building construction design

www.buildingconstructiondesign.co.uk

October/November 2019

Appointments & News 02 Interiors 08 Exteriors 13

Cover image: Kalwall See page 14 for details

Maintaining tenant safety and compliance

By Simon North – Service and Maintenance Division Manager with SE Controls



tith the new 2019 edition of Building Regulations ADB coming into force on 30th August, it's evident that considerable progress has been made on improving residential safety and security, particularly within high-rise buildings since the Grenfell Tower fire. However, it's universally accepted that there is still more to be done.

In addition to the detailed review of construction industry regulations standards, much of the focus has rightfully been directed towards replacing potentially hazardous and non-compliant products, such as cladding, alongside the wider adoption of automatic fire suppression systems.

As building regulations already require residential buildings over three-storeys to be fitted with smoke control systems, which protect escape routes and keep them free from smoke, any move to supplement this protection with other safety technologies and solutions must be welcomed.

However, fire safety systems and their individual component parts are only as good as their maintenance regime. All too often, SE Controls engineers have been called to a property to undertake an inspection or review its smoke control systems only to discover there are issues that would directly impact on safety, impair escape and put lives at risk if a fire should occur.

It must be said, that in many cases, there is nothing inherently wrong with the design, installation and operational aspects of these systems, but their performance and reliability have been severely compromised purely by the lack of correct maintenance by skilled and, more importantly, qualified personnel.

FOCUSSING ON SAFETY

At SE Controls, our business is focused on life safety smoke control systems that enable residents to exit a building in the event of a fire. These systems are often complex, and they must operate without fail when needed, so ongoing maintenance regimes are a critical aspect of ensuring 'failsafe' operation.

During the past two years, we have been approached by a growing number of housing





associations (HA) and local authorities (LA) to assess a wide range of existing smoke control installations in their properties to ensure they are operating correctly and are compliant within the scope of the current regulations.

Our findings in most cases were that the systems were malfunctioning and lives were placed at risk, as a consequence of a range of different maintenance related issues. A common factor in these assessments was that a 'fire contractor' had carried out the system's maintenance as part of a 'bundled' package.

COMPROMISING SAFETY AND COMPLIANCE

Whilst it is perfectly understandable that with ongoing budget pressures, HAs and LAs would want to save money by 'bundling' fire systems maintenance and smoke ventilation maintenance into an integrated multi-disciplined 'fire service and support' contract.

However, compliance to a contract does not infer compliance to legislation, which is an important distinction. Compliance to the contract covers off matters such as when PPM visits are scheduled and completed; how quickly reports are completed and number of call outs attended etc. These can be measured and are generally included in KPIs that compliance managers use to manage their contractors.

The procedures for maintaining smoke control products, equipment and systems is defined by a range of important specific legislation, yet it's quite common that compliance teams and compliance managers know very little about this vital legislation, which could compromise tenant safety.

Insufficient emphasis is placed on matters such as whether the attending engineer is trained and equipped to maintain the systems; whether the smoke ventilation system is fit for purpose and keeping tenants safe or is the system compliant to the legal obligations that the building owner or managing agent is the responsible person for?

MEETING THE SAFETY STANDARDS

Under the scope of British Standards, including BS9991, BS9999 and BS7346 Part 8, together with Building Regulations ADB; the European EN12101 standard and best practice guidance documents from the Smoke Control Association, there are specific maintenance requirements and procedures for smoke ventilation systems that must be followed.

The penalties for not adhering to these safety standards can be significant, including the prosecution of companies, building owners, landlords and individuals responsible for building maintenance, resulting in punitive fines as well as custodial sentences.

SE Controls has already been directly involved in a significant number of projects to correct problems caused after general fire contractors have been employed, but were unable to maintain the smoke control system within the demands of these critical regulations.

Clearly, these could have been avoided if the specialised smoke ventilation maintenance contract was kept separate and handled by a specialist company with the necessary skills, experience and expertise.

There is no room for compromise, complacency or 'cutting-corners' where life safety is concerned. Meeting the regulations and maintaining systems to the required standards goes beyond compliance and is about responsibility, quality and safety in every stage of the process.

01543 44 30 60 www.secontrols.com

Eurobrick update BIM & CAD information

Europrick were first to introduce a comprehensively designed and tested brick slip cladding system to the UK in the early 1990s - providing a fast, flexible and cost effective way to get the real look, feel and durability of brick and stone walling. Recently, Eurobrick has been working with online platforms to provide better quality digital content for people working with their systems, including architects and specifiers.

Eurobrick already provide a number of digital downloads on their website, including technical drawings, product and installation guides and certification for planning. They have now updated their offering through Bimstore and FastrackCAD.

The online information library, Bimstore, offers BIM (Building Information Modelling) information to the construction industry. BIM is a collaborative approach to projects that uses digital technologies to provide greater clarity and detail for the building as a whole and make planning more efficient. BIM allows you to embed asset data and a 3D model into plans to help manage and maintain assets throughout the project lifecycle. It is now the required standard for many local authorities and is used by most major construction companies.

Eurobrick's information on Bimstore allows users to input 3D models of their P-Clad and X-Clad systems, to produce 3D project installation details and from these, generate system quantities required – enabling Eurobrick to provide an accurate estimate for the project. From the 3D models of their building, users can generate photo realistic visuals using any of Eurobrick's ranges of brick and stone blends, to get a clearer idea of how the final project would look. You can view Eurobrick's BIM content at www.bimstore.co/manufacturers/eurobrick.

Eurobrick have also updated their information on FastrackCAD, an architectural database that allows registered users to view or download free CAD files. These are simplified 2D versions of Eurobrick's standard detail drawings, which can be input into working drawings to save time during planning. You can view Eurobrick's CAD download on www.fastrackcad.com in the brick slips and stone cladding section.



01179 717 117 www.eurobrick.co.uk

Release of new Podium Deck Brochure

elta Membrane Systems Limited, one of the UK's leading Type C cavity drainage membrane manufacturer and supplier of specialist structural waterproofing products is pleased to announce the release of its new Podium Deck Brochure. This 44-page, full colour brochure presents design and build philosophy, project detailing and specification/selection of the correct waterproofing and drainage protection systems for podium decks, buried roofs, blue roofs, green roofs, warm roofs, cold roofs, hybrid roofs, car parks and terraces & balconies.

Delta's Podium Deck Brochure is divided into key sections and features an array of easy-to-read text, technical drawings, detailing and 2D graphics. Successful podium deck and buried roof waterproofing design lies with choosing the most appropriate combinations of structure and waterproofing system to achieve pre-determined performance levels and criteria.

