cautions.

The architect won the battle to install triple-glazed rooflights in the ceiling of the gym, introducing a generous wash of light down its long CLT walls. Treated with an obscure film 'it brings lightness to a roof that would otherwise have felt quite heavy'. The assembly hall was easier; part of the copper-clad west courtyard public face, its rooflights give what Dimbleby terms 'art gallery standard of lighting'.

MVHR associated with maintaining the variable volume control of this sealed building resulted in a lot of ductwork, and it's most evident in the classrooms where bulkheads abound. Their size is dictated by the need to maintain high volumes of air exchange with minimal noise – Passivhaus is a holistic comfort standard after all. Dimbleby opines that Sutton is not Passivhaus Plus; while low energy, gas heating still gives it a carbon footprint. But Part L prevented a move to electricity to meet its heating demand. And he adds that reducing energy savings from 80% to 100% has its costs – ground source heat pumps at the firm's smaller Hackbridge primary school cost £500,000 to install and scaling up here with the required PV, he says, could have added £5 million to the final value-engineered figure of £38 million.

But he's still happy with the result – and so, it seems, are parents. At the last open day 4000 of them turned up to enquire about the 200 places on offer hoping to benefit from reduced CO_2 and better daylight levels, aiding concentration. 'Kids today are really switched on; they know how this building works and how to make it work at peak level too,' Dimbleby concludes. They're at the vanguard of a new way of building. It's what the RIBA Manifesto for Change wants by 2030. But if we can do it now, why wait?'

Top The main hall has huge composite windows giving views over the west entrance courtyard. A deep stage area and retractable bleacher seating make the space extremely versatile.
Above Aluminium composite windows abound in the more formal communal areas, providing greater tactility and warmth. Here in the refectory, they look out onto the east courtyard.

Top right Architype fought hard for the rooflights in the gymnasium that bring aesthetic and literal lightness to what would otherwise by a 'heavy' structural roof.
Right The west face of the school makes good use of the level changes southwards and imbues The building with a civic presence.

Credits
Client Sutton Council
Architect & Passivhaus designer Architype
Services engineer BDP
Structural engineer Price & Myers
CLT structural engineer KLH UK/Ramboll
Landscape architect Churchman Thornhill Finch
Quantity surveyor Synergy Construction
Planning consultant Nathaniel Lichfield & Partners
Education consultants Lloyd Wilson Partnership
Contractor Willmott Dixon

Suppliers
FF&E Chalk Creative
Concrete and groundworks JP Dunn Construction
Timber cladding and doors NH Etheridge
Partitions/ceilings DMC Ash (interior)
Windows Lang Fenster
Roof lights Lamilux
Roof Soprema UK
Cubicles Petal Postforming
Sliding partitions Style Partitions
Acoustic ceiling and wall systems Rockfon UK

Costed

David Holmes, associate at AECOM, provides supply and fix costs for a range of commercial and industrial and windows

The market for doors and windows is estimated to be around £6 billion and demand is largely driven by construction output with newbuild and repair and maintenance sectors achieving significant market share. The Green Deal roll out is encouraging home owners to upgrade energy saving components for financial and environmental benefits, which will contribute to overall market value.

The following rates include for the supply and hang of doors and windows, complete with all frames, architrave, typical medium standard ironmongery set and appropriate finish. Source: Spon's Architects' and Builders' Price Book 2020

