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Design for Education & Student Accommodation Supplement

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FROM THE EDITOR



Architects working in the education sector won't have been too delighted to see the return of Michael Gove to a role overseeing aspects of design quality, but at least this time it appears to be largely restricted to the challenges of building enough homes. The remit of the 'Department for Levelling Up, Homes and Communities,' and its ambitious Secretary of State could impact student accommodation, at least from the housing angle. So with this supplement covering accommodation as well as education buildings themselves, we can only wonder as to what Gove intends for this part of the sector.

He made few friends within the industry as Education Secretary in the early 2010s, taking an aggressively 'anti-architect' stance, even banning curves in new education builds, in one of his early cost-cutting interventions. The back-to-basics design approach was about drawing a line in the sand after Blair's Building Schools for the Future programme, lambasted by Gove as being used as a money-making vehicle by some architects.

His disheartening comments included not only that the Government "won't be getting any award-winning architects to design schools," but that architects were "creaming off money" from the programme, and that "no-one is here to make architects richer." Let's hope that in his drive towards creating better, 'levelled-up' communities in his current role, he has learned the value of schools' design for knitting communities together – not forgetting student accommodation.

In this supplement, we celebrate architecture and design's contribution to better education environments. The importance of the building itself to the learning, but also wellbeing of children and older pupils and students is arguably underestimated, and undoubtedly underfunded.

We have Nicola Ball of KKA, describing why student accommodation is getting much more exciting (page 9), and a practical piece by partition manufacturer Neil Miller on how glass could be the answer to future classroom flexibility. Healthy ventilation, post-pandemic, and the critical importance of getting acoustics right (as well as some good solutions), are also core subjects on our syllabus.

Our project report is a new take on the 'STEM' concept, integrating the arts into science, technology, engineering and maths, to make STEAM, at a further education college building in Bridgend. The project architect explains how the conflicting requirements of spaces for noisy practical teaching have been successfully combined with quieter study spaces.

We hope you enjoy the supplement!

James Parker, Editor

**ON THE COVER...**

Nicola Ball of architects KKA says that as universities face greater competition to attract students from home and abroad, the design of student accommodation is now a big differentiator. See page 9 for more

UNIVERSITY

Medical training facility completed at Nottingham Trent University



Work on a three-storey, specialist training facility for those in the healthcare sector has now been completed at Nottingham Trent University's (NTU) Clifton Campus.

The renovation of existing NTU buildings and the completion of a new building will serve as a base for the Institute of Health & Allied Professions, which offers a range of specialist courses such as adult and mental health nursing and paramedic science. The whole facility is focused on equipping the healthcare providers of the future with the knowledge and hands-on skills required for modern healthcare.

Independent property, construction, and infrastructure consultancy, Pick Everard provided architecture, interior

design and principal design services from concept to completion, working with main contractor Henry Brothers during the construction period.

Devika Parmar, director of architecture at Pick Everard, said: "We are delighted to have provided services for such an important scheme for the university and its healthcare students. We won this project via a competition under the NTU consultancy framework, where we put forward our concept proposals to create a gateway building to the campus that would be visually striking, functional and inspirational for anyone hoping for a career within health services. We're thrilled that the completed building aligns very closely

with our original concept sketch."

With flexibility of use in mind, multi-use spaces have the potential to provide students with fully immersive experiences. The new building also provides a welcoming gateway building to the campus with the external facade treatment and quality materials providing aesthetic interest.

David Shaw, national design director at Pick Everard, said: "The architecture of the new development has been designed for maximum visual impact on arrival to the campus. We wanted to ensure this new addition to an evolving campus would be complimentary but also distinctive both externally and internally."

HIGH SCHOOL

HLM develops concept for a ‘joint education’ campus in Cardiff



Working in collaboration with ISG, Arup and Austin Smith Lord, HLM Architects have developed a design concept for a new ‘joint education’ campus in the Fairwater area of Cardiff.

Following a brief from Cardiff Council, the Fairwater Campus will co-locate three schools – Cantonian High School, Woodlands Secondary Additional Learning Needs (ALN) School, and Riverbank Primary ALN School, onto the Cantonian High School site in Fairwater.

The development will form a “fully inclusive, state of the art campus” for over 2,000 pupils and staff, which will also

offer comprehensive facilities to the wider community outside of school hours.

Cantonian High School will be the largest project delivered under the Cardiff Council and Welsh Government’s Band B Sustainable Communities for Learning Programme to date in terms of scale and investment. The project will “lead the way with its sustainability credentials,” said the architects, with “significantly reduced” embodied carbon during the build stage.

The project team intends it to be the city’s first school campus to be operationally net zero carbon. The architects commented: “To achieve this, the campus has been designed

to be rich in biodiversity and to integrate renewable energy sources.”

Gareth Woodfin, HLM’s Cardiff studio director commented: “As emphasised in our commitment to a more sustainable built environment, we design every project to be as sustainable as possible, and our work on Fairwater Campus highlights this promise, creating an environmentally conscious building that aligns with the climate action expectations of all stakeholders.”

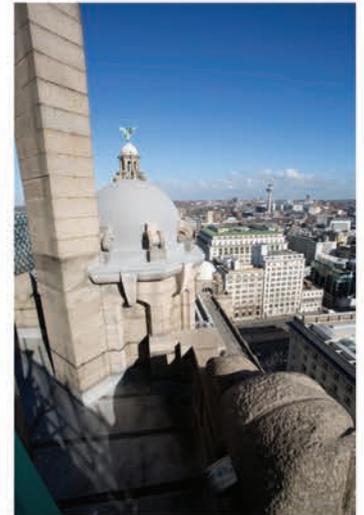
Subject to planning and procurement, work on the new campus is expected to begin in 2023.