In order to design out risk of failure due to less than adequate workmanship, damage or defects on site it is also important to consider



practicality and ease of installation, the phasing of the construction process and the scope for testing and certifying during construction. To reduce risk, Delta's Podium Deck brochure focuses on:

- Design & Build Philosophy
- Definitions of Structure
- Choice of Structure
- Selection of Waterproofing
- Selection of Drainage Protection
- Detailed Drawings

"Recent years have seen an increase in the use of podium decks, and it has been recognised that there has been a significant increase in failures. As a sustainable manufacturer, we feel duty bound to offer advice on correct design, installation techniques and the correct selection of waterproofing and drainage protection systems".

"Being a sustainable business within the construction industry is about striking the balance between customer expectations, the requirements of building regulations and reduction of project failure/risks. We truly believe that acting as a responsible business in society, will contribute to lasting life cycles of structures and ultimately economic success".

"I would like to add my thanks to the Delta Technical Team for contributing so expertly to this brochure – we've produced a "first" within the structural waterproofing industry and this would not have been possible without all of your hard work – so many thanks to you all for your continued hard work and input".

01992 523 523

www.deltamembranes.com/technical/deltabrochures/

CO and smoke alarms – separating fact from fiction

A lthough most people recognise the importance of smoke and CO alarms, some widespread myths have gained a foothold in consumer understanding of home safety. Adrian Keats at Honeywell's home safety business debunks the common examples of misinformation that housing associations are often confronted with.

According to regulation, landlords must install a smoke alarm on every floor of each property, along with a CO alarm in rooms containing a solid fuel burning appliance. Despite the dangers of noncompliance and the ability of these systems to potentially save lives, there is still a shocking level of misinformation. Here we take a look at three of the most common myths and separate facts from fiction.

FICTION: SMOKE ALARMS CAN BE FALSELY TRIGGERED OFF BY HOUSEHOLD FUMES FROM COOKING

Fact: Some smoke alarms use an older type of technology called ionisation, which is the culprit for the pervasive belief that all alarms are triggered by household fumes such as burnt toast. In actuality, modern optical alarms, unlike ionisation units, are much less susceptible to these types of nuisance alarms.

What's more, by installing heat alarms designed for areas such as kitchens, nuisance alerts from cooking fumes can be avoided. These alarms detect fires which produce little smoke but plenty of heat such as those caused by a chip pan on fire.

FICTION: CARBON MONOXIDE POISONING IS ONLY CAUSED BY A FAULTY BOILER, SO IF A NEW ONE HAS BEEN INSTALLED, YOU'RE SAFE Fact: Many people think that if they have just

bought a new boiler, or indeed had their existing

one serviced, then they're safe from the dangers of carbon monoxide poisoning.

While this does reduce the risk, it does not eliminate it as boilers can break down or the flues become blocked at any time between service dates. Similarly, though the chance of a brand new boiler leaking CO is relatively slim, it is still possible, so all boilers should have a CO alarm provided alongside them when they are fitted.

Of course, these are not the only household appliances that can emit carbon monoxide. All fuel burning appliances such as gas cookers, heaters, coal fires and woodburners can cause a leak and create danger for the homeowner. What's more, CO can also leak into a home from a faulty appliance in a neighbouring property, which a resident would have no control over.

Therefore, it's important that any homes or apartments with these provisions are fitted with working alarms within the property, no matter the age of their appliances.

FICTION: I'VE BOUGHT MY OWN ALARM SO DON'T NEED ANYTHING ELSE INSTALLED IN MY HOME

Fact: Landlords have to install units that are kitemarked to the relevant standards, which for CO alarms, is EN50291. This is particularly important as these stringent legislative standards cover a wide range of performance and durability measures, and lay out the means, and extent of testing for things such as sensor reaction times, temperature resistance and minimum alarm volume levels. These benchmarks help to safeguard residents by ensuring that problems can be detected quickly and efficiently, giving households more time to react in the case of a leak. So whilst a tenant may have their own means of CO detection, it may not provide an adequate level of protection.



Also, despite regulations stipulating the installation of a CO alarm only in rooms with a solid fuel burning appliance, ideally, a CO alarm should be placed in every room housing a fuel burning appliance. And for complete safety, an alarm in any bedrooms which may be above these, too. The alarms can be interconnected, meaning all alarms will sound once an activation has occurred.

In larger properties where residents are unlikely to hear sounds from the other end of their home, a network of linked heat, smoke and CO alarms ensures that occupants can be alerted to a potential danger even if they are far away from the source of the activation.

Another feature which may be missing from a resident's own purchase is the ability to view key data on an alarm and its status from an app on a mobile device. This function makes it easier for landlords to monitor details such as battery levels or recent activations.

Although the benefits of fire and CO protection systems may be obvious, it is worth clarifying any concerns tenants may have due to misconceptions. Not only would this help keep them safe, but also help to build trust.

For more information on the full range of Honeywell smoke, heat and CO alarms, please visit the company's website.

01202 645 577 www.homesafety.honeywell.com





Renderplas PVC beading solutions for a sustainable future

anaging Director of Renderplas, Daniel Leedham-Green, is committed to ensuring that the production of millions of linear meters of Renderplas PVC beads every year used for rendering, plastering, dry lining and external wall insulation, actually contribute to a sustainable environment rather than harming it.

From conception 30 years ago, Renderplas have worked hard to innovate and lead the PVC bead industry in the field of sustainability. All of our white PVC beads are made predominantly from waste material from the vast manufacturing process of building components, making them sustainable and a great development in the way that building components can perform.

We are proud to manufacture our PVC beads in the UK and to provide a low carbon alternative to cheap imports. Quality is assured, Renderplas beads will not perish and



they will not need replacing. Our PVC products require far less maintenance than traditional building materials, they are also easier to cut and handle than metal and so produce far less waste during installation.

Renderplas PVC beads are designed to last as long as the render, typically 25 years or more, and they last longer than metal. Even if the render needs replacing or when the building reaches end of life, our PVC beads can be removed and easily recycled.

The first PVC bead manufacturer to complete a full life cycle assessment (LCA) providing Ecopoint calculations for our products, Renderplas PVC beads achieved the top eco-rating available of "excellent" in an independent environmental profile report. Renderplas beads are ecologically benign and comply with REACH legislation as all harmful additives have been removed.



01299 888333 info@renderplas.co.uk www.renderplas.co.uk

Comfort and safety from SE Controls at sixth form centre

A new sixth form study and careers centre at Hampton School in South West London is using a combined ventilation and smoke clearance system from SE Controls to help provide a comfortable learning environment with enhanced fire safety for students and staff.

Designed by IID Architects, the new building is constructed as a three-story pod located in the centre of the school's Hammond Quad, while a further single storey was added to the existing building at the southern end of the quad and the previously open space covered with a glazed roof.

In addition to meeting the building's fire protection specification, which demands that fire fighters must be able to actuate the system and disperse smoke on arrival, via a manual call point at the main entrance, SE Controls also had to integrate the ventilation solution into the BMS to provide comfort ventilation and temperature control during day-to-day operation. To achieve this, 20 SHEVTEC louvred smoke ventilators were installed at high-level in a rooftop plenum and operate as a four-zone system via a dedicated controller, linked to the BMS. This design enables proportional actuation of the vents so that they can be opened in stages depending on the temperature within the atrium. The control panel also incorporates a 72-hour battery backup for failsafe operation in the event of power interruption or failure.

As the ventilation system must also operate in the event of a fire, all the ventilators and control systems supplied by SE Controls are manufactured and tested in accordance with BS EN 12101 part 2 and part 10, as well as being compliant with other relevant product legislation, regulations and standards.

Although the louvres are all 1,280mm in height, five different widths were used on the project, ranging from 1,430mm to 1,854mm, enabling them to fit within the structural glazing system's dimensions and



ensure the ventilation airflow requirements are met.

In normal comfort mode, IP65 rated electric motors open and close the louvres depending on the level of cooling and ventilation needed within the atrium, which is managed by the school's BMS. If the building's fire alarm system is actuated, it over-rides the BMS and all the vents are closed until the fire services arrived and actuate the system to manage how the smoke is cleared to assist fire-fighting procedures.

01543 443060 www.secontrols.com

Offices at Farringdon station to feature TROX fancoils

ROX UK has been selected by MACE MEP Services to provide PWX fancoils and grilles for the new office development at Farringdon East Crossrail Station over-site development in central London. The prestigious development by Helical plc, known as Kaleidoscope, will be a six storey office building of 88,600 sq ft with a restaurant unit on the ground floor. The floorplates range from 14,000 sq ft to 19,500 sq ft and the building benefits from a communal rooftop terrace of 5,000 sq ft together with 94 cycle spaces, showers and its own loading bay. It is situated immediately east of Smithfield Market with views over Charterhouse Square and towards St Paul's Cathedral. As well as anticipating a BREEAM "Excellent" rating after a pre-assessment exercise, the prestigious building (designed by PLP Architecture) displays outstanding aesthetic endeavour and has achieved a WiredScore Platinum rating, meaning it is at the forefront of digital connectivity.

Development of the scheme started in August 2018 and completion is due in December 2019.

TROX PWX fancoils were the natural choice for the Kaleidoscope development, to assist the achievement of ambitious sustainability goals, and to provide optimum flexibility for layout of the office spaces. Launched in 2017, the PWX fancoil was the result of an extensive research and development programme and was put through thorough testing, using TROX's inhouse test chamber (constructed to comply with ASHRAE 79, BS1397 and EUROVENT 6/3), in addition to extensive corroboration of results at an independent test facility.

TROX PWX units feature new inlet attenuators, inlet plenums and discharge attenuators capable of achieving outstanding performance across a wide range of applications. SFPs across the range comply with and exceed Part L requirements, with typical values between 0.15 to 0.25 W/(l/s) at



30 Pa ESP.

The TROX PWX range is able to speed up the specification of projects significantly, streamline installation and commissioning, and provide valuable environmental and cost benefits whilst reducing levels of risk. This has resulted in the PWX being selected not only for the Kaleidoscope development at the Farringdon East Crossrail Station, but also for many other notable projects around the UK.

Which?

T = 5 L T POWERWALL CERTIFIED INSTALLER

01842 754545 www.troxuk.co.uk

Do you dream of a "Low energy, low cost home?"

Then look no further...... Take four pages of free advice on: insulation specification, air tightness, whole house ventilation with heat recovery, underfloor heating, Thermal mass, solar shading to reduce over-heating. Then add a well-designed Nibe Ground sourced heat pump for space heating and hot water, fill your roof with Q Cells solar PV panels & Tesla Powerwall home battery. What can you expect your results to be in your new all electric house?

Here are the results from one of our recent self-builders:

- 285 m² super insulated house
- Total ALL energy consumption for the last 12 months 8,826kwh
- Solar Generation 12,232kwh/yr
- Energy stored and then used later from the Tesla Powerwall battery 2,975kwh/yr
- Electricity bought from the Grid 3,164kwh/yr



- Export 6,168kwh/yr to the grid most of which will be available in future years for electric car charging
- Total energy cost for the year at 16p/kwh £506
- Then there is the Governments RHI heating subsidy which for this house works out at £13,200 over seven years

Carbon Legacy are long term specialists in Ground and Air sourced heat pumps, Sola PV and battery storage. We strive to help customers become as self-sufficient as possible with Renewable energy in terms of heating, hot water and electricity.

We use only the highest quality equipment from Nibe Heat Pumps, Q Cells + LG Solar Panels, Tesla & Sonnen batteries, and Solax/ SolarEdge/SMA Inverters to give you a high efficiency, reliable system that can meet up to 90 per cent of your heat and power needs.

If you like to know more for expert advice, then please get in touch via our website.

01664 822499 www.carbonlegacy.co.uk Email: info@carbonlegacy.co.uk

Marley sponsors skillbuild to support tomorrow's roofers

s part of its ongoing commitment to investing in future roofing talent, Marley is sponsoring SkillBuild, the UK's largest running construction skills competition.

As sponsor of both the regional qualifiers and final, Marley has also donated JB Red battens and tiles which will be used by trainees and apprentices competing within the Roof Slating and Tiling category.

Rebecca Ball, Campaign Manager – Roof Systems at Marley, said: "As the construction industry continues to face an ongoing shortage of skills, including roofers, it is vital that we support the next generation coming into the sector. Competitions such as SkillBuild, not only work to develop competitors' technical abilities, but also their time management, confidence and self-esteem which help form the foundations of a long and successful career in the trade."

Chris Messenger, who is part of the team of lecturers who train students for competitions at Leeds College of Building, said: "SkillBuild is a fantastic opportunity for our apprentices to take the technical skills they've developed and compete among their peers, with the winners even having the chance to compete on an international level. Having the support from manufacturers, such as Marley, ensures those



taking part can get to grips with quality roofing products, gaining further practical experience which they will be able to use throughout their career."

Simon Dixon, Training Manager at the NFRC, has been working with the roofing competitors. He commented: "We're really excited to be working alongside the CITB again for this year's SkillBuild competition. With the ongoing construction skills shortage still impacting the roofing industry; competitions, such as SkillBuild, play an important role in encouraging and showcasing our best young talent and creating role models to inspire the next generation."

SkillBuild, delivered by CITB, is the largest multi-trade competition in the UK for construction trainees and apprentices. The series of competitions sees the very best compete against each other to be crowned a winner in their chosen trade.

01283 722 588 www.marley.co.uk

Creating new openings



Vortice launches Vort HRW Mono



Vortice has launched a new single room heat recovery unit which is quiet, efficient, energy saving and anti-allergic thanks to built-in filters preventing the release of pollutants and allergens into the surrounding air. Easy to install and maintain, the Vort HRW Mono is an ideal alternative to tradi-

tional ventilation systems and intermittent fans. Suitable for recessed installation in outside walls of thickness between 285 and 700 mm, it has a low voltage EC motor-driven fan and five speeds. There are two versions of the Vort HRW Mono, manual or RC (remote control), allowing the unit to be turned off and on and the mode of operation to be selected.