EXTERNAL DOORS	**£/m²**
Softwood external doors	
Standard external softwood doors and hardwood frames; doors painted; including ironmongery	
matchboarded, framed, ledged and braced door, 838 mm x 1981 mm	570-690
flush door; cellular core; plywood faced; 838 mm x 1981 mm	580-710
Heavy duty solid flush door	
single leaf/ double leaf	1225-1475/1975-2425
emergency fire exit: single leaf/ double leaf	1675-2025/2450-2950
Steel external doors	
Standard doors	
single external steel door, inc frame, ironmongery, powder coated finish	1025-1225
single/double external steel security door, inc frame, ironmongery, powder coated finish	2125-2600/ 3150-3800
Bullet resistant doorset	
single, 1000 mm x 2100 mm steel doorset with ply veneer	4150-5130
Overhead doors	**£/m²**
single skin; manual/ electric	160-200/300-360
electric operation standard lift, 42mm thick insulated sandwich panels	230-275
rapid lift fabric door, external, electric operation	980-1175
uPVC external doors	**£ each**
entrance doors; residential standard; PVCu frame; brass furniture (spyhole / security chain / letter plate / draught excluder / multipoint locking)	
overall 900 x 2100 mm half glazed	465-560
overall 900 x 2100 mm half glazed; WER A rated	470-570
overall 900 x 2100 mm half glazed; coloured	530-640
Automatic glazed entrance doors	**£ each**
automatic revolving door; 2.1m diameter, 2.2m high; clear laminated glazing; 4nr wings; glazed curved walls	27,000-34,000
automatic sliding door; bi-parting opening 2.0 m x 2.3 m opening	9100-11500
INTERNAL DOORS	
The following rates include for the supply and hang of doors, complete with all frames, architrave, typical medium standard ironmongery set and appropriate finish	
Standard doors	**£ each**
Cellular core; softwood; softwood architrave; aluminium ironmongery (latch only)	
single leaf; moulded panel; gloss paint finish	310-375
single leaf; Sapele veneered finish	350-420
Purpose-made doors	**£ each**
Softwood panelled; softwood lining; softwood architrave; aluminium ironmongery (latch only); brass or stainless ironmongery (latch only); painting and polishing	
single/double leaf; four panels; mouldings	475-570/930-1125
Hardwood panelled; hardwood lining; hardwood architrave; aluminium ironmongery (latch only); brass or stainless ironmongery (latch only); painting and polishing	
single/ double leaf; four panelled doors; mouldings	960-1175/1875-2250
Fire doors	**£ each**
Standard fire doors; cellular core; softwood lining; softwood architrave; aluminium ironmongery (lockable, self-closure); painting or polishing;	
single/double leaf; Oak veneered; 30 min FR; polished	500-610/1150-1400
single/double leaf; Oak veneered; 60 min FR; polished	780-950/1450-1750
Ironmongery sets	**£ each**
Stainless steel; euro locks; push plates; kick plates; signage; closures; standard sets	
office door; non locking; fire rated	330-400
office/store; lockable; fire rated	380-455
classroom door; lockable; fire rated	495-600
maintenance/plant room door; lockable; fire rated	355-430
standard bathroom door (unisex)	290-355
accessible toilet door	170-205
fire escape door	1825-2200
WINDOWS	
Softwood windows (U-value = 1.6 W/m²K)	**£/m²**
Standard; painted; double glazed; up to1.50 m²/1.50 m² - 3.20 m²	470 - 570/350 - 425
Purpose made; painted; double glazed; up to 1.50 m²/over 1.50 m²	650-780/580-700
Hardwood windows (U-value = 1.4 W/m²K)	**£/m²**
Standard; stained; double glazed	1250-1525
Purpose made; stained double glazed	740-900
Steel windows (U-value = 1.6 W/m²K)	**£/m²**
Standard windows; double glazed; powder coated	490-590
Purpose made windows; double glazed; powder coated	540-660
uPVC windows	**£/m²**
standard, with ironmongery; sills and factory glazed with low E 24mm double glazing	220-265
WER A rating /WER C rating	220-270/220-265
Secured by Design accreditation	220-270
extra for colour finish to uPVC	56-68
Composite aluminium/timber windows; U value = 1.5 W/m²K	**£/m²**
Purpose made; stainless steel ironmongery	
fixed, up to 1.50 m²	290-350
fixed, 1.50 m² - 4.00 m²	260-350
outward opening pivot windows, up to 1.50 m²	700-850
outward opening pivot windows, 1.50 m² - 4.00 m²	310-375

PiP specifieds are compiled from supplied company press releases

Specified

1
Airlock security doors
Warrior Doors

Two households, both alike in dignity,
in Lunduntahn, the place we lay our scene,
compete to get some Boodles' jewellery.
Here's one who footy plays to buy the cream;
the other chooses skiing masks, a sawn-off and a safe-crack team.
The first wins big, buys trinkets by the barrowload.
The fearful passage of the other shows
crime cannot pay: the stolen Landie fails
when faced with Warrior security. And so
by ram-raid's end is proved nought can defy
iMotion 2302-operated stainless steel
that's interlocking, styled to please the eye.
warriordoors.co.uk