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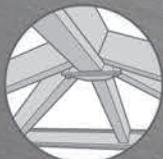
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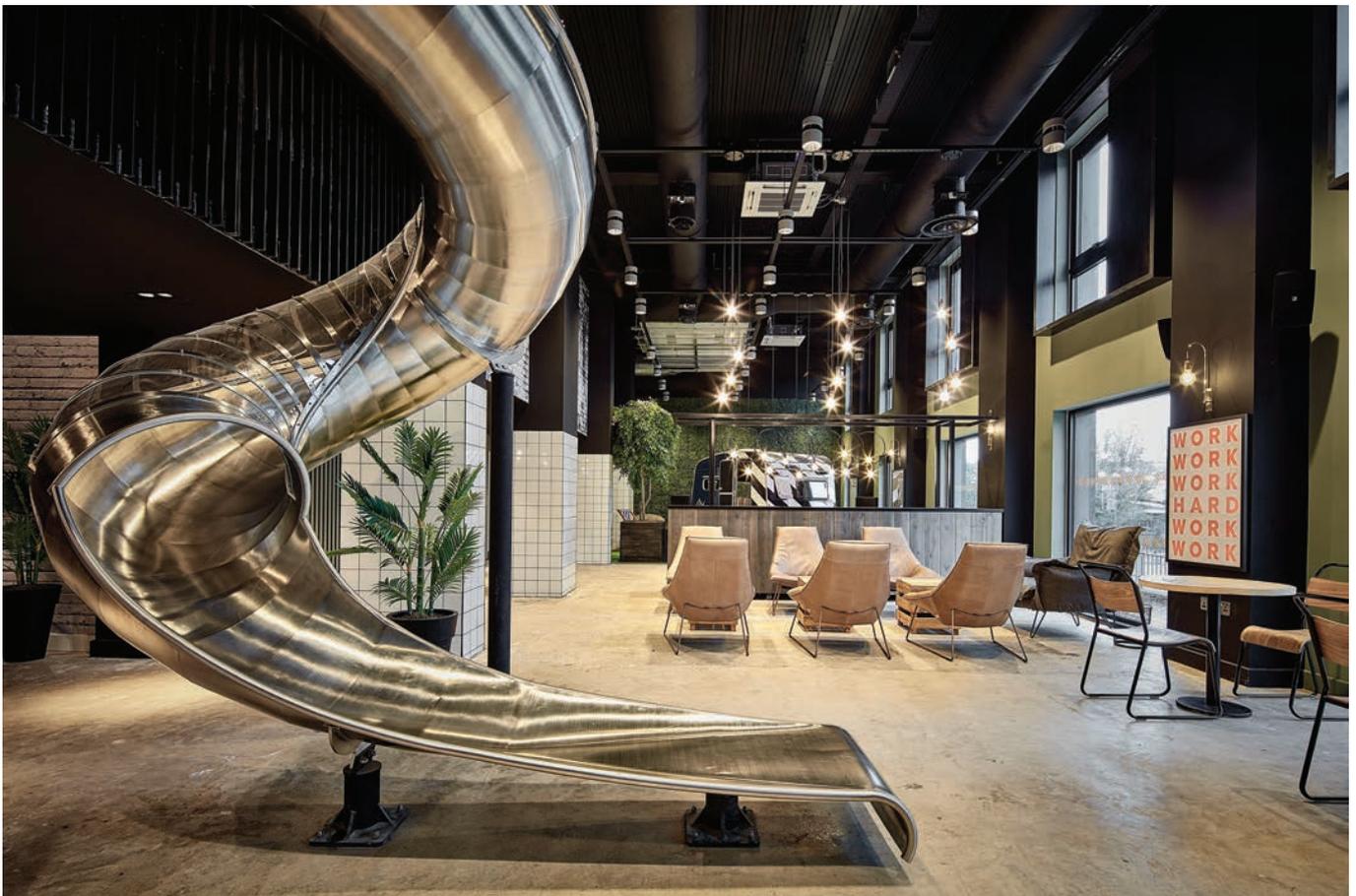
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COMMENT

High-quality student accommodation on the rise

Nicola Ball of architects KKA says that as universities face greater competition to attract students from both home and abroad, accommodation has become an important differentiator, which has led to standards rising across the country



Student accommodation is not what it used to be. The consequences of young people being bundled together in cramped, unhygienic homes has become a thing of the past. While it would be wrong to say the sector has evolved to a universally high standard, today the range of buildings produced now comprises an increased number of high quality co-living spaces.

High-quality living spaces with flexible-living contracts are being offered to students, making them more appealing to UK students as well as the all-important international arrivals.

The interiors team of Liverpool-based architecture practice KKA (KKA I) is currently delivering four student developments across the UK, all set to be opened for this year's student intake.

High-quality student accommodation has an ever-growing list of considerations when designing interiors of its spaces: Specialist facilities, cleanliness, technology, futureproofing, and inspiration, to name but a few. Developers are creating spaces where tenants can both work and play – in a post-pandemic world, creating a one-stop-shop of activity has become paramount, with mental health and wellbeing at the heart of it.



Mental health and wellbeing

The impact of physical space on improving mental and physical wellness has become more important than ever. This is something that – even before the pandemic – was a pivotal element of student accommodation designs. For many students, their time at university will be their first proper experiences away from their home, and how we use design can play an important role in making this important stage feel as safe and welcoming as possible.

For example the last year has taught so many to appreciate the green spaces that are near them, whether that is back gardens or local parks.

Such considerations have already been factored into designs, with architects and designers incorporating biophilic design into their plans for student accommodation – like at the Bricks Development at Salford Quays. Such design is proven to improve mental health, relieve stress plus encourage creativity and connectivity, all of which are key factors in the life of a happy and healthy student.

Cleanliness

Designers of student accommodation have always factored in the importance of cleanliness and hygiene, but the impact of the pandemic means we're now seeing more and more students talking about it too. The fact that student living quarters can be a hotbed of passing on germs is not new. Yet, while there are jokes about

Developers are creating spaces where tenants can both work and play – with mental health and wellbeing at the heart of it

'Fresher's Flu', the pandemic has demonstrated the importance of maintaining rigorous hygiene standards within student populations. It is therefore crucial that accommodation facilities are taking the necessary steps to mitigate the risks.

With this consideration in mind, designers must select materials and furnishings that are durable, robust and can withstand repetitive cleaning. However, creating a considered balance to ensure the overall aesthetic of the development, and students' comfort are not lost, is of paramount importance.

Sustainability

With the continued supply chain shortages resulting from Brexit, interior design teams have continued to prioritise UK suppliers of materials. Not only does this minimise transit times, but also lowers the carbon footprint of the material, making it more sustainable.

At a number of KKA I-designed interiors, local artists have been commissioned to create a statement piece – using only recycled materials – bringing sustainability to the heart of the accommodation. Also, for example at developments by True Student, pop-up events are hosted, inviting local restaurants and artists to educate and inspire students, also encouraging them to buy local and engage with local communities.

Space

Designing communal spaces that are open-plan can encourage peers to collaborate through their studies, socialise more with one another, and even foster creative thinking. It is equally important to have pockets of space for reflection or private study. This evolution of communal areas has created environments that have a scalable interactivity, making it a versatile experience with a strong sense of community.

Each development's interior also draws inspiration from its surroundings, whether it is a biophilic design embracing its environmental roots, 'earthbound' textures, or drawing on cultural inspiration. An example is how the River Street Tower development in Manchester draws from that city's great musical and media heritage.

For many, the student experience is one that shapes the rest of their life, personally and in their studies, and helps form their outlook on the world. It's also increasingly the case that the higher standard of accommodation they're now exposed to during this period will mean they won't want to settle for less in future years. Many will expect similar standards in post-graduation accommodation.

As these tenant expectations continue to rise, more co-living projects are expected to become increasingly common, and we will see the care given to improving student experience transferred into more environments and influencing accommodation types for residential projects for people from all walks of life. With a boom in quality currently visible across student accommodation, this can only be a good thing.

Nicola Ball is associate interior designer at KKA I



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COMMENT

Flexible rooms for future learning

Neil Miller from QIC Trims looks at how the flexibility needed in modern education environments can be achieved by specifying glass partitions, meaning that teachers can be relieved of the need to alter the contents of a space



A glass partition's ability to transform a room without altering its fabric or fixtures and fittings makes it ideal for schools where interior designs are regularly reconfigured in order to suit particular classes or events.

By allowing such a fluid approach to the reimagining of learning spaces, alterations can be carried out rapidly and cost-effectively. This is a highly important outcome for educational settings, where budgets are often tight and every penny has to be accounted for.

Sight & sound transmission

Glass partitions allow more privacy, bearing in mind that concentration levels have to be at their highest during study time.

However at the same time their transparency avoids alienating students from their surrounding environment.

At all other times glass partitions help maintain clear lines of communication. The learning process is severely impacted by tutors not being able to make themselves sufficiently heard or understood due to exterior noise interference. It could also create a safety issue. Therefore, good acoustic performance should be given high priority in glass partition selection. A quality fixed single or double-glazed system will provide up to 50% noise reduction, thus screening-out disruptive airborne sounds and allowing students to fully focus on the learning activities at hand.

In a recent project, double-glazed partitions featuring mullions

and transoms with external face-applied bars were installed throughout four floors of a school library. The system was specified due to the acoustic rating it was able to achieve using 12.8 mm x 12.8 mm acoustic laminated glass, a drop-down seal on the framed glass doors, and a +/- 25 mm deflection head.