01283 492949 www.vortice.ltd.uk

Convenient and paper-free



Enjoy reading ADF but find it's not always convenient to have the printed magazine? Or has your workplace turned paper-free? The Digital Issue offers you the same content, delivered straight to your inbox and accessible via smartphone, tablet and desktop computers. Be among the first to read all the latest features, comment, interviews, and more, before the print

issue has even been delivered! What's more, the Digital Issue includes interactive links to featured companies. Subscribe for free now.

www.subscribepage.com/adf

VitrA expands bathroom products collection with Origin

VitrA, one of Europe's leading bathroom companies, has expanded its collections of bathroom products with the addition of Origin brassware and accessories.

Subtle elegant design is the key theme of the outstanding new Origin brassware and accessories range from VitrA. Origin presents designers and consumers with a complete and versatile collection that is the perfect partner for contemporary sanitaryware and furniture.

There are over 150 pieces in the collection including monoblock taps in four heights, wall and deck mounted mixers, and both concealed and exposed thermostatic and manual showers with a choice of handheld or fixed overhead showers. Taps and showers are complemented by a comprehensive range of accessories. All pieces are available in chrome, brushed nickel, copper and matt black finishes.

Showerheads from the Origin collection showing all finishes (top to bottom): brushed nickel, matt black, chrome, copper. Prices start from $\pounds160$ for a chrome showerhead.

www.VitrA.co.uk



Thermoblock combats cold bridging for new leisure facilities at Fife Holiday Park



The construction of a new swimming pool and play park at a caravan and holiday lodge complex, set in a stunning location on the coast of Fife, is making full use of the unique insulating and load-carrying attributes offered by **Marmox** Thermoblocks. With its fully enclosed and well insulated steel framed structure, the new swimming pool and play park will offer year round enjoyment for not only those staying in the caravans and lodge homes, but also the wider public. A key element to this energy saving design is preventing cold-bridging occurring around the perimeter to the building's in-situ reinforced concrete floor where it meets the external walls, with its 140mm thick block inner leaf, infilling the cold-rolled steel columns. The site agent for Pert Bruce Construction, Mark Macpherson, commented: "This is the first time I have seen the product, but the bricklayers found it quite straightforward to install and our company has also been using Thermoblock on a housing site in Brechin for Angus Council." Pert Bruce Construction is also making use of the Marmox MSP 360 sealant as an adhesive to complete the stepped overlay joints between the individual Thermoblock units.

www.marmox.co.uk

New 52-page Nuance brochure from Bushboard

Anyone looking for beautiful bathroom ideas will find a wealth of inspiration in the new 52-page Nuance brochure from **Bushboard**. The beautiful-bathroom-surfaces book showcases the new Designer and Acrylic bathroom wall surfaces in both striking room sets and swatch layouts.

Nuance is an award winning and patented waterproof bathroom wall panelling system that can swiftly transform the dingiest bathroom and at the same time offer huge savings in money and time. Ceramic tiling a 7ft x 7ft small bathroom can take one to three days and a large 13ft x 7ft room rises to three to six days.

Add the cost of the tiles, and the noise and disruption involved, a striking 100 per cent waterproof wall surface like Nuance becomes a natural choice. Installing Nuance in the same 7ft x 7ft bathroom or wet room space can be completed in just four hours. It can be installed over existing tiles for even more speed and cost-saving.

To order samples or request a brochure please contact Bushboard.

www.bushboard.co.uk



Shape your projects with FR Flexi-Ply

Providing yet another innovative breakthrough, industry leader James Latham now offers a fully certified fireretardant, flexible plywood, giving interior design professionals a quick and easy solution for creating high-impact curves, waves and cylindrical shapes in their fit-out projects.

Ideal for reception desks, columns, panelling, arches and counters, it is already proving extremely popular in the exhibition, shopfitting, hospitality and commercial sectors where a Euro Class B fire-rated material is part of the specification.

Stuart Devoil, James Latham's Group Head of Marketing explained, "Our new FR Flexi-Ply has already been a big hit with customers. In fact, the first load sold out before we could even advertise it! As well as being fully tested and third party certified with a Class B EN13501 fire rating, it offers designers exceptional flexibility and performance as it can easily be bent to all kinds of intricate shapes and radii, delivering a highly cost-effective and time saving solution.

"As well as the obvious risk to safety of



occupants, fire damage in buildings can be devastating and as a result, fire-retardant products are increasingly being specified to help reduce this impact. In particular, when it comes to high-footfall public areas such as retail premises, exhibition centres, concert venues, stadia, cinemas, theatres, hotels etc as well as schools, offices and hospitals, fire retardant materials are essential."

Available in thicknesses from 3 - 16mm,

and sheet sizes up to 1220 x 2500mm, FR Flexi-ply can provide an excellent solution to complex design challenges, combining design flexibility, great aesthetics and performance you can trust.

James Latham offers one of the widest ranges of certified and independently tested timber and panel materials on the market. As well as the new FR Flexi-ply, its highperformance, fire-retardant product portfolio includes; CE marked Birch Plywood, Timber Cladding, Chipboard, MDF, MF/MDF, OSB, plus decorative products for interiors such as Valchromat HDF, MFC, HI-MACS solid surface, Laminate and Fire-rated door blanks.

All products are certified and independently tested to the relevant Euro Classes, providing data on the rate of fire propagation, lateral fire spread, total heat release and smoke production among others. Copies of reports, and the Field of Application relating to all these products are available to download on the James Latham website.

0116 257 3415 www.lathamtimber.co.uk



Direct Flush – a fresh approach to washroom hygiene

Toilets are an obvious source of harmful germs. Cisterns store water in ideal conditions for bacterial development and these bacteria are released in an aerosol plume during flushing, but they can also spread back through the pipes and colonise the system.

The alternative to cistern-flush mechanisms is a direct flush system which connects directly to the water supply. A self-closing valve discharges a pre-determined flush volume without the need for stored water. By employing system pressure to rinse the pan, there is no water stagnation, scale deposition or build-up of impurities upstream of the flush mechanism.

Direct flush improves hygiene

Water Supply Regulations (1999) require the pan content to be "cleared effectively by a single flush of water". Gravity-fed cisternflush mechanisms may not have sufficient dynamic pressure to ensure a hygienic rinse with a single flush, and a 40 to 60-second refill time exacerbates the problem. Replacing the cistern with direct flush valves has several hygienic advantages. Firstly, the flush volume can be adjusted to the dynamic pressure to ensure an effective single rinse. Where necessary the flush can be adjusted for ecological or smaller children's WC pans. This reduces the aerosol flush plume, prevents unhygienic splashing and avoids the risk of slipping on wet floors. In addition, since there is no refill time, the full flush is instantly available for subsequent users, delivering an effective flush every time.