2
Dualframe 75 profiles
Technal

'Yes, this is a picture of what it was like a year ago. God, we loved the view, didn't we Ray?'
'Hmm. We don't even open the curtains now.'
'It's very depressing. The whole point of installing Dualframe 75 and Elegance 52 was to indulge superior thermal performance while still enjoying the glorious countryside.'
'It's the crowds, you see. Very off-putting.'
'Yes, our marriage has definitely suffered. Ray just can't keep his mind on the job any more. But he would make that bloody video.'
technal.com

3
Minimal Windows sliding doors
IQ Glass

When a day that you know
is Wednesday starts off by
sounding like Sunday, there is
something seriously wrong.
I felt that from the moment I
woke. And presently I had my
first evidence – a distant clock
struck what sounded to me like
eight. Then I knew things were
awry.
The way I came to miss the end
of the world was sheer accident: I
had specified 'Minimal Windows'
for my new extension, and the
solar coatings on the structural
glass had repelled the meteors'
glare as effectively as bandaged
eyes...
iqglassuk.com

4
SPW501 doors
Senior Architectural Systems

'No, no Cora, it's absolutely fine!
The new spa extension blends
seamlessly with the Jacobean
style of the house, and the guests
absolutely love Mr Carson's
"Quintessentially English"
tea-tray reiki! They adore it!'
'Really, Robert! You just never
listen, do you? It's your mother
I'm so dreadfully worried about.
The doors. The modern doors. I
selected them specifically. If the
dowager works out how to use
them, no-one will visit the spa
again! It will fail instantly! Has
she worked out yet how to use the
doors?'
seniorarchitectural.co.uk

House for Theo and Oskar

Tigg + Coll Architects' extension future-proofs the home of two young boys suffering from a rare condition that will change their needs as they grow

Words: Stephen Cousins Photographs: Andy Matthews

Left The rear elevation of the section shows the generosity of the cantilever of the timber diagrid roof, allowing the children space to play beneath it.
Below far left The extension's front elevation, deferring to the scale of the original house, has an accessible main entrance.
Below left The large garden accommodates the scale of the intervention.

Above left A wide accessible rear entrance gives direct access from the children's rooms to the covered play spaces and garden.
Above right Reconfiguration of the existing building was kept to a minimum but it segues nicely into the new space.

Theo and Oskar suffer from Duchenne muscular dystrophy, a genetic condition causing progressive muscle weakness that will change their physical needs over time.

London-based Tigg + Coll Architects won an international competition to radically remodel the family's cottage, in Box Hill in Surrey, to create a spacious and adaptable interior sympathetic to the children's gradually reducing mobility and interaction with their environment.

The initial budget, around £100,000, was not considered enough to extensively reconfigure the cottage, so the architect proposed a wraparound extension with a new accessible entrance.

The open layout features an entrance hall with level access, two large bedrooms for the boys with full height sliding glass doors providing views onto the garden, a large wet room and accessible WC, and a spare bedroom for carers or a guest. The kitchen and family room were relocated to the middle of the plan and open out into the rear extension to improve natural light and connection to the garden.

Key to the transformation is an expansive flat timber roof designed to unite the extension, with its stepped corner glazing and various internal uses, as a single element, and to create a cantilever for a covered veranda for the boys.

Collaboration with contractor developer Ballymore and its project management and procurement team, which donated services, time and materials to the project, created an opportunity to use advanced prefabrication techniques rarely seen on domestic jobs. The free-spanning diagrid roof was developed in collaboration with structural engineer Engenuiti and glulam manufacturer Buckland Timber. The 550mm-deep beams thin out towards the edges and extend to a maximum 5m from the building line at the longest point of the cantilever. Concrete sandwich panel walls pre-fabricated by Byldis & Hurks Facades support the roof deck.

Offsite techniques helped ensure accuracy and speeded installation. The commercial scale of the elements might have seemed out of place on another domestic job, but not here, says Helen Sutton, associate at Tigg + Coll: 'The extension had to be big to accommodate the large accessible rooms and the 100m-long garden, could withstand the scale. There is also a nice contrast with the interiors of the existing house, where the low ceilings open up into the extension.'

> An expansive flat timber roof is designed to unite the extension and create a cantilever for a covered veranda for the boys

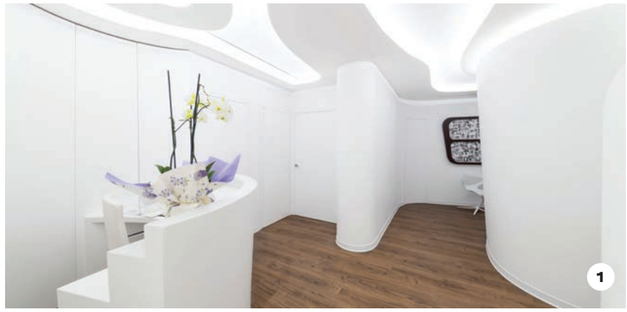
The solid timber soffit can be exploited to adapt the internal layout and support the use of hoists or other supports. Diamond shaped openable roof lights in the lattice above the boys' bedrooms improve light and ventilation.

The architect consulted occupational therapists from the local council on future proofing the property. Interior features include large turning circles and sliding instead of swing doors for wheelchair access, widened openings in the existing cottage, and textured floor surfaces to ensure slip resistance.

The family's decision to adapt their house will mean they can enjoy it for as long as possible without having to move or rely on external support. 'It's about future proofing the house, but at the same time adding warmth and interest,' says Sutton. 'It was very satisfying after the project was handed over to see the boys settled in and excited to have their own bedrooms and play with friends unrestricted,' she concludes.

Specified

PiP specifieds are compiled from supplied company press releases


1


2

3


4

1
Hi-Macs acrylic composite
LG Hausys

So there's me, that is, Alex, and my three droogies, sauntering about the trees and country dark, trying to make up our rassoodocks what to do with the evening. Then, O my brothers! We viddy a wipe-clean domy the like of which was never seen outside of zasnoot dreamies! And there, a window open with the stereo wafting out, our old friend Ludwig Van, and the dreaded Ninth Symphony. And this a devotchka tooth clinic in Valencia too! O bliss and heaven! I viddied right at once what we would do.
himacs.eu

2
Atrio Icon 3D faucet
Grohe

Outro from Stingray 1964:
'Marina, Aqua Marina,
come out to dinner?
There's a great little place
underwater I know…
'This place is magic to me…
A beautiful mystery…
Snøhetta just got it together
It's called Under – a new eatery.
'Marina, Aqua Marina,
it's only in Norway
so please come away.
And let's eat sub-Marina
while close to my heart?'
'Er, no, Troy, I'm Grohe's gorgeous new 3D-printed metal tap, in Under's lavs. And anyway, you're a wooden puppet. Soz.'
grohe.co.uk

3
Creation 70 LVT
Gerflor

'Please mind your head' read the sign above, yet I found myself instead bent low, examining the marvellous flooring. It had the appearance of Halifax stone, and yet it was not stone, for it was warm and smooth, and so intent was I upon this study that the next I knew, a thousand tiny threads had wrapped themselves about me and were now pulled tight, and I found I was pinned prostrate, half in the little lake upon the tabletop, surrounded by a jeering multitude of tiny Lilliputian Welshmen…
gerflor.co.uk

4
Allura Wood LVT
Forbo

'As the images show, it's smart, it's stylish, it's ready to go! And in the perfect location! Untapped market; adventurous, cosmopolitan clientele, fully literate in Italian cuisine; abundant seafood and market-fresh Mediterranean produce! And the vibrant cocktail culture, reminiscent of Weimar Berlin! I assure you, Dragons, this will be huge! Ladies and gentlemen, I give you… The world's first "Barzzeria!"'
'And the location?'
'Barnsley.'
'Oh. Right. Still. But I do like the floor, and the clue's in the name!'
forbo-flooring.co.uk

Sign Up

John Walker, director at Walker Simpson Architects, chooses three of his specification favourites

UPCYCLED QUARRY TILES

Staffordshire Blue quarry tiles have a varied finish and texture, from flat matt to almost vitreous. These have been salvaged from a building basement, dated around 1890, and used as a design feature across the floor of a residential project. With skylighting overhead, the tiles are highly light sensitive with grey, blue and silver tones reflecting across the surface as occupants move through the space. The quarries are laid on an underfloor heating system powered via a small photovoltaic array. As an upcycled product, the new embedded carbon comes mainly from the jointing grout and transportation of the tiles from a 50 mile distance.

SANDSTONE

Walker Simpson specified stone as a principal facing material in a project for Holy Cross College in Bury. Stanton Moor sandstone was sourced via Marshalls with careful consideration of the provenance and proven weathering, described in McKay's Building Construction Series, Volume Two (1961) as 'Honey to very light drab: very hard and durable; uniform texture, close-grained: good working Millstone Grit of Carboniferous age' from Stoke Hall Quarry, Grindleford. The design creates a new entrance to the college, with a canted pilaster form derived from the mansard roofs of the adjacent college buildings.

TREATED TIMBER

Shifting from clay and stone, we recently completed a building for Girlguiding using timber slats fixed to a Ruukki Insulation panel. The concept evolved from research into the notion of a woven fabric, to produce a heavily textured appearance. Layering produces a subtle interplay of light and shade with different planes accented using primary colour stains. Visual continuity across the fabric is maintained by a single slat size. The building's forest setting gives views of the contrasting precision engineering and irregular organic forms of the trees. The project was Building of the Year 2019 at the Manchester Society of Architects Awards.

...Sign Off

Jan-Carlos Kucharek enjoys three stand-outs from the inbox

END OF AN EPOQUE

PiP's always loved a tile – especially going out on them on the occasional night; so when it saw these bespoke circular ceramic ones, part of Perrier Jouët champagne's 'Metamorphosis' installation at last year's Design Miami, it warmed the cockles of its heart. Drummed up by Italian designer Andrea Mancuso, the ceramic cave was there to showcase his six exclusive crystal coupe designs, crafted on the Venetian isle of Murano, for the 200-year old house's Belle Epoque cuvees. The effervescent PR doesn't go into either Mancuso's after-party or post-show recyclability of his stand, but we suspect that one, the other – or both – got well and truly smashed.

VACS POP

Looking like the lovechild of James Dyson and Ted Rogers' 3-2-1 show booby prize Dusty bin, Dustcontrol UK proudly launched its new range of Tromb industrial dust extraction units at the 'much-anticipated Executive Hire Show 2020'. Now, while Dyson's busying himself diversifying into driers and lights, it's good to see the nuts and bolts Tromb sticking to what it knows best with its bulky 'pre-separator', 'filter change system' and 'motor package that's easier to remove.' We especially like its DC Box cleaning cabinet – a vacuum cleaner that...er, cleans a vacuum cleaner: a facilities maintenance cover version of 80s grebo band 'Pop will eat itself'.

#CRYFACE

In a world where elections can be won or lost by Russian-hacked Twitter campaigns, it's good to get a, ahem...handle on the social media worth of some of TV's home and interiors stars. Website sellhousefast.uk has researched some interesting, if uncorroborated, stats on influencers' commercial value to advertisers. DIY SOS' Nick Knowles makes an eyewatering £1122 per post, more than twice Kirstie Allsopp's tears-of-post-completion-joy-making £534. Restoration Man George Clarke holds it together at £339 and while Location co-host Phil Spencer must be feeling gazumped at £94, Grand Designs' Kevin McCloud gets a decidedly un-grand £71 per post.

Editor-in-chief Hugh Pearman
Editor Jan-Carlos Kucharek
Design Richard Krzyzak
Sub editor Alysoun Coles
Publishing director Helen Castle

Telephone +44 20 7496 8300
Fax +44 20 7374 8500
firstname.surname@riba.org

Advertisement manager
Richard Tomlin +44 (0) 20 7496 8329
Account manager, London and South
John Ward +44 (0) 7741 265 696
Account manager, Midlands and North
Sunil Shah +44 (0) 7501 466 640
Advertising and digital support
Charlotte Collins +44 (0) 20 7496 8326

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