Inspiring glass partitions

The project revealed another advantage of installing glazed partitions in educational settings, namely the aesthetic they lend to spaces. It's often said that people are a product of their environment. Therefore, if places of learning present a smart, professional look courtesy of a well-appointed glass partition scheme, it's more likely students that will respond accordingly.

The additional natural daylight afforded by partitions provides another boost for occupant wellbeing. In research carried out in the U.S by Professor Alan Hedge of Cornell University, the study revealed a significant drop in incidence of eyestrain, headaches and drowsiness in workers in offices which are filled with natural daylight. Transpose these findings to a learning environment, and it becomes clear how similar conditions could benefit students in terms of mood and concentration levels.

Although not a 'headline' consideration, when specifying glass partitions for schools, it's worth remembering that they can be lively places when catering for hundreds of students of different age groups. This means that glass partitions in classrooms, even where occupants are seated for the majority of the time, should be specified for a certain level of robustness. As part of this, for the safety of students and the integrity of the structure itself, investing in a glass partition that meets up to date standards for loadings is essential.



Conclusion

Although there are a number of standout reasons for specifying glass partitions for schools, they are available to suit a wide range of needs in terms of cost, design and performance. Available in either straight lined or faceted forms, single and double-glazed systems offer a practical and innovative solution for the smart and discreet division of interior space.

Neil Miller is sales and marketing director at QIC Trims





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BUILDING
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**STEAM ACADEMY
 BRIDGEND COLLEGE**

Dawn of the STEAM age

A groundbreaking further education building in Bridgend, south Wales, integrates ‘art’ into the established STEM typology to make STEAM. It also combines a range of open workshop spaces alongside traditional classrooms, as James Parker discovered

The concept of bringing together Science, Technology, Engineering and Maths in technology and practical learning-focused further education facilities, transferring skills across these related disciplines, is now well established. However a new tweak on the idea has brought so-called ‘STEAM’ facilities to the fore. The ‘A’ stands for ‘arts,’ the idea

being to ensure a rounded education for 16-18 year olds, with the emphasis being on creativity and innovation.

A STEAM Academy – totalling 8,500 m² – has recently been completed for Bridgend College at its campus in Pencoed, just east of Bridgend in south Wales. The building was designed by established Cardiff-based practice Rio Architects, and is their first



major project with the college, and first encounter with the ‘STEAM’ concept. The two-storey, £2.5m facility includes workshops for car and other vehicle maintenance, welding, M&E, pneumatics, CNC cutting facilities, and laboratories as well as the more traditional range of classrooms, staff areas and break-out social spaces.

The design also enables a forward-thinking approach for the college, including bringing teachers together to enable collaboration across disciplines, aiding efficiency. Connection is a big theme behind the project – it is designed to give students a feeling of openness but also connection – with copious glazing employed internally to visually connect workshops with classrooms. It’s also a building carefully designed to connect and blend unobtrusively with its richly landscaped existing setting, which doesn’t impose itself.

The project’s initial impetus came from a drive by the college to better connect with local businesses. The college, in line with Welsh Government priorities, wanted to enhance its existing STEM offering, and collaboration with local industry, by creating “real work environments.” Being located next to the

‘Digital Creative Cluster’ within Pencoed Technology Park meant that it could develop closer working relationships with both large and small companies.

Procurement & brief

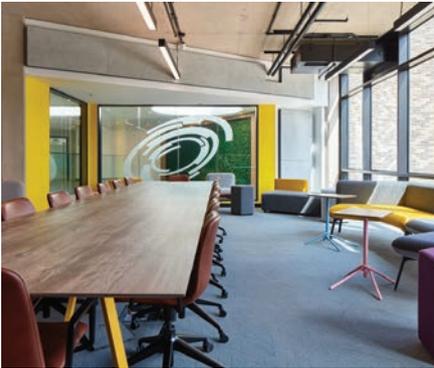
The architects’ involvement began when they were asked to do a feasibility study for a new building on the campus. The project would be a Design & Build, via a local education framework, NPS (since renamed DPS), led by Mott MacDonald.

However, benefitting the design, the architects designed the scheme to Stage 4 with the client, before it went out to tender. Project architect Andrew Baker comments: “For me, Design & Build works when you design up to Stage 4, with the client’s requirements. I don’t think it works when the contractor takes over at Stage 2; they’re not really pricing anything accurately because the designs are incomplete, prices are based on outline information only, the contractor then finalises the design process with a bias to reducing costs and risk, to the detriment of the design quality.”

The college wanted to relocate existing ‘specialist’ further education facilities – requiring specialist design treatment – such as car mechanics, from its Cowbridge

“It needed that kind of maturity, but without looking like a building on a business park”

Andrew Baker, Rio Architects



GREENING INDUSTRY

The building's open reception area combines an exposed industrial feel with a green wall, plus a screen displaying electricity generated by solar PVs on the roof

Road campus. However it also wanted to make some new additions as part of the STEAM remit. The architects carried out “extensive” surveys of the existing facilities and specialist equipment early on, in order to closely model the equipment they'd be needing to house. They also fully investigated the working practices of college tutors, to make the new facilities as efficient as possible.

Baker says that this approach was highly beneficial, and offset imminent design challenges, “as more people became engaged with the project from the client side, with their preferred teaching or operational methods.” The ‘A’ part of the STEAM equation didn't however add too many design challenges in terms of new spaces. Baker explains that the ‘arts’ elements integrated here were generally manifested in the form of rooms where filming and production could take place, to help publicise the college's activities, and included ‘green room’ facilities. In addition, there's a large conference room, with retractable tiered seating and acoustic treatment for performances and presentations, plus a substantial lighting gantry.

There were some challenges around the client's remit moving during the briefing, expected in an emerging typology like

this. Certain areas of the curriculum were expanding, like the car mechanics teaching function (including one large workshop for training in maintenance of electric vehicles). As a result, client expectations were evolving as the architects were designing the project. “It was one area where there was a bit of uncertainty – as we were designing the curriculum and the brief was evolving.”

Baker cautions that if a project is a Design & Build such as this, “Once the contractor's on board, changes in the design can be expensive. It's critical to have a thorough briefing and design process.”

Where the college wanted to make a tweak on traditional teaching methods, with the help of the design, was to “integrate break out spaces” throughout the building. These would facilitate “more experimental learning methods,” i.e. flexible approaches to using the space, “alongside the traditional classroom formula.” Well-suited to more practical, task-based learning, this means that students can separate and perform a particular task in a break-out area, then come back to the classroom.

With the project having a finite budget, the smaller break-out spaces allowed for a reduced number of traditional classrooms below that in the original brief, and so a reduced overall GIA. This was “a bit of



a gamble for the college,” says Baker, in the hope that the break out spaces would provide sufficiently for the curriculum.

Transparent transformation

The pre-existing provision for STEM teaching was of a poor standard, characterised by “old workshops, leaky roofs, no insulation,” and were “spread” across different buildings. They were also “dark and dingy,” often windowless spaces, says Baker; “unless you went in, you wouldn’t be aware of any engineering activities.”

There was a further, key aspect to creating open, welcoming and bright new spaces, compared with the previous offerings. That was to make them feel more inclusive, and less intimidating in the hope of attracting more female students into the engineering industry, and “dispel the dirty, male-dominated environments” that characterised the previous workshops, says Baker.

The client’s drive to have a building with a strong, visible presence, included a transparency to enable visitors and students in classrooms to see what was going on in the workshops.” This also raised a “big challenge,” namely that in making all of the engineering facilities “open and visible,” the architects had to balance this against the

functional urge to close spaces off for fire and acoustics reasons. But in the end, the architects were determined to harness the benefits of good design to help inspire all of the college’s students, “and hopefully enjoy being in a great building.”

A collegiate aesthetic

The design is described by the architects as “sober, robust and confident,” and one which seeks to defer to its rural context, but also, the extensive landscape of mature trees surrounding it. Another example of a balance the architects were keen to strike was the overall ‘collegiate aesthetic’ they were aiming for, as well as the more self-explanatory ‘crisp detailing.’ Baker explains the ‘collegiate’ aspect as offering a sense of academia, without overdoing the formality, while also not being too patronisingly ‘young.’ He says: “It’s for young people, but we didn’t want it to be too playful, or childish. By the same token, it’s got to be formal, but not corporate.” Baker adds: “These are people who have put school behind them and are going into the adult world. It needed a certain level of maturity, but without looking like a building on a business park.”

The facades have generous areas of glazing ‘where appropriate’ but also the necessary solar shading to mediate this.



WORKSHOPS

The large workshops have an exposed steel frame, unlike the concrete that forms the rest of the structure, due to the need for 35 metre spans

External facades show the ‘collegiate’ aspect expressed in “robust and industrial materials with warm tones and textures,” and “well-considered proportions.”

As per the intention, the buff-coloured brick facades (Michelmersh Synthesis S09, Light and Mid Grey 50% blend) give a sober, unassuming feel; aside from the surrounding trees, there was little architectural context in the nearby buildings to respond to. The workshops, which are to the rear, have a “calm” black cladding formed in a pyramid profile.

“We wanted a building that had a confident design, but which wasn’t too shouty, one that settled into the landscape,” says Baker. There is one striking detail, i.e. an orange-hued aluminium ‘picture frame’ surrounding a number of windows. This gives the building a subtle presence behind the trees; “When approaching from a distance, you sense there’s a building of note.” However, the long, low horizontal form sits below even the shortest trees surrounding it, so it’s “very much a building within the landscape, and doesn’t dominate it.”

An exposed concrete frame, offering the benefits of thermal mass, has been used for most of the structure, and runs throughout the general teaching spaces. The large workshops however have an exposed steel frame as they require much greater open-plan space – meaning long spans up to 35 metres. The architects say that this approach, alongside exposed

services “creates a bold aesthetic that reflects the building’s engineering environment, as well as passively enhancing the environmental performance.”

Programme & interiors

The volume is organised over two levels, but includes several double-height spaces, from the six large workshops, to the conference room for up to 200 people on the ground floor, and parts of the reception. Classrooms and circulation spaces are located on the upper floor, looking down into the workshops through glazing which controls noise.

The classrooms project into the workshop void, framed in orange, a feature that visually connects back to the exterior. Some of the classrooms are also glazed to the internal circulation, so that walking down the corridor you can see through the classroom to workshops beyond. This was “challenging with noise breakout,” says Baker, “but the whole building works really well acoustically.”

According to the architects, “the internal environment balances comfort, robustness, connectivity, privacy, accessibility, security, an open collaborative environment and quiet study areas,” Meeting these challenging and diverse end-user requirements was part of creating an “uplifting educational environment.”

While the client was keen not to have a capacious, space and heat hungry atrium, they did want to experience a sense of

arrival in the building's reception, so there's a two-storey green wall, and the social breakout spaces above look down onto the double-height spaces. The architects created a clever circular aperture above the voids cut into the plasterboard, beneath a standard square rooflight, adding a "sense of elevation" to the space.

The client wanted the spaces to give users a sense of being connected to a 'greater whole,' so that the individual classes or disciplines would not feel cut off from the rest of the building. "So if you were sitting in a classroom you could see into the workshops, and vice versa," says Baker. We wanted students to "have a sense of being part of a wider learning environment."

Flexible spaces

The architects provided great amounts of flexibility to the workshops, as "to be able to alter the space was really important to the client, as they don't know how the curriculum may evolve over the coming years."

The workshops are "one big open shed, basically," but they have storey height stud wall partitions to provide acoustic protection. Easily demountable, workshops can be enlarged or subdivided as required. There is one full-height partition, to cut off the particularly disruptive levels of noise from the mechanical workshops.

Some of the glazed classrooms, for example those overlooking the car maintenance area, have two 'skins' of double glazing, with a "big gap" between, and the final part of a belt and braces solution being a twin wall consisting of concrete frame and metal stud and plasterboard beyond, plus insulation, "just to achieve the acoustics we needed to." This obviously came at a cost, but, the final build cost was circa £21.8m (under 2,800/m²), therefore within budget, and no value engineering required.

Baker comments on the successful procurement when it came to the subcontractors: "We provided a really robust set of information at Stage 4, the contractors knew what they had to price, and they all came in relatively close. The contract was tendered on mean cost."

Landscaping & sustainability

The architects used their own landscaping consultant, but involved the college's horticultural department in the design and physical planting of the site, which contributed towards their curriculum.



On the 4,500 m² roof there are 3,000 m² of PV panels, and data on the electricity generated is on constant display in the reception area. There is greywater recycling and the concrete is contributing to the passive control of the internal temperature.

Conclusion

Bridgend College fully embraced the concept of the flexible break-out areas to provide for new ways of learning and fully supported the design team to create these environments within the final designs. However, the team was relieved to discover that things have gone according to plan, and these spaces are very well used and enjoyed by staff and students.

Baker says: "When we revisit the site, all of these spaces are really well used, there are always people and groups in them, whether for social or structured learning." Class-based teaching still forms a large part of what the college does on the campus, but students have also embraced the flexible spaces naturally, whether doing tasks alone, or collaborating."

A vast improvement on the college's former STEM facilities, and a highly successful example of Design & Build for the architects, this building represents a transformation in the students' experience, to a much more inclusive one. Rio Architects' design has been validated by their "extremely positive" feedback received so far since the building opened to students in September 2021. ■

"For me, Design & Build works when you design up to Stage 4, with the client's requirements"

Andrew Baker, Rio Architects

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Turning up the heat in the classroom

Heating is always a key consideration in any educational setting. Chris Harvey at Stelrad Radiator Group looks at the benefits of low surface temperature radiators as a safe and effective heating option



In recent years funding has been available for heating system upgrades in existing establishments and there has been a plethora of new build opportunities up and down the country where either traditional boiler driven heating systems or increasingly, new low temperature renewable heating systems have been installed. But whatever the driver, the end product has to be reliable, effective heating to keep staff, pupils and students warm during the colder months of the year.

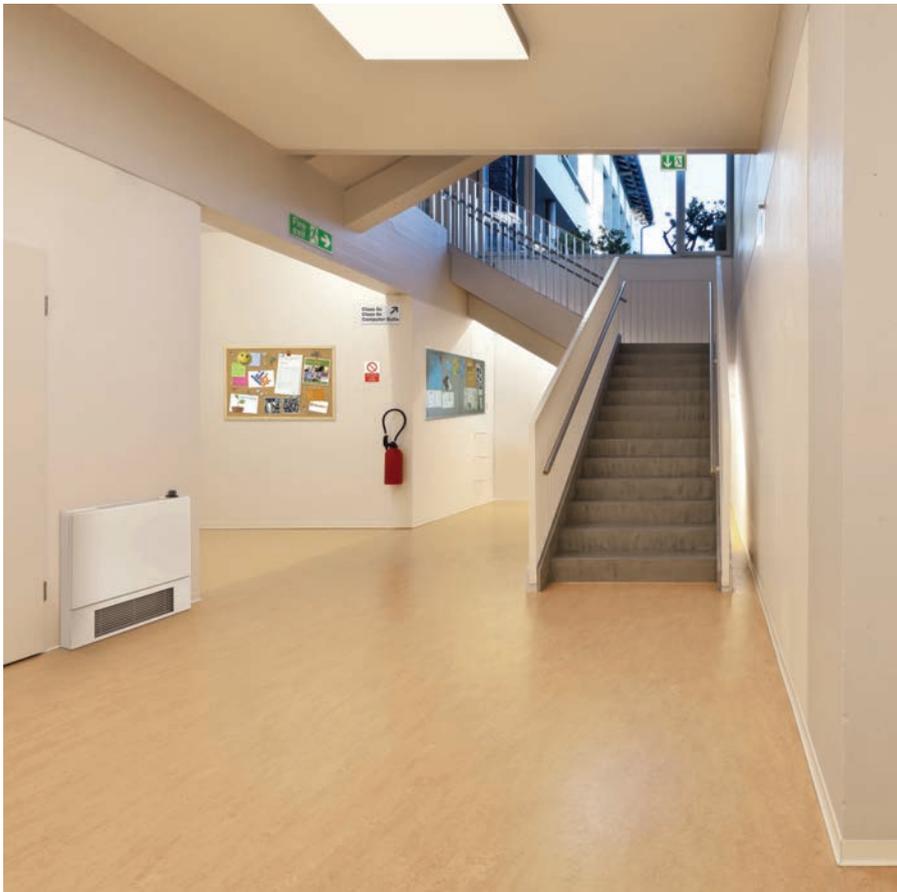
Despite the advent of underfloor heating and other forms of heat provision, radiators have been the 'go to' option for the vast majority of these opportunities. Tried and tested technology, easy to install, they offer a straightforward and easily recognised

option for most heating systems and modern radiators offer a level of reliability that is key for heating systems that have to work, day in, day out.

If radiators are sized properly for the rooms and spaces they have to heat, they will deliver the heat required – whether the heat source is a commercial boiler or a commercial heat pump – air source or ground source.

Radiators come in a huge range of shapes and sizes and increasingly in a wide range of styles as well. And while many schools, colleges and universities have selected designer or decorative radiators, the biggest trend in recent years in the education sector has seen the rise of the low surface temperature radiator (LST radiator).

LST radiators are the perfect solution for educational buildings and it's no surprise that they are also becoming standard specification for many other public buildings



LST Standard radiators have the benefit of being able to maintain a relatively low surface temperature, meaning they are much safer than many other radiator models that retain a hotter exterior when they are in use

An LST radiator is quite simply a standard heat emitter that comes with a safe insulative, flat panel casing on its exterior, allowing for piping flexibility, with the benefit of being reversible if you so desire. Along with the benefits of accessibility and overall safety LST radiators are made to last, which is why this product usually comes with a 5-year warranty on its casing, and a 10-year warranty on the heat emitter itself.

LST Standard radiators have the benefit of being able to maintain a relatively low surface temperature, meaning they are much safer than many other radiator models that retain a hotter exterior when they are in use. The beauty of an LST Standard radiator is that the risk of getting burnt is dramatically reduced; these radiator casings will never have a surface temperature of more than 43°C, meaning a child that comes into contact with one will come to no harm.

LST Standard radiators are the number one choice for safety, making them ideal for environments such as nurseries, schools, children's playrooms and anywhere where a vulnerable or young person might be

ever-present. LST Standard radiators align with NHS guidance for 'safe hot water and surface temperature' and are finished with antibacterial paint for extra protection.

LST radiators are the perfect solution for educational buildings and it's no surprise that they are also becoming standard specification for many other public buildings that require a level of safety to be built into the sharing of heat – including care and nursing homes, sheltered housing schemes – and in buildings which are used by vulnerable people of all ages who may not have the levels of awareness needed to recognise the heat that normal radiators reach – up to 80° – or be able to feel the heat immediately until after they have received a dry burn that can be catastrophic to their health. Many LSTs not only protect the heat emitter but also protect the incoming and outgoing pipework so that there is no possibility of the people in its vicinity being able to get burned by the heat from it.

While LSTs are a vital option for architects and building designers looking to build safety into their buildings, there are other options available and being used in educational buildings up and down the country, but mainly in those buildings being used by older students.

Some school projects have seen the use of another special application radiator available today – heavy duty radiators that have been designed to be more robust in the face of use in an environment where contact is likely. They have been selected for a number of school projects – where it's anticipated the radiators may not always be treated with the highest respect! It's a high-end specification product built to withstand high impact, yet it retains its high heat output while remaining price competitive. For installers, piping connections are exactly the same as for a normal radiator. This robust version comes with a 3.2 mm combined thickness, tough outer steel fascia to provide additional protection where the radiator is used in an environment where there is a need to take knocks in its stride.

If you need to find out more about radiator specification for educational buildings and want to find out more about LSTs in particular, there are CPD programmes available that take you through the details of the products and where they are appropriate for use that you can take online.

Chris Harvey is head of marketing from Stelrad Radiator Group

Learning through design

Rainscreen cladding systems are enabling architects to move away from the traditional school building design to create structures that inspire a new generation of students. Simon Gregory from Proteus Facades looks at the issue in detail

School buildings have evolved dramatically over the years as architects move away from traditional bricks and mortar. Instead, they are opting for materials which allow creation of more engaging structures that both stand out and positively impact teachers and students.

Various studies and reports carried out over recent years have found that the overall design of a school building can have quite an impact on a student's ability to learn, their attainment, aspirations, and ultimately academic performance. The RIBA Better Spaces for Learning report for example states that "school buildings have a significant and positive impact on pupil behaviour, engagement, wellbeing and attainment and on staff productivity, with the most comfortable and well-designed facilities demonstrating a 15% overall increase."

In addition, the University of Salford has found "clear evidence that a well-designed school can boost learning progress in reading, writing and maths"; as part of the 'Clever Classrooms' study, a summary of the HEAD Project by Professor Peter Barrett.

As such, architects are recognising that the design of a school is extremely important and should incorporate plenty of space, creativity and colour, among other key elements. Some studies conducted in recent years have also cited that the design of the external learning environment can have a substantial effect on imagination, security, and play quality of pupils.

In line with this, modern rainscreen cladding systems have progressed to a stage where they now provide architects and designers with the freedom to create aesthetically pleasing school buildings that improve the overall teaching experience for pupils.

Take the new Corfield Building at St Albans School in Hertfordshire for example. In recent years the school has experienced a consistently increasing take-up of science, technology, engineering and



mathematics (STEM) related subjects by pupils. However, it was found that there was a lack of existing, fit-for-purpose space to house and support the growth and teaching of these subjects at the school.

The building replaces a now demolished wooden cabin-like structure to address this need. Designed by PHP Architects and developed by Borrás Construction, it includes a bespoke two storey maths facility on the upper ground and first floors along with a Combined Cadet Force (CCF) shooting range and office space within the lower ground floor. A key requirement for the design of the new structure was to ensure that the outside aesthetics showcased the state-of-the-art facilities within and the leading reputation that the school has for its STEM programme.

To achieve the required aesthetic and taking inspiration from the old black boards and white chalk used in schools many years ago, PHP Architects specified

Architects are recognising that the design of a school is extremely important and should incorporate plenty of space, creativity and colour amongst other elements



It is clear that the external aesthetics of school buildings and how they are developed moving forwards will continue to evolve

bespoke back-painted glass cladding panels with a unique, screen-printed monochrome mathematical design.

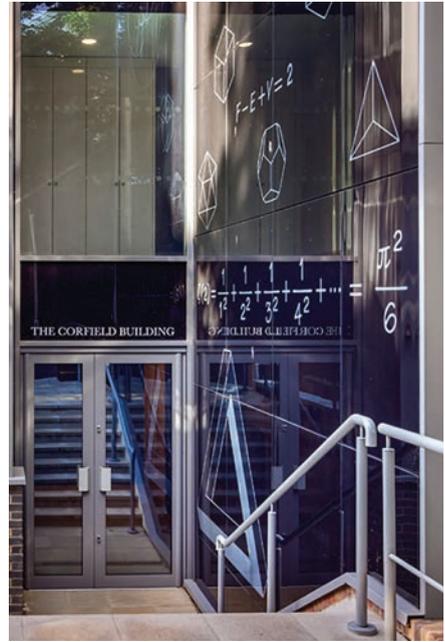
The glass was fabricated with a two-layer digital screen-print effect. An initial white application was applied, with a CNC control printing of the mathematical symbols. A solid secondary black back-painted layer was then added to create the black board effect.

Colour is key

As well as incorporating creative designs and imagery to support learning, colour is an important element. Different colours can often generate different impacts on students' emotions and mindsets during the school day.

Red for example is a stimulant that can help to provoke conversation; improves performance/concentration and spurs action, while green is known to offer calming effects and reduce stress. The use of the colour yellow and its varying shades, including gold, is also a common colour in schools as it is found to be beneficial to learning as it creates a positive feeling in pupils and is optimum for maintaining attention and encouraging creativity.

This is a factor not lost on architects BDP who in 2019 designed the Mulberry Park Community Hub with an eye-catching and equally functional gold facade. The £10m building, commissioned by housing association Curo, sits at the heart of Mulberry Park, the renovation of the former Ministry of Defence site on Fox



Hill in the village of Combe Down on the southern fringes of Bath.

The development features perforated gold cladding panels, manufactured from a mixture of copper and aluminium, on the school hall and the third floor, cantilevered above the main entrance and Public Square. Complementary solid rainscreen cladding panels, also in a gold finish, feature at ground floor level, adding structure and providing an aesthetically pleasing, hardwearing layer that both benefits the learning and play of pupils and protects the building from the elements.

Summary

Both St Albans School and Mulberry Park feature distinctive facade designs that not only stand out but also benefit the pupils and support their learning. They are clear examples that the look and feel of the external areas of a teaching environment are just as important as the internal spaces.

With building design having an impact on a student's ability to learn, and the benefits of integrating colour and creativity into all teaching spaces, both inside and out, it is clear that the external aesthetics of school buildings and how they are developed moving forwards will continue to evolve. As such, we expect demand for innovative rainscreen cladding that can help to create both functional and striking structures to continue to rise.

Simon Gregory is sales director at Proteus Facades

Natural choices for education ventilation

Karen Scrace of Passivent helps specifiers of education environments to choose between a natural or hybrid ventilation strategy in order to provide the right healthy environment for students

Maintaining a good supply of fresh air within any communal space is not only important to help control internal temperatures and CO₂ levels, which in turn aids concentration, but in this new post-pandemic world, it's also essential in removing potentially harmful pathogens carried in exhaled breath. Older school buildings have highlighted the need for all new educational facilities to have a robust ventilation strategy in place and one that is ideally addressed at the design stage.

Making the grade – ventilation regulations and compliance

All new or refurbished schools in the UK have to comply with Building Bulletin (BB) 101 which provides guidance on ventilation, thermal comfort and indoor air quality. Projects must also comply with the necessary Building Regulations, including new stricter targets on ventilation as outlined in Part F, conservation of energy as outlined in Part L, and the acoustic requirements set out in Part E. Additional guidance on the acoustic design of schools is also detailed in BB93.

A ventilation system should ensure comfortable temperatures within the occupied zone, provide sufficient fresh air to occupants and, in winter months, avoid draughts and minimise heat losses. Schools must also be thermally modelled to prove that they will not overheat.

Close attention should also be paid to the daily average CO₂ levels within a room, as poor air quality is detrimental to both wellbeing and learning. As a rule, for natural ventilation systems or hybrid ventilation systems operating in passive mode, these levels should be less than 1500 ppm during the occupied period and not exceeding 2000 ppm for more than 20 consecutive minutes each day. For mechanical ventilation systems, or



when hybrid systems are operating in mechanical mode, these levels should be 1000 ppm during the occupied period and not exceeding 1500 ppm for more than 20 consecutive minutes each day. A system should be designed to achieve a CO₂ level for the majority of the occupied time of less than 1200 ppm for a new building (criterion for a category II building).

Maintaining a good supply of fresh air is also essential in removing potentially harmful pathogens carried in exhaled breath



Schools must also be thermally modelled to prove that they will not overheat

Care must also be taken in terms of how ventilation systems can influence the acoustic performance of a school building, and must comply with the guidance set out in BB93. Classrooms should be designed to ensure that the teacher can be heard, and that learning is not affected by the ambient noise in the room. In standard new-build classrooms, the upper limit for the ambient noise level is 35 dB with a tolerance of 5 dB for natural and hybrid ventilation systems. This can be increased to 55 dB for the hottest 200 hours of the year to allow fans to run harder.

The natural choice

Natural ventilation is ventilating an internal space without using fans. Systems rely on a number of natural forces such as external-to-internal temperature difference, wind pressure and buoyancy (essentially the force that makes warm air rise). As a result, systems are less energy-intensive, and also require minimal maintenance. Natural ventilation is a widely accepted strategy for schools, and can bring a number of benefits, but it has to be considered at an early design stage to allow for cross flow of air, stacks and general planning of air paths and circulation throughout the building.

Fully naturally ventilated spaces can achieve BB101 compliance by tempering the incoming air. This can be done using a heating coil, or by placing inlets behind radiators.

As well as operational benefits, naturally ventilated spaces are widely accepted as being preferable places to work and study, with the fresh supply of air helping to

keep CO₂ levels low, and reducing both pollutants and pathogens. As there is no mixing of stale room air, natural ventilation can boost health and wellbeing and can play an important role in minimising the spread of viruses such as Covid-19.

The passive nature of this type of ventilation also means there is no disturbing noise from fans, so acoustic requirements can be successfully met.

The hybrid choice

When a project will not lend itself to a fully natural ventilated system or when particular classrooms need an individual solution, hybrid ventilation provides an effective compromise. These systems feature low power consumption fans but have different settings that can be controlled and used only when needed. Importantly, this includes a passive mode so that for the most part, they can still offer many of the key benefits of natural ventilation.

For example, the system can be set to supply fresh air during the day via natural ventilation but can provide a 'boost' when CO₂ or temperature levels increase. They also provide a 'mixing' function so that incoming air can be combined with room air to avoid cold draughts in the winter. Hybrid systems can also include heater coils which can be used as a primary heat source in the space. Fully BB101 and BB93 compliant, hybrid systems are well suited to modular buildings and extensions where classrooms are ventilated independently.

Breathing new life into supply chain collaboration

From large sports halls and atriums, to individual classrooms and specialist areas such as science laboratories and ICT suites, each area of a school will require a different ventilation strategy. There will be times when natural or hybrid ventilation systems may not be suitable and a mechanical strategy may be a better option, or it may be that a combination of both is required.

It's important to make the most of all available resources to bridge the 'performance gap' between how ventilation strategies are designed and how they work in practice. As an early and considered approach is needed, it's well worth tapping into the expertise and technical knowledge of a natural and hybrid ventilation specialist to help create better educational buildings and healthier spaces.

Karen Scrace is product manager at Passivent



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Sound advice for educational settings

Nigel Watkins of Rockfon shares some thoughts and guidance on specifying acoustic ceiling and wall solutions to help create the ideal conditions for successful study

Schools and places for education are no longer where students simply sit in rows in front of the teacher. Today, it is based on active engagement in different settings where interaction is encouraged and communication is key.

Whether you are designing a new state-of-the-art facility or renovating an existing school, it is crucial to get noise control right; if it is not controlled properly, it is

likely to impact educational outcomes, with significant long-term consequences.

Consequences of excessive noise in a learning environment

A wealth of academic research has been carried out in America and elsewhere, looking at the impact of sound on both students and teachers. Here are some resulting statistics: of students asked what

most disturbed their learning, 77% said noise; an American study found for every 10dB increase in noise pollution, eight to nine year-old students performed 5.5 points lower on their National Standardised test; 50% of teachers suffer irreversible vocal damage from talking loudly to make themselves heard; another study of 21,000 students showed those with greater access to natural light had 26% higher reading levels and 20% higher maths results.

The Lombard Effect or Lombard Reflex is a common phenomenon which often occurs in noisy spaces with poor sound control, which is an involuntary tendency of speakers to increase their vocal effort to enhance the audibility of their voice. It has a negative influence on the physiological and psychological wellbeing of students and teachers.

The challenge of different spaces within schools

In addition to classrooms, a modern school is likely to encompass a library, offices, spaces for performance and social assembly, sport and recreation, kitchens, a dining hall, hallways for multifunctional breakout spaces and perhaps even a swimming pool – all within one site.

Controlling acoustics in each of these areas takes expertise and provides an opportunity to embrace specialist systems and technology. The right acoustic ceiling and wall solution can go a long way to alleviate the negative impacts of unwanted noise and help create the perfect setting for successful communication, concentration and learning.

Technical & sustainability advice

Look for a manufacturer with the technical expertise, experience and range of specialist acoustic ceiling and wall systems that can solve the challenges within these multifaceted spaces. Having one provider for complex projects means one point of contact for technical and sustainability advice.

Whether your aim is to achieve credits or points for the BREEAM, LEED or WELL Building Standard voluntary rating schemes, or looking for a supplier committed to a more sustainable future via Cradle-to-Cradle Certification, your chosen manufacturer should help navigate your options. They should also offer a free sample service and online resources including sound calculations, product sustainability certifications, instruction videos, and a comprehensive BIM library.



Solutions that sound & look good

White wall-to-wall suspended ceilings have been the go-to option for schools for over 50 years and today remain cost-effective, practical and functional. But there are plenty of alternatives.

Designers have a powerful tool in applying colour and colour psychology in school situations to support a child's development. Established research suggests that each colour can influence us on all levels; physical, cognitive and emotional. Greens are relaxing, blues encourage us to think outside the box and be creative, yellows are uplifting and so on. Acoustic ceiling systems are now available in a wide variety of colours.

Acoustic islands or baffles are sometimes preferred to a traditional suspended ceiling. A wide range of versatile acoustic baffles are available in many formats and can be installed in a number of ways, including fixed directly to the soffit. Elegant, frameless islands are another popular option. Hung from wires, appearing to float, they are also available in many shapes and colours.

Sports halls make particular demands



on the materials used in their ceilings and perhaps walls, to control noise. Here, the grid, ceiling tiles and wall panels need to be highly resilient and impact resistant in addition to offering good sound control. The same goes for other high traffic hotspots such as hallways, where crowding can cause transit noise and physical impact.

Sound control is important around pools, changing rooms and food preparation areas for obvious reasons. But they also exhibit high humidity. Using acoustic ceiling and wall solutions designed specifically with these spaces in mind is key, as humid conditions can cause dimensional instability leading to warping and breakage. Warm, damp environments can also be a breeding ground for bacteria.

Stone wool is used as the core material in superior acoustic ceiling and wall systems. It's volcanic rock that is virtually non-combustible, largely impervious to humidity and offers no sustenance to bacteria. It's also recyclable and can be upcycled into new insulation products, offering great advantages in reducing a building's ecological footprint.

Nigel Watkins is sales director of Rockfon for the UK & ROI

Benchmark at key regeneration project



Sparrow Farm Drive in Feltham comprises of socially rented family homes for local people. At the centre of the project is a large new communal garden. **Benchmark** were contacted to supply a number of stainless steel benches giving the residents somewhere comfy to congregate. This was a crucial part of the

development as a key ambition was to help create a sense of community and emphasise healthy environmentally-friendly living. The new BL003 seat in 316 stainless steel offers fantastic value along with great longevity. This product will become a staple in the Baseline Street furniture range.

0117 904 6561 www.benchmark-ltd.co.uk

Cut unnecessary use of energy in rooms



Prefect Controls has been designing and manufacturing heating and safety controls for student accommodation since 1997. Iirus monitors room conditions, and controls water heating via data that is transmitted to a portal. Managers log on via the internet to review/adjust settings remotely. Ecostat2 is similar, but timings

and temperatures in each room are programmed using a dedicated handset. Both systems enable occupants to control their comfort, but only within set temperature and time parameters, avoiding unnecessary use of energy and making savings of 30-40%. HobSensus prevents hobs from being left on should the person preparing food be distracted.

01787 320604 Prefectcontrols.com

HeartFelt range specified for project



An award-winning refurbishment at Birkbeck, University of London, has breathed new life into an almost 100-year-old building – and **Hunter Douglas Architectural** helped to bring it into the 21st century. Architect Gibberd Partnership specified Hunter Douglas to supply 568 m² of its

HeartFelt range for a number of ceilings in the teaching rooms and in the reception. A modular linear felt ceiling system with unique design qualities, it is made from Cradle to Cradle bronze-certified felt and is a sustainable choice as it is 100% recyclable or easily reusable. The range is available in five grey tones and five earth tones.

01604 648229 www.hunterdouglasarchitectural.eu/en-GB/ceilings

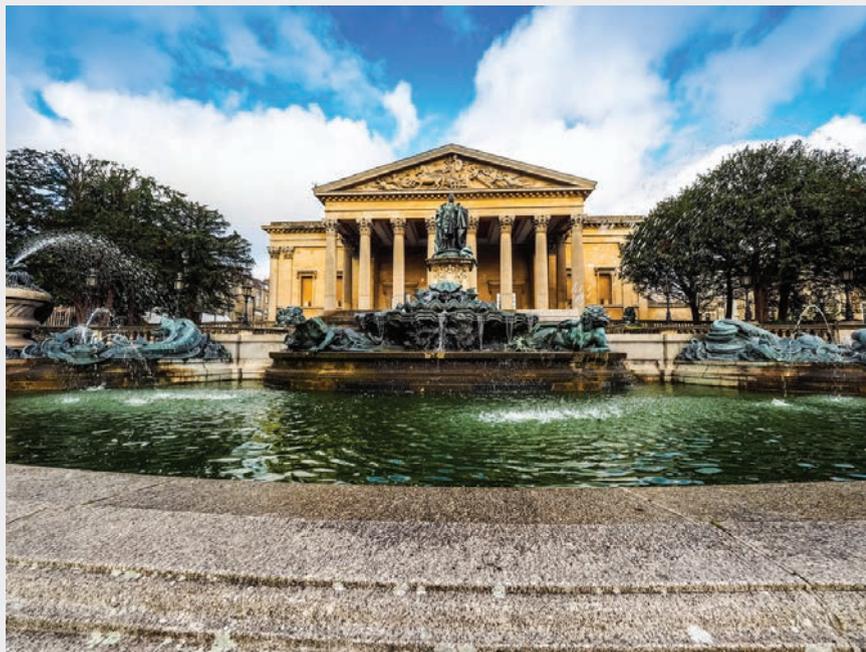
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Advanced Lights the Way at University of Bristol



The University of Bristol has upgraded its emergency lighting with the installation of a further ten LuxIntelligent emergency light testing panels from Advanced. The new equipment has been installed alongside 21 existing LuxIntelligent panels linked to around 4,500 light fittings, to ensure ongoing compliance with the BS 5266-1 code of practice for the emergency lighting of premises.

The LuxIntelligent panels have been retrofitted across a range of university buildings, including seven halls of residence. They were chosen for their versatility and ease of use when replacing outdated emergency lighting on existing sites, allowing significant time and cost savings to be achieved.

A variety of LED luminaires have been chosen from the wide LuxIntelligent range, to protect buildings with very different lighting requirements. They include downlighters, spotlights, exit signs and bulkhead lighting that complement equipment already installed in the historic Victoria Rooms, the Wills Hall halls of residence as well as operating theatres and abattoirs in the veterinary college campus.

Chris Smith, Commissioning Engineer at the University of Bristol, said: "We fit various emergency lighting systems at the University of Bristol according to individual building requirements. The emergency lighting in some

areas of the University had become outdated and we could no longer source replacement parts, making repairs increasingly difficult. Having used Advanced's emergency light testing system across other parts of the University for many years, I was confident that we could rely on it for performance, compliance and peace of mind."

Matt Jones, Emergency Lighting Business Manager at Advanced, said: "It's fantastic to see our emergency light testing systems standing the test of time and being chosen for this major upgrade at the University of Bristol. We look forward to continuing to support the University as their future emergency lighting requirements grow."

LuxIntelligent from Advanced is an addressable, automatic emergency lighting test system, that shows all emergency lights are compliant and functioning, with no engineer involvement required. Each panel has up to four loops each, supporting 249 luminaires, and can be easily networked with existing wiring and luminaires, keeping installation costs to a minimum. The system also offers optional cloud monitoring and system management via mobile and web apps.

LuxIntelligent can be used with EasySafe, Advanced's latest range of addressable, low-voltage emergency luminaires and exit signs. Powered directly from the LuxIntelligent

panel, EasySafe devices need no local power supply and are compatible with any existing LuxIntelligent luminaires and exit signs, enabling the easy installation of devices onto existing wiring to form one intelligent emergency lighting system.

Advanced is a world leader in the development and manufacture of intelligent fire systems. Its reputation for performance, quality and ease of use sees its products specified in locations around the world, from single-panel installations to large, multi-site networks. Advanced's products include complete fire detection systems, multiprotocol fire panels, extinguishing control, fire paging, false alarm management and reduction systems as well as emergency lighting.

Advanced is owned by FTSE 100 company Halma plc, a global group of life-saving technology companies. Advanced products protect a wide range of prestigious and high-profile sites across the globe, from London's Shard and Lloyd's building to Abu Dhabi International Airport and the Hagia Sophia historic site in Turkey.

0345 894 7000 www.advancedco.com



Stylish student living – introducing the Beacon Road Project by David Phillips



Located in the bustling market town of Loughborough is the Beacon Road Project. Home to one of the nation's top 10 universities, this up-and-coming area is extremely popular for student living. Owned by TopLets Student Accommodation, leading furniture services provider **David Phillips** was delighted to be commissioned to furnish Beacon Road, a 6-bed house with multiple occupation (HMO). With a brief to furnish the property in a functional yet stylish way, whilst remaining sympathetic to the property's inherent character, David Phillips invited TopLets to its showroom to view a selection of products in situ before presenting a range of interior design solutions. From initial concept through to the end result, David Phillips worked closely with TopLets to create an interior scheme that would guarantee a return on investment, providing insight on how best to use the downstairs space and to furnish each room adequately. Stunning original floor tiles create a striking first impression for guests alongside adding characterful charm to the hallway. Similarly, in the bedrooms, muted neutrals and contemporary black furniture are offset by an ornate mantlepiece for a luxurious bedroom design.

020 3872 2295 davidphillips.com

A new discovery in smoke protection



Students at University of Salford discovered a new approach to being safe. **Gilberts'** "first of its kind" Series 60 damper were chosen by leading smoke control systems company Baiceir to protect the 14-storey Discovery Quay development. Some 26 dampers – each capable of providing up to two hours' fire integrity – were incorporated into the common corridors to protect the two stairwells within the £24.5m building, comprising 400 student bedrooms and ancillary communal space. Manufactured from galvanised steel with intumescent material and gaskets within, Series 60 has passed all relevant smoke and fire tests (EN12101-8 and EN1366-10), retaining its integrity and performance when incorporated into evacuation shafts and risers. Thus customers have the assurance that they are meeting, if not surpassing, current Standards for smoke ventilation in multi-storey buildings- new build and refurbishments. Believed to be the only vent of its kind designed and manufactured in the UK, Series 60 offers what Gilberts claims will be the biggest standard range of EN12101-8 compliant fire-tested dampers. The initial launch provides seven sizes, from 440 mm x 440 mm up to 1,000 mm x 1,125 mm.

01253 766911 info@gilbertsblackpool.com

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Style's cost-effective repair saves wall

A school in Falkirk relies on a substantial 6.2 metres high moveable wall to divide the main hall into two separate areas at different times of the day. Unfortunately, recent damage to the roller housing had caused one of the panels to become stuck, disrupting the day-to-day implementation of the school timetable. A call to the Scottish service team at nationwide partitioning experts, **Style**, quickly had moveable wall technicians on site who were able to safely lower the panel, remove and repair the damaged part before reconstructing the wall at minimal cost. Style's fully employed team of specialist engineers is highly trained and able to offer service and repair of almost any moveable wall system. The Style team used a chain hoist to carefully drop the stuck panel to the ground. They then opened-up the access to the roller housing, removed the damaged part and sent it to a metal specialist to be straightened, saving money by not having to order new parts or, worse still, replace a whole section of the moveable wall. The panel was then reconstructed.

www.style-partitions.co.uk

Yeoman Shield wall protection continues roll out at Springwell School

Yeoman Shield protection panels have been an un-mitigating success at Springwell School in Hartlepool. The school caters for children aged 3 to 11 years who have a broad range of specialist needs and the vibrant and busy spaces can suffer from impact damage caused by the everyday activities of the students and staff.

To counteract such damage and to keep the classroom and communal areas looking clean and welcoming the school have previously utilized Yeoman Shield FalmouthEx Wall and Door Protection Panels.

Site Manager, Dean Henson commented: "We already have Yeoman Shield protection panels on walls and doors in areas around the school, including the hall which can be used for many things ranging from a dining hall to activities hall. The panels have been in place for around 5 to 6 years and still look as good as new."

Having proved to be long lasting and durable the school decided to bring Yeoman Shield installers back during the February half term to continue the wall protection panels throughout corridors.

Yeoman Shield 2.0 mm thick FalmouthEx protection panels were supplied on this occasion in attractive mid grey and lilac colours with the addition of a waved top giving a decorative feel to the walls.



Manufactured from a non-porous rigid PVCu the protection panels are not only easy to clean but are inherently hygienic as they do not promote the growth of bacteria or mould.

As recognised by Springwell School the implementation of wall and door protection systems can reduce the amount of time and money spent on the repair and re-decoration

of wall and doors throughout the buildings, extending the lifecycle of the interior decor.

For more information on how to transform and maintain the interior of education facilities with Yeoman Shield Protection Products go to the website.

0113 279 5854 www.yeomanshield.com



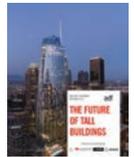
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SUSTAINABILITY & WELLNESS IN COMMERCIAL BUILDINGS

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