Hygiene can be further improved by installing an electronic flush mechanism. For example, DELABIE's TEMPOMATIC Dual Control direct flush valve has a user-activated conventional push-button flush. However, an automatic sensor also detects their presence and flushes the valve automatically if the user forgets. An intelligent rinsing system identifies the duration of use and flushes accordingly. There are 3 programme options, including an ecological setting with a reduced flush length equating to a lower flush volume.

Electronic flush systems have the additional benefit that no manual contact is required, so the toilet is accessible to any user, regardless of age or level of independence.

Furthermore, an automatic duty flush can be programmed to flush the pipework every 12 or 24 hours when not in use, preventing stagnation and reducing biofilm development.

Fit for purpose

Cistern-flush toilets are usually installed through habit but, although they are ideal for domestic usage patterns, the mechanism comprises plastic components that cannot cope with the regular and intensive use experienced in public buildings. Heavyhanded users can easily break fragile mechanisms. Depending on water quality, watertight seals which are sensitive to scale and impurities quickly wear out with repetitive use. This inevitably leads to leaks and reduced flushing capability.

According to Thames Water, a leaking toilet can waste up to 400 litres of water a day, and a leak in a cistern-flush toilet is very difficult to detect. The resulting maintenance is time consuming and problematic, especially where cisterns are installed on frame systems behind IPS panels. However, with direct flush systems, any leak is very easy to identify and remedy.

Direct flush mechanisms, designed for public washrooms, are much more robust. The hydraulic timing mechanism on DELABIE's TEMPOFLUX 3 relies on water pressure to operate, so there is no metalmetal or metal-plastic friction. A self-cleaning timing groove reduces maintenance and extends the operational lifespan to over 500,000 activations. Furthermore, the cartridge is standardised and can be exchanged simply by isolating the water supply via an integrated stopcock.

Challenging perceptions

Contrary to popular belief, direct flush toilets can replace cistern-flush toilets in refurbishment projects. If the header pipe is close to the installation, only the branch pipe run needs to be changed in the majority of cases. Although the methodology for calculating pipe sizes for cistern-flush is different to that for direct flush, the pipework sizing is similar due to the principle of calculating simultaneous use.

A direct flush activates for seven seconds, whereas cistern refill is between 40 and 60





Number of WCs installed	Number of WCs used simultaneously
3 valves	1 valve
4 – 12 valves	2 valves
13 – 24 valves	3 valves
25 – 50 valves	4 valves
50+ valves	5 valves

seconds. Although the effect on demand is cumulative, the shorter duration of the direct flush means that in effect fewer valves will be operating simultaneously. For example, based on a dynamic flow rate of 1.5 litres/second, DELABIE estimate that for a block of 20 direct flush toilets, three out of 20 will be activated simultaneously.

Easy to install

Another major concern is the ease and convenience of installation and ongoing maintenance for direct flush systems, especially in recessed applications. DELABIE has patented an innovative housing that can be installed on IPS panels or solid walls up to 120mm. Unlike conventional housings which are cut flush to the wall, this housing features a collar with an integrated seal which provides a watertight seal against the wall finish. The housing is cut to size in front of the collar and any leaks or condensation evacuate in front of, and not behind or into, the wall. The collar also provides support for the wall actuator plate which conceals the whole mechanism and has an integrated electronic unit for sensor models.

The flush valve is supplied in two kits, the hydraulic connection is made from the exterior with temporary caps to replace the sensitive elements while the system is purged. The mechanism and electronic unit are then connected inside the housing, but can be easily accessed for subsequent servicing. A backflow prevention device is also incorporated within the housing and, in the event of backflow, any water will evacuate in front of the wall.



Direct Flush systems offer a hygienic alternative to cistern-flush WCs, reducing the risk of infection in commercial washrooms. Designed for intensive use in public environments, they provide a sustainable solution that manages water consumption and adapts to the usage demands of public facilities, plus they are easy to install and maintain. Breaking the habit of specifying domestic style cisterns will deliver long term dividends in terms of improved hygiene, sustainability and reduced maintenance.





Hygiene by Design

In public washrooms, a suspended WC pan offers a stylish, contemporary design. However, there are distinct functional advantages for the healthcare sector. A suspended pan offers an additional hygiene benefits, since the overall toilet surface area is reduced and access for cleaning beneath the pan is improved.

Supported on a frame system, a suspended WC pan is ideal for installation in confined spaces or service ducts. The pipework and all fixings are concealed and, where the mechanism is also recessed, the working parts are inaccessible to users reducing potential vandalism.

User access and comfort is also improved as the adjustable bracket on a frame system ensures that the WC pan can be installed at the correct level for compliance with the DOC M Building Regulations for wheelchairaccessible toilets (with the pan height 480mm above floor level).

One further hygiene consideration is a rimless WC pan. Designed for maximum hygiene, the bowl is quick and easy to clean, with no inaccessible places where bacteria can take refuge. The adjustable flush volume on the direct flush system is the ideal mechanism to complement a rimless WC pan, guaranteeing an effective rinse without splashing.

01491 824449 www.delabie.co.uk

How to transform your fireplace this autumn

By Niall Deiraniya, general manager, DRU Fires UK



Onsumers are looking for ways to transform their existing fireplaces. And if they live in homes where there is no chimney, they are seeking solutions to create new fireplaces.

The passion for wood

Recently, wood has been the most popular choice for anyone installing a new fire or stove. It is a sustainable fuel and looks beautiful when it is burning.

A good example is the Dik Geurts Ivar, one of a series of compact stoves that will fit into an inglenook chimney or stand alone in many locations.



The Dik Geurts Modivar has a choice of log storage compartments and plinths to suit different styles of living space.

If you would prefer to install a wood fire, there are many models. The Dik Geurts Instyle/Prostyle series includes fires from 55 cms to 1 metre wide.

The Spartherm range has single, two-sided, three-sided and tunnel versions. They also include electronic vertically sliding glass windows.

The convenience of gas

Today's gas fires generate a flame picture that is the equal of a real burning wood fire and



are more energy efficient.

The Global by DRU range is available in a selection of sizes with conventional and balanced flue versions.

They also include the Global cavity wall gas fire, which fits inside the wall cavity.

The inspiration of design

The DRU Maestro range includes 2-sided, 3-sided and tunnel fires. They have a Dynamic Flame Burner, which creates high and dense flames.

The Maestro 60 is a gas fire with a unique 'Summerlighting' feature. You can switch it from gas to electric mode in the spring and summer.

Bioethanol - the green solution

An alternative fuel is bioethanol, an odourless, colourless liquid derived from renewable plants.

Bioethanol fires include built-in, table-top and freestanding models. The new Ebios Passo E bioethanol stove was recently voted Best Fireplace Suite (other fuels) at the Hearth & Home awards.

So, when transforming your fireplace this autumn do you convert the existing chimney or opt for a freestanding model? If you're going to burn wood, how will you store it? If gas is your preferred option, do you want a classic fireplace or a contemporary model? And finally, should you consider bioethanol?

Whatever your conclusion, you can create the fireplace of your dreams this autumn.

0161 793 8700 www.drufire.com

Deanestor completes £1.1m contract



Deanestor has completed a £1.1m contract for the supply and installation of furniture and fittings for over 1,600 rooms for the new Royal Papworth Hospital – the UK's leading specialist heart and lung hospital. The contract is Deanestor's 15th healthcare project

for Skanska. The fixed and loose furniture was manufactured and preassembled at Deanestor's factory in Mansfield. A highly durable white finish for the wall and base units was specified for the clinical areas with light grey laminated worktops. All these items were designed for longevity and to meet stringent infection control requirements.

www.deanestor.co.uk/healthcare

High profile social housing development

Spectus Flush Tilt & Turn Windows were specified in the construction of 22 houses and 22 flats in Crawley. Spectus Flush Tilt & Turn Windows were specified with Spectus Approved Window Contractor Jade Window and Door Specialists appointed to manage the fabrication and installation of the 200 windows the project



required. Spectus Flush Tilt & Turn Windows more than met the project specifications. Central to the development was energy efficiency to help target future fuel poverty. Spectus Flush Tilt & Turn Windows can achieve a WER of A++, so could make an impressive contribution to thermal efficiency in the homes.

info@spectus.co.uk

Record £32m orders for bathroom pods



Offsite Solutions has announced $\pounds 32m$ of orders for more than 9,500 units in the last six months – a record performance and a significant increase on the same period last year. James Stephens, managing director of Offsite Solutions, said "We have continued

to grow market share and diversify into new areas such as retirement living and timber-framed housing. This is testament to our team's consistently outstanding performance in delivering every bathroom project to the highest standards, and is reflected in the high number of repeat customers we now have."

www.offsitesolutions.com

Profile 22 specified for high quality development



Over 500 **Profile 22** Optima Flush Casement Windows were installed in a private housing development in Whalley Range, Manchester. The Profile 22 Optima Flush Casement Window more than met the demanding requirements of the development. Jonny Reynolds, Technical Director at Kingfisher Windows, said: "The Optima Flush

Casement Window offers the perfect solution for developments in areas protected by conservation orders that need a window that replicates the 19th-century timber window design, whilst offering modern features and benefits." Like all Profile 22 products the Optima Flush Casement Window System is produced to BS EN 12608 and manufactured to BS EN ISO 9001.

www.profile22.co.uk



Look up to help achieve BREEAM

A quantifiable means of achieving BREEAM points is being pioneered by **Hambleside Danelaw**, via its Zenon GRP rooflights.

Manufactured in the UK, Zenon GRP in-plane rooflights are the first of their kind to attain an independently assessed Environmental Product Declaration (EPD). The accreditation enables a contribution of 1.5 points towards a building's BREEAM rating. Zenon's EPD applies to a range of site-assembled and composite panel rooflight configurations.

"Rooflights have always been acknowledged as contributing towards BREEAM, but it has always been an intangible element," explains Paul Hanratty, Hambleside Danelaw National Sales Manager Rooflights. "The EPD makes that contribution tangible, quantifiable; it gives reliable evidence."

A CPD on the topic is available from the company.

01327 701900 www.hambleside-danelaw.co.uk



Senior's healthy mix of solutions

Ideally suited to the healthcare sector, aluminium fenestration systems can offer huge benefits in terms of aesthetics, durability and efficiency and thanks to **Senior Architectural Systems**, specifiers can access a full range of solutions from one sole supplier. With a proven track record of delivering contracts that meet the specific performance and budgetary requirements of this challenging sector, Senior's work in the healthcare market includes the recently completed Sir Robert Ogden MacMillan Centre in Northallerton. The new state of the art cancer care facility is circular in form with the extensive use of Senior's SF52 aluminium curtain walling providing maximum views of the surrounding landscaped gardens. As well as helping to achieve the require levels of daylighting, Senior's thermally-enhanced aluminium curtain walling has been integrated with Senior's patented low U-value PURe[®] aluminium windows to provide ventilation and further contribute to the overall efficiency of the building envelope.

www.seniorarchitectural.co.uk



Working to help roofing merchants grow

Whilst Freefoam building products have traditionally been available from specialist PVC suppliers the more ambitious roofing and general builders merchants are now seeing the potential and benefits of stocking fascia, soffit and gutter alongside their existing ranges. With 12 branches in and around the capital, Skyline made a strategic decision to add PVC roofline products to their range. Greg Homer, General Manager Hanwell branch explained: "We have seen our customer base widen from our core roofing professionals, to now include builders, loft convertors, renovation companies and cladding contractors. We needed to introduce a wider range of products to service this new business. We chose Freefoam as our roofline provider because we get a wide and comprehensive range of products, enabling us to provide the variety our customers need." Skyline now hold substantial stocks of PVC roofline products. With an initial installation of bespoke racking for roofline and rainwater products provided by Skyline for each branch, alongside training for counter staff and Point of Sale provided by Freefoam, roofline has quickly become an integral part of the Skyline range.

www.youtube.com/watch?v=XhlfMkqobhg&t=12s www.freefoam.com

Balconies add value to luxury development



McCarthy & Stone's Stapleton Court development of retirement apartments near Hull has utilised **Neaco's** design expertise for an extensive specification of glass walk-on balconies. Fraser Mitcalfe, Regional Surveyor at McCarthy & Stone, said: "We have used

Neaco for numerous previous developments due the high standard of their product and their reliable service. As a company, they bring more than just product quality to the table – they also bring useful design input and experience from a supplier's perspective. Their Neatdek decking is now specified group-wide due to its non-combustible quality which is now a legal requirement for balconies on residential developments."

www.neaco.co.uk

Profile 22 used in housing development



Profile 22 Chamfered Windows were specified and commissioned for 39 new build houses in Telford. When it came to the windows and doors on the project, the contract was awarded to Profile 22 Approved Window Contractor Select Windows. Profile 22's Optima Chamfered Windows is increasingly becoming the

commercial system of choice because of its ability to meet demanding requirements at a competitive price. Optima delivers a 1.2 W/m²K U-value as standard, with U-values as low as 0.8 W/m²K possible. Optima windows achieve PAS24 2016 Enhanced Security and have Secured by Design options when these are required.

www.profile22.co.uk

Kalwall helps famous Brewery take the LEED



Kalwall[®] translucent cladding has helped the New Belgium Brewing company accomplish a raft of sustainability awards for its latest brewery on the East Coast of the USA. Specified by international architects Perkins + Will, the new brewery in Asheville has been hailed as a showcase for the art of sustainable practice and design. The project earned three LEED Silver Certifications for the Distribution Center, Gold for the Brew House and Platinum for the 'Liquid Centre'. At the SEAL Business Sustainability Awards event, all this helped New Belgium Brewing be recognised as one of 'The 50 most sustainable companies in the world'. The innovative use of Kalwall in the clerestory adds to the building's striking appearance as well as contributing valuable points for the LEED ratings. Not only does Kalwall diffuse daylighting deep into the interior but it removes shadows and glare and the stark contrasts of light and shade. The system also enhances simplicity in external design by eliminating the need for blinds, curtains or solar control. Kalwall's insulating properties also mean that U-values down to 0.28 can be achieved, thereby helping with the important requirements of Part L.

www.structura-uk.com/kalwall



Schöck capability at major North London development



he former site of the National Institute for Medical Research (NIMR), on The Ridgeway at Mill Hill, in North London, is being redeveloped by Barratt London as a major residential development known as Ridgeway Views. The NIMR building, with its distinctive green copper-roof, has been a local landmark since the 1950s, but more recently the Medical Research Council decided the NIMR should relocate. In 2016 it became part of the Francis Crick Institute in St Pancras. Work on the forty-seven acre site is due to be completed by the end of 2021 comprising around 460 residential units, with apartments across nineteen buildings of three to nine-storeys and twelve three-storey houses. New offices, leisure facilities and a café will also feature.

THERMAL PERFORMANCE IS CRITICAL

Minimising energy use by improving thermal performance is key and the prevention of thermal bridging is critical to this, particularly within the balcony and parapet detailing. Ineffective insulation at the connection points means local heat loss, resulting in more energy being required to maintain the internal temperature of the building. Also, low internal surface temperatures can cause condensation, leading to structural integrity problems and even the potentially serious occurrence of mould growth.

A VARIETY OF CONNECTIONS

Schöck Isokorb structural thermal breaks are being installed throughout to minimise thermal bridging risk. For the concrete-to-concrete



cantilever balconies it is mainly the Isokorb with 80mm insulation thickness that is used, transferring both negative moments and positive shear forces. For the recessed balconies where there is continuous support, a variant of the same Isokorb is installed. Steel-to-steel connectivity on the project uses a modular unit which can meet practically any profile size and load-bearing capacity. A special requirement here involved a steel balcony needing to be bolted down to a precast plank. To achieve this an L-shaped bracket was first fixed to the slab, then a stub bracket and balcony attached to the bracket using the modular Isokorb.

The Isokorb with 120mm insulation thickness for parapets is also used within the first phase of the development. Parapets are just as prone to



thermal bridging problems as balconies and the conventional insulation method is to wrap the perimeter of the wall with an insulation barrier. With the lsokorb no wrapping is required

TOTALLY VERIFIABLE PERFORMANCE

The comprehensive Schöck Isokorb range meets full compliance with the relevant UK building regulations, has NHBC approval and offers LABC Registration. There is also the security of independent BBA Certification. The requirement too that the temperature factor used to indicate condensation risk (fRSI) must be greater than, or equal to, 0.75 for residential buildings is easily met by incorporating the Isokorb.

01865 290 890 www.schoeck.co.uk

Insulating flat roofs in accordance with new British Standard and fire regulation revisions

The recent review of the flat roof design British Standard and Approved Document on Fire feature new design considerations for insulating flat roofs. Ensure your project requirements are being met by following Bauder's guidance on achieving minimum U-values, thermal performance of inverted roofs and fire safety

BS 6229:2018

The 2018 update of British Standard 6229 flat roofs with continuously supported flexible waterproof coverings, brings in significant changes that affect the design of flat roofs and the installation of a waterproofing system and associated insulation. The document comprises updated practices that directly impact the design of roofs on new buildings and those to be refurbished.

Minimal U-Values and Control of Condensation

Under the revised British Standard, the minimal U-value levels permitted at any point on a roof, must be 0.35W/m²K (clause 4.7.2). 'At any point' includes the minimum thickness of tapered roof areas and gutters to maintain the thermal performance of a heated building. This is a new design consideration under the standard's revision. In such roofs, the risk of surface condensation is removed if continuity of insulation, including at upstands and roof penetrations exists.

This uplift in the standard looks to eradicate the practice of thinly insulated gutter soles and excessively low points in tapered schemes.

For reference: 0.35W/m²K is achieved using approximately.

60mm BauderPIR FA-TE or 100mm of BauderROCK.

Thermal Performance of an Inverted Roof

When designing an inverted roof construction, the principal thermal insulation layer is located above the roof structure and waterproofing, resulting in the waterproofing,

structural deck and support structure being at a temperature close to that of the interior of the building. In order to prevent water from passing around the insulation, through the joints, and reaching the waterproofing layer, where it would have a cooling effect on the building, the correct installation of a Water Flow Reducing Layer (WFRL) is required. However, the construction tolerances and installation of the WFRL can result in a less than desirable reduction of water flow and as such the corrective action is much reduced. The advice Note in clause 4.6.2.2 - Inverted Roofs to counter this reduction suggests increasing the design thickness of the thermal insulation of an inverted roof where a Water Flow Reducing Layer (WFRL) is being relied upon by "not less than 10 per cent". Bauder provides in project specifications both the design thickness for the target U-value plus the advisory minimum 10 per cent increase in thickness for the specifier to choose if they wish to follow the advice.

To ensure comparable tendering Bauder recommends that you should clearly state if you are following the advice in BS 6229:2018 Clause 4.6.2.2

Update to Fire Safety Approved Document B

On the 30th August 2019 the new edition of 'Fire Safety-Approved Document B' (ADB) came into force and with-it considerations that affect insulation within flat roofing design. For a full understanding of the testing procedures, classifications and further guidance, please visit bauder.co.uk/fire-protection-statement.

Specifying roof insulation based on fire performance

Individual construction products are covered within BS EN 13501-1 for which insulation as a separate component will be encompassed and allocated a Class according to their reaction to fire test results with letter classifications from 'A1' through to 'F'. On the whole, materials manufactured from plastics will achieve an 'E' rating, which will include the insulants Expanded Polystyrene (EPS), Extruded Polystyrene (XPS) and Polyisocyanurate (PIR) and are excluded from 'Specified Attachments' – fixed balconies, but they are perfectly acceptable in a flat roof build-up where the whole build up achieves BROOF(t4).

There are currently a number of 'grey areas' in the legislation that further complicate this. Whilst there are several noncombustible insulants that can be used on balconies or vertical flashings, the waterproofing membrane used will typically be Class 'E'. The MHCLG need to be more specific on their requirement for flat roofs.

Non-combustible insulants, such as cellular glass along with mineral wool, are clearly desirable materials to include in a flat roof specification because of fire performance, and it is important to consider and balance the factors for inclusion within a roof system. In general, non-combustible insulants are not as thermally efficient as PIR insulation and therefore extra thicknesses, increased weight and reduced compressive strength can be a limitation in some applications. PIR has the advantage of being highly efficient, which reduces the height and weight of a roof covering build-up whilst also offering good compressive strength meaning greater versatility on a project.

Within a Bauder warm roof waterproofing system (excluding 'Specified Attachments') the insulation, be it mineral wool, cellular glass or PIR, is not directly exposed and is therefore protected through the performance of the cap sheet and its system classification of BROOF(t4); thus these insulants in-situ all conform to Building Regulations for external fire on roofs in the same way - not one achieving a higher rating than the other.

0845 271 8800 www.bauder.co.uk



Platform drainage at Historic York Railway Station

The original York Railway Station was built within the City Walls, adjacent to where the current station now stands. Opened in 1839 by the North Midland Railway, the structure only served trains to and from the south and the northern coalfields. However by 1873, as more passenger and goods lines were built into York, a larger station, from which trains could gain access from all directions, was needed.



Opening in 1877, the new York Station took three years to rebuild. Designed by the North Eastern Railway's architect Thomas Prosser, the curved 800ft-long train-shed roof, supported by iron columns, arched 42ft above the platforms. The station was immediately hailed as one of the great buildings in Victorian era. At the time, it was the largest railway station in the world with four massive arches and thirteen platforms.

Today, the structure still impresses. Serving the busy East Coast mainline route, primarily between Glasgow Aberdeen, Edinburgh and London it is also a vital cross-route link between Glasgow, Manchester and Liverpool. The station currently copes with around 800 trains and thousands of passengers each week. With so many passengers using the station, the extended platforms, which project out from the original arched structure, are as busy as ever. The platform surfaces have been designed to gently slope inward away from the track so any surface water naturally



drains towards their centre. Effective drainage of these roofed and un-roofed "outer" areas was a major safety consideration.

Hauraton RECYFIX[®] STANDARD 100 channels were chosen for the slightly curving platforms – see photographs. The 271 metres of channelling installed were made from the company's tough recycled Polyethylene-Polypropylene (PE-PP), all fitted with Class C 250 ductile iron "heel-safe" gratings finished in a Black anti-oxidisation coating. As each one metre unit only weighs just over 6kg, including the grating, contractor C. Spencer Limited was impressed with the ease and speed of installing the channels as all the units used easily complied with manual lifting regulations.

01582 501380 www.hauraton.co.uk



Kerto LVL elements for fast construction

ocated within the established historic campus of Cranleigh School in Surrey, UK, the new van Hasselt Centre was built using a hybrid structure combining steel and wood. Kerto[®] LVL (laminated veneer lumber) was used in floor and roof elements to stabilise the steel frame. Use of light and green Kerto LVL products enabled fast installation on the construction site.

Cranleigh has its roots in a community school launched in 1865. As part of the school's ongoing Masterplan development project, two disused squash court buildings were redeveloped and expanded.

A new building of 2,525 square metres covering the area was constructed around a steel frame with stabilising Kerto LVL wood elements for the floor and roof. Architects Allies & Morrison were given the task of designing the building.

Fast Light Green Kerto LVL

The design team convinced the school of the feasibility of the steel-timber concept and Kerto LVL Ripa elements. All the coordination and decision making thus took place at the design stage rather than on the construction site. This sped up the work onsite.

"Timber is used extensively in this project and is inherent in its design concept. The structural timber is exposed to view throughout, providing maintenance-free soffits that give character and warmth to the building's spaces," says Jack Stephenson from the architects Allies & Morrison. "The RIPA technology allows the ribs and deck to be designed as one module, which increases the span by approximately 40 per cent. The prefabricated timber panels were chosen not only for visual reasons but also for their fast installation and lightness."

The project was coordinated using BIM (building information modelling) Revit and IFC files. This improved the coordination between the architect, engineer, steel manufacturer, element manufacturer and construction site, minimising mistakes and problems onsite.

Enhanced loadbearing properties

The van Hasselt Centre's structure consists of a steel frame superstructure, with Kerto LVL elements creating the floor and roof.

The Kerto LVL Ripa roof and floor elements used in the Cranleigh School project were manufactured by Belgian company Dupac. The Kerto LVL Ripa elements design



technology is an innovation by Metsä Wood that allows wide spans without supporting partition walls or pillars. It is based on Metsä Wood's Kerto LVL wooden panels, which feature outstanding dimensional stability. Based on Kerto LVL S-beam and Kerto LVL Q-panel loadbearing components and structural gluing, it enables very long spans for elements of up to 20 metres.

Floor panels were constructed using 37 mm thick Kerto LVL Q-panels as deck and 73 x 358 mm Kerto LVL S-beams as ribs. The roof panels were constructed with 25 mm Q-panels and 45×300 mm S-beams.

The acoustician required a concrete screed on top of the timber panels. Kerto LVL Ripa was the only structure capable of easy load transfer within the maximum depth. The elements were chosen because they enabled long-span, lightweight, shallow depth and high capacity.

Compensating for frame tolerances

The Kerto LVL elements give stability to the steel frame. As the steelwork had rough tolerances, elements and details were designed to allow for bigger steel tolerances.

To allow varying levels of steel while still retaining the same floor level, a top-hung connection with bearing ribs on the steel was used. The top-hung detail was specially designed for the project, with glued elements and screw reinforcement. Using Kerto LVL in the roof elements allowed big openings, bringing light to the rooms.

Easy connections, speedy installation

The Kerto LVL elements were screwed to the pre-drilled steel structure and to each other.



Because most of the details were left exposed, it was essential that connectors were partly hidden or completely invisible. This was achieved through careful design, cooperation with the architect and the use of tailored detailing.

All services in the wooden elements were pre-drilled to limit work onsite and minimise damage.

Up to 60 minutes of fire resistance

The Kerto LVL floor elements were designed to withstand 30 minutes of fire, with an additional 30 minutes achieved through the application of a fire retardant coating, bringing the fire resistance class to R60.

The timber elements of the roof structure in the corridor areas had factory flame protection, with additional flame treatment applied on site.

Prefabrication saves time on the construction site

The elements were entirely prefabricated, a decision that allowed work to be done simultaneously onsite and offsite, thereby accelerating the installation phase. Careful logistics planning – down to the order in which the elements were loaded on trucks to speed up installation – ensured just-on-time deliveries, minimising the need to store material onsite while enabling uninterrupted installation.

The properties of the Kerto LVL elements as reinforcements in a steel frame structure, combined with fast and easy installation, allow fast completion of even demanding structures.

www.metsawood.com

action of the subscribe to the free digital issues



ARCHITECTSDATAFILE.CO.UK/ADF-DIGI

Cover image: Kalwall See page 14 for details