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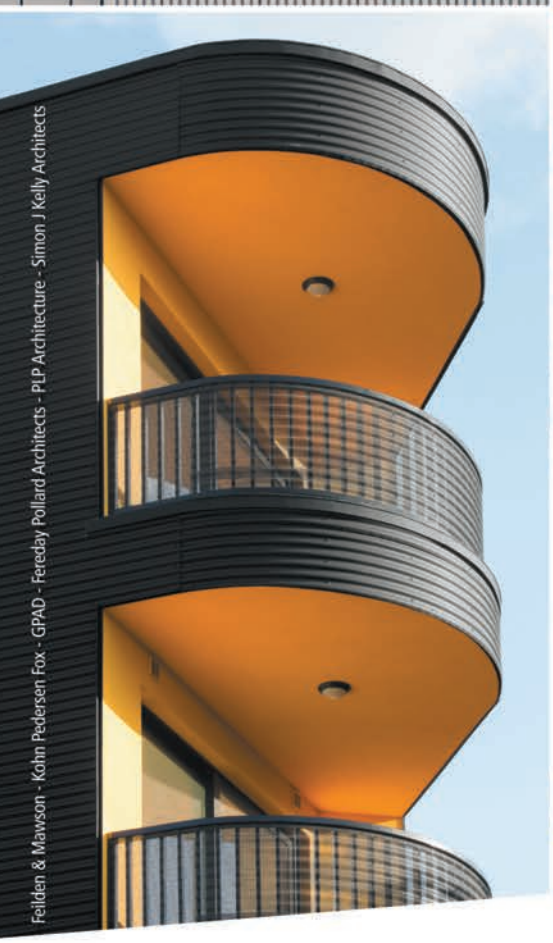

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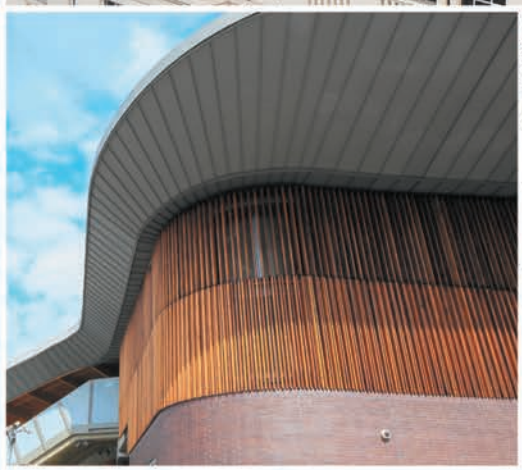

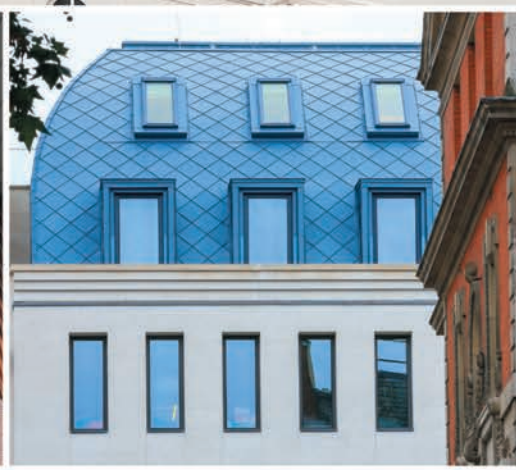

VMBUILDINGSOLUTIONS

04.19

Design for education & student accommodation supplement

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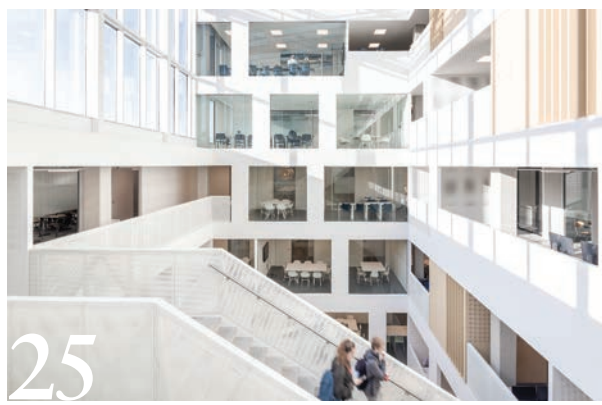

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Annual subscription costs just £48 for 12 issues, including post and packing. Phone 01435 863500 for details. Individual copies of the publication are available at £5 each inc p & p.
Printed in England

FROM THE EDITOR

It's something of a well-rehearsed argument, but investing in education is really about investing in the future of your country. I'd go as far as to say that you can probably measure the worth of your culture and therefore your society by how much you spend on education, and that goes for buildings as much as it does for staff, books and computers.

At a time when we are witnessing some worrying signs of education spending stalling, based around a much-debated per-pupil spending calculation which seems to unfairly favour certain areas of the country, it's worth looking at how much we spend as a nation. Oddly enough, when you look at the quality of a lot of our buildings, the figures haven't been that bad in recent times.

The Organisation for Economic Co-operation and Development contains 34 major countries, and compares data on many key societal factors. The UK was in the top six in terms of per-pupil spending on education between 2008 and 2014, and in the top six for increases in that spending. However The National Audit Office in 2017 said that although overall spending on schools has continued to increase between 2014/15 and 2019/20, a combination of increasing pupil numbers and staff costs mean they will have to spend 8 per cent less per pupil.

Also in 2017 the OECD reported that 44 per cent of UK students were taught in schools where the headteacher has reported that issues like poor quality buildings or grounds has hindered performance, at least to some extent. When it comes to comparisons, this is way is far above the OECD average of 35 per cent. While recruitment and retention of teachers remains a big challenge, such problems are not going to help, notwithstanding the impact on childrens' learning.

Something else that grated with teachers is when the Chancellor Phillip Hammond used the phrase "little extras" in his Autumn 2018 Budget to describe the purpose of the £400m extra for schools he managed to produce. While this relatively small injection would be likely to do anything about shortfalls in costs of retaining staff, the implication that putting money into schools – to be spent perhaps on things like IT equipment or a lick of paint – was an "extra" was felt to be patronising at best.

Now we realise that finding some cash for "extras" is not the real problem however – the budget restrictions are now starting to eat into the core curriculum across the UK. Recently I've seen reports in my local area on the south coast that music GCSEs are being removed from some schools' syllabuses. This is no doubt seen as an "extra" by many in authority, but it's an example of where the cultural life of children, and their future prospects, is being sacrificed while other things are perceived to be more important.

Buildings are even less of an optional extra. As this supplement shows, good quality educational establishments are not just vanities, they are essential to childrens' enjoyment and therefore effectiveness of learning. I would say that any drastic cuts we make here are wounds inflicted on our whole society.

James Parker
Editor

ON THE COVER...
The interior of the new Heidelberglaan 15 building at HU University of Applied Sciences in the Netherlands contrasts off-whites, greys and timber with escalators in a bright gold/ yellow casing.
© Adam Mørk for Schmidt Hammer Lassen Architects

For the full report on this project, go to page 25

ROYAL COLLEGE OF PATHOLOGISTS

Bennett Associates' East End college HQ completes

The Royal College of Pathologists has relocated to a new building in east London designed by Bennetts Associates. The completion of the 4,500 m^2 building on Alie Street in Aldgate marks the final step in the college's move from a traditional Grade 1 listed building in St James to contemporary, purpose-built premises. The design of the new building addresses the college's mission to advance the science and practice of pathology and to better serve its membership.

The new college 'HQ' is designed to accommodate the college's changing space needs, and help it meet its strategic development objectives, providing a wide range of flexible educational, workplace, social spaces and meeting and working areas for visiting members.

The new building uses materials and artefacts to "reflect the character of the college, with social areas, staff offices and education spaces that reference its history and look to its future," said Bennetts Associates. The building's sixth floor steps back, creating an open-plan pavilion with panoramic views over London. The large double-height reception space can be used for hosting public exhibitions and events while the full height windows at ground floor level "create transparency and a sense of openness" said the architects.

The building features "enduring and timeless" materials: the concrete frame unifies the building and integrates structure, services and lighting. The brickwork cladding, also present in the grand atria, stitches the spaces together. The structure features large spans and few columns for built-in flexibility, while a variety of materials and techniques add texture to the internal spaces." Board-marked concrete, coffered concrete soffits and waxed mild steel staircases are complemented by walnut timber panelling and perforated brick walls.

Environmental efficiency also played a key role in the design with exposed coffered concrete slabs used throughout the building as part of the passive cooling strategy. By increasing the surface area of thermally active concrete, the architects were been able to significantly improve the environmental efficiency of the building. The building benefits from excellent natural daylight provided by the large atrium that brings light into the deeper plan office spaces. The core is set to one side to provide optimum daylight penetration and flexibility for a site constrained by party walls on either side.

EGHAM ACCOMMODATION

New student development secures planning

Runnymede Borough Council has granted planning permission for a new student residential development on Egham High Street in Surrey. Designed by tp bennett, the scheme will provide high quality student accommodation in two separate buildings. Situated in the town centre, it will supplement the variety of accommodation available for the expansion of the local university over the next few years.

The design of the development is "a contemporary interpretation of Egham's unique architectural character that reflects the materiality, scale and detail of the town centre and its immediate neighbours," said the architects. A heritage study was carried out to fully understand the local surroundings and how this architecture would be reflected in the design of the new building. Situated within the conservation area, tp bennett's design response was "careful balance between acknowledging its prominent location at the end of the high street and its sensitive context."

The scheme will comprise 107 studio rooms across two buildings within ground and two upper floors as well as pitched roof accommodation, including amenity space on the ground floor, with a cinema room, social space and gym. In addition, the plans include the creation of two flexible retail units that "breathe new life into this end of the high street." In terms of sustainability, the scheme also incorporates a thermally efficient external envelope, natural ventilation and photovoltaic panels.

COMMUNITY COLLEGE, NEW YORK

A Long Island Learning Resource Centre

Architectural practices ikon.5 and Wiedersum Associates have completed work on The Learning Resource Centre, described as an innovative state-of-the-art library at Suffolk County Community College in Brentwood, New York.

The Learning Resource Centre sits at the centre of the Michael J. Grant Campus, at the confluence of major pedestrian pathways. A simple mass of nine cubes arranged in a three-by-three grid accommodates the library programme, on two floors. Portions of the cubes are "either removed or expanded to create an interplay between negative and positive space" that "allows the centre to act as a prism that casts sunlight deep into the building throughout the day," said the architects. A central lantern creates an "iconic expression on the campus skyline," visible from all corners of the campus.

The Learning Resource Centre presents opportunities for team-based, experiential and problem-based learning by providing a variety of learning environments: group study rooms, seminar rooms, flat-floor computer classrooms, open tutoring classrooms, and a 100-seat lecture hall.

The building's combination of aluminium and glass curtain wall and white terracotta is a departure from the red clay brick typically found on campus, and "expresses the primacy of this learning centre." A ventilated rain screen facade, green roof, and photo optic lighting controls are examples of the sustainable design approach taken.

Joseph G. Tattoni, design principal at ikon.5 architects said, "The Centre is symbolically and physically a place for productive collisions between students."

TURNHAM PRIMARY

Primary school 'grows up' with rooftop extension

Edward Williams Architects has completed a rooftop extension to a mid-20th-century primary school in Lewisham, London, developing and detailing Stage 3 designs by Pollard Thomas Edwards Architects. Turnham Primary School needed additional facilities on a restricted site for expanding pupil numbers. The extension provides additional facilities in a light-filled space with views across the neighbourhood.

The zinc-clad second floor extension provides extra classrooms, including special education needs (SEN) rooms, and a large hall that can accommodate the whole school. With an expressed natural timber structure, lined with birch ply timber panels, the hall is a "warm, unimpeded space" said the architects, flooded with daylight through large windows running along its length.

The extension also includes an "ecology terrace" with benches and raised planters outside a practical classroom complete with a wet area, where pupils can grow edible plants and learn about nature systems, plants, and food. All of the new rooms in the extension were naturally ventilated using a 'Breathing Building' system – a low energy solution that uses passive roof terminals in conjunction with opening windows to ventilate the spaces. Throughout the extension, high acoustic performance was achieved using expressed acoustic panels.

The concept design was developed by careful detailing, and a series of proposals were implemented to "add safety and material quality to the composition," said Edward Williams Architects. The school remained in operation during the construction programme.

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COMMENT

An education in MMC

Imran Kassim from architecture and building consultancy practice AHR discusses the opportunities 'modern methods of construction' offer the education sector in meeting its tough building targets, and the architect's role in delivering successful projects

Demand for high-quality new schools and improvements to existing facilities are growing, in line with an increased demand for pupil places. The Department of Education cites that the required renewal rate is 400 schools per year, just to maintain the existing estate. However, addressing this is a complicated task. Any solution must provide these critical school places with minimal disruption and offer futureproof, sustainable facilities.

In order to provide modern buildings for education that can accommodate a growing population – while maintaining a high level of quality for pupils and staff – procurement is turning toward modern methods of construction (MMC), like prefabrication.

MMC encompasses a range of disciplines that improve upon the traditional building process. These include modular, in which units are constructed entirely off-site before assembly onsite, and hybrid techniques that combine prefabricated structures built offsite with traditional on-site construction techniques. Support for this mode of construction is growing, and the UK Government is promoting the adoption of these methods through a £1.2bn framework that supports prefabricated developments in the education and healthcare sectors.

What opportunities do MMC offer to education?

Using prefabrication in the education sector can shorten time onsite and increase speed of delivery. Often schools operate on a tight opening schedule, and minimising disruption to pupils and staff is of paramount importance. By utilising prefabricated and modular construction when building new facilities, schools can massively improve the speed of delivery.

This can be achieved because manufacturing a large proportion of the build offsite means onsite construction can take place within a much tighter timeframe. This is an invaluable advantage when taking into consideration the need for minimising disruption to teaching and learning. Reducing the amount of time construction work takes while a school site is in use to a minimum also delivers considerable health and safety benefits.

The build process itself promotes high quality by constructing self-contained units and component parts in a factory environment, with materials and tools immediately to hand for workers, schools can achieve turnaround speeds that are up to 50 per cent faster than traditional methods. Prefabrication means the entire construction processes is more controlled, leading to more predictable outcomes both in terms of cost and programme.

SALFORD SCHOOLS
The Walkden High School project in Salford, designed by AHM and built by Laing O'Rourke, was one of several modular schemes in the Salford Schools project

Architects must lead the way in driving innovation in this field, encouraging schemes that deliver attractive, site-specific design solutions

These benefits also extend to the quality of the final product. The use of a factory environment means quality control is enhanced, which leads to benefits for pupils and the schools themselves. Buildings delivered through MMC can provide industry-leading, design-led facilities with strong sustainability and energy efficiency

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DRIVEN BY BIM
The Salford Schools project used BIM to prototype and test components (Moorside Primary School, Salford, pictured)

credentials. This means they can provide longevity alongside quality for teachers and pupils. In the long-term, these attributes can also save schools money, by reducing the amount of energy new buildings need for heating and lighting, while remaining as robust as a traditionally constructed building.

Maximising the opportunities of MMC

The architect plays a key role in maximising the benefits MMC can provide for schools. This includes ensuring every scheme is designed to the highest standards, whether that's to the Department of Education's Generic Design Brief, or a bespoke specification provided by a local authority.

Architects must lead the way in driving innovation in this field, encouraging schemes that provide the benefits typically associated with this approach, while delivering attractive, site-specific design solutions.

This can be achieved through effective stakeholder communication and the implementation of other technology, such as BIM, early in the design process. The creation of a BIM model provides a resource for data-rich visualisation before delivery, giving the vital insights required on the materials and dimensions required for a build, early in the construction process.

This approach aligns with the RIBA DfMA (Design for Manufacture and Assembly) guidelines. An initiative that seeks to align with the RIBA Plan of Works Stages and maintain best practice amongst architects within the discipline of MMC.

At AHR we have a strong legacy of harnessing the potential of MMC to deliver new school places across the country. This is well illustrated by the Salford Schools project we delivered with Laing O'Rourke. In this case, BIM data was used to prototype and test components before being used to inform the machinery that drive the off-site manufacturing process. An absolute understanding of the brief, and rigorous coordination, were crucial to ensure all pre-installed elements were positioned correctly during the manufacturing process. With much of the work front-loaded in the off-site manufacturing process, the construction time for the project was rapid, resulting in a 750-place, watertight high school erected in just 16 weeks.

Working on the Priority Schools Building Programme Modular Batch B Framework, our teams have continued to build on this pedigree, and recently delivered a batch of new primary schools in London, Sussex and the Midlands. These schools incorporate the benefits that MMC provide, while adding an additional level of flexibility; providing compliant classrooms which offer a bespoke footprint that can be adapted to the size of the site. This is alongside affordable and versatile facade options that allow for a diverse design palette, offering the ability to easily swap cladding choices for separate buildings.

Sustainability is set to be a key focus for all sectors in the future, so education must position itself to deliver solutions. By placing the environmental sustainability of a building at the forefront of its design, architects ensure their client receives a building that provides energy efficiency and economic sustainability through longevity, and cost-savings far into the future.

This is the key in maintaining the viability of modular construction across all sectors going forward. Commissioning clients are now better informed about the benefits, and this has driven the discipline's surge in popularity. In order to build on this momentum, designers and manufacturers must continue to innovate, deliver an increasingly high-quality end product and, above all, make sure each scheme brings with it a better sense of community and place.

Imran Kassim is regional director at AHR

COMMENT

Higher student expectations, driving better design responses

David Strong of consultancy Curtins discusses how education institutions are responding to increased student expectations, and the current trends which are driving the design of education facilities

It's no secret that to be popular with students and therefore be considered a 'success' by the institutions in charge, a university campus has to support a positive experience and quality of life for students. There are many different elements for the architect to consider, but creating a campus that is connected – both physically and socially – ensures it works as a whole.

The concept of 'experience' is integral to modern campus developments and has undoubtedly been driven by the digital age. A decade ago, students were reliant on a printed prospectus and their first-hand experience of campuses gained on open days across a few days per year. Now, everything they want to know and more is available at a few clicks. They can look at rankings and feedback given by others at any time, see photos and videos, and even look around the campus on Google maps. All of this means that students are understandably pickier when selecting their preferred university – a situation exacerbated by increases in tuition fees. Expectations are higher in regards to student facilities from all sides, providing further challenges for architects.

The international student market continues to grow, with five million students currently studying outside their home country, a number which is set to grow to eight million by 2025. It's easy to see why high standards are expected as wherever they choose will essentially be their full-time home while in the UK. Their parents will also want greater reassurances that their child is secure and in the best possible environment to enjoy and make the most of their time abroad.

LEFT TO RIGHT
Millennium View, new student accommodation for Coventry University / Collaborative Teaching Lab, University of Birmingham

Affordability ongoing topic for debate; there is an ever-present challenge of striking a balance between accommodations that is at the right price-point for the target market and providing high-quality living spaces

However, it is crucial that universities achieve the balance of experience in educational and social terms. While feeling part of a community is important to a successful university experience, students choose universities based on the ones they believe will give them the training and knowledge they need to pursue their chosen career. This means that new facilities have to be cutting edge – both in the physical building and the services within them.

Connected campuses

This striving towards connectivity on every level is being reflected in the type and design of facilities being constructed on university campuses, with recent years seeing a switch to more holistic schemes.

In terms of delivering a successful experience and creating a campus that stands out from the crowd, we're seeing a much greater emphasis on the interrelationship between buildings. More commonly than not, we are briefed on projects, alongside architects, that must work to complement the campus as a whole with infrastructure and the movement of those using it vital to our considerations.

This may mean that sometimes an educational institution will invest in a building that is solely for the purpose of providing students with a sense of 'centrality,' and encouraging them to socialise and be active in the community. A good example of giving a campus a central point is The Heart of the Campus project at Nottingham Trent University (NTU), for which we provided civil and structural engineering.

This award-winning project sat within the existing NTU Clifton campus and created a vibrant central pavilion with a new state-of-the-art teaching block, a fully refurbished refectory, and full external landscaping. The design of the new building took advantage of the natural slope on the site and created a broad, south facing covered colonnade terrace which overlooked the other university buildings. The result has been a clear focal point located in a central location, which the campus had lacked until that point.

Of course the development of any new building means balancing the needs of end users and the university and aligning those with both the brief, and crucially the budget. A successful scheme will create what is increasingly being called a 'sticky campus'. New buildings must naturally integrate and work alongside existing buildings on the wider campus, ensuring that students are encouraged to stay and spend their time – and money – on site, and more importantly creates a feeling of community and inclusivity.

Affordability is an ongoing topic for debate; there is an ever-present challenge of striking a balance between accommodations that is at the right price-point for the target market and providing high-quality living spaces that not only meet the growing expectations of students, but which also give the educational institution an attractive edge.

There is a definite art when it comes to achieving the delicate balance of these many differing requirements, and this is what makes working in the education sector both exciting and unique.

333 BATH STREET
Student accommodation in Glasgow for University of Strathclyde and Glasgow Caledonian University

Not only does your work have to meet the needs of the end-user, those paying the fees, and the university itself, but potentially an additional stakeholder which is quite commonly a business of some kind. We've certainly seen a significant rise in recent years of links between higher education and industry – for example the University of Warwick, and ongoing investment from the large players in the automotive industry.

With the education sector continuing to evolve and remain of great importance to attracting the best talent for this country's employers, in addition to being vital for the UK economy in general, architects and developers must ensure that they are working together to create the best possible student experience. The balancing of many ever-moving parts is an ongoing challenge in the sector, which brings with it the positive opportunity to introduce new and innovative solutions, collaborating with others to develop effective design solutions that meet the needs of both students and universities.

David Strong is executive director at built environment consultancy Curtins

COMMENT

An academic approach to comfort

Adrian Pargeter of Kingspan Insulation looks at the new guidance underpinning an increased focus on wellness in education environments, and the overall impact that thermal comfort has on students' learning

Keeping students focused on the task in hand is a daily challenge for anyone working within education. It doesn't take much to lose a class' attention and that job is made even harder when the building itself is working against you. Over recent years, a growing body of evidence has shown just how much impact conditions within the classroom can have on student wellbeing and attainment. Research has shown that environments which students felt were too hot or too cold were associated with increased respiratory complaints while students who described their environment as "comfortable" were likely to outperform those citing it as "hot." The question for architects is how to ensure education spaces offer these comfortable conditions?

To provide clearer guidance, the Education and Skills Funding Agency recently published a thoroughly revised version of

SLIM CONSTRUCTIONS
Insulation boards with low thermal conductivity allow desired U-values to be met using slim constructions

MAINTAINING THERMAL COMFORT
It is simpler and more cost effective to maintain internal temperatures if the building is well insulated

Building Bulletin 101 (BB101) guidelines on ventilation, thermal comfort and indoor air quality in schools. The document offers a clear overview of the relevant regulations and standards for managing conditions within the classroom environment along with supplementary advice on best practice.

One of the most significant changes in the new version of BB101 is a more adaptive approach to how thermal comfort is measured and addressed.

Thermal comfort

In BS EN ISO 7730:2005 – Ergonomics of the thermal environment, thermal comfort is loosely defined as being a personal condition which "expresses satisfaction with the thermal environment." Put more simply, it is the measure of whether a person feels neither too hot nor too cold.

This can be affected by a wide range of personal and environmental factors, from our health and the types of clothes we wear, to our position in the room and the air temperature. Measures of thermal comfort attempt to consider all these factors and determine whether occupants are likely to feel too hot, too cold, or just right.

This definition is inherently problematic for architects, as the personal nature of many of the factors means that, within any given space, there can be a wide divergence in opinion on whether it is too hot or cold. To estimate the thermal comfort of all students and staff, BB101 uses a version of the adaptive thermal comfort standards within BS EN ISO 7730:2005, which has been specifically modified for school environments.

BB101 guidance

The modified standard within BB101 uses two indices to estimate thermal comfort: predicted mean vote (PMV) and percentage of people dissatisfied (PPD).

PMV considers a number of personal and environmental factors to generate a score on a seven-point comfort scale – from hot (+3) to cold (-3). The PPD is then calculated from this score with the percentage of people dissatisfied exponentially increasing, as PMV moves away from the central comfort scale score (neutral – 0).

The revised BB101 provides a valuable resource for architects with much needed clarity on how best to account for staff and student comfort when designing school buildings

BB101 provides a list of recommended operative temperatures for different spaces within a school during the heating season. Outside of this period, it uses an adaptive approach, changing the maximum indoor temperature from day to day based on external temperatures.

Identifying solutions

A wide range of measures is available to control thermal comfort with the most suitable solution varying depending on the specifics of each project. One way to develop a solution is through dynamic thermal modelling where a 3D simulation model is created. Through this approach designers and engineers can:

- predict internal comfort conditions
- identify the likelihood of overheating during summer months
- establish likely heating demands
- maximise available natural light via daylight calculations.

BB101 also suggests the use of night purge strategies, where air is introduced through windows and vents during the night, helping to efficiently cool the building.

Building insulation

Whatever approach is taken, the building fabric will play an important role in allowing internal temperatures to be maintained at a constant level. With section 4.15 of BB101 highlighting the need to future-proof spaces, it makes sense to look beyond the standard U-value requirements outlined in the Approved Documents to the Building Regulations 2013 (in England), 2014 (in Wales), and Section 6 (Energy) 2015 of the Building Standards in Scotland.

With a wide range of insulation options available, it's important to carefully consider which solution is most suitable for any given project. The latest generation of phenolic insulation products have a thermal conductivity of just 0.018 W/m·K, the lowest of any commonly used insulation product. This can allow desired U-values to be met with slimmer floor, wall or pitched roof constructions.

Vacuum insulation panels (VIPs) are also proving increasingly popular for refurbishment applications. The panels have an insulating performance up to five times better than commonly used insulation materials, making them ideally suited for applications where the construction depth must be kept to an absolute minimum – such as above an existing solid floor.

Quality focus

The revised BB101 provides a valuable resource for architects with much needed clarity on how best to account for staff and student comfort when designing school buildings. By applying its guidance, and making use of the latest insulation materials, designers can ensure schools achieve a high level of energy efficiency and thermal comfort.

Adrian Pargeter is head of technical and product development at Kingspan Insulation

BUILDING
PROJECTS

INSTITUT DES SCIENCES MOLÉCULAIRES D'ORSAY
ORSAY, FRANCE

Concrete contrasts

KAAN Architecten's scientific research building for a new university campus near Paris plays with the contrasts between its no-nonsense concrete forms and the landscaped setting, while also paying attention to users. Roseanne Field reports

Situated just outside a national park, 20 km south west of Paris, the new Institut des Sciences Moléculaires d'Orsay (ISMO) building is part of a new 600 hectare academic campus created on the Plateau de Saclay.

The 'urban campus' is part of the Paris-Saclay project, a complex including higher education facilities run by University of Paris-Saclay, plus housing, offices and other services. The university, established in 2014, combines the science-based resources of several 'grandes écoles' along with three French universities – University of Versailles-Saint-Quentin-en-Yvelines, University of Évry-Val-d'Essonne, and University Paris-Sud, which includes the ISMO itself.

The concept for ISMO was established in 2010 as a fusion of three research laboratories with a focus on molecular physics and "physico-chemistry." The building is now home to 170 workers including researchers, teacher-researchers, PhD students, and postdoctoral researchers.

A multitude of architectural practices have been involved in the development of the campus. For the ISMO building, University Paris-Sud organised a design competition from which they shortlisted several firms. Dutch practice KAAN Architecten was selected as the winner, and

"It's a very geometric backdrop to an organic front, being set in this undulating landscape"

Kees Kaan, KAAN Architecten

INSIDE OUT
On the east, south and west elevations the corridors are arranged around the outside of the building

collaborated on the project with local associated architecture practice FRES architectes, a firm founded by two ex-KAAN employees, Laurent Gravier and Sara Martin.

Although KAAN Architecten has a track record of high quality laboratory buildings and educational facilities, the combination proposed here was something new for the firm. "It's something that we had done before, but in a different mixture," says Kees Kaan, founder of KAAN Architecten.

Design considerations

The fact the building would be bringing together researchers from across three universities played an important part in the brief, and the thinking behind KAAN Architecten's design. "It wasn't only that the ISMO needed a new building, it was also used to catalyse the merger between the different faculties," explains Kaan. "Everything would be new – the building, the colleagues, and the collaboration."

Keeping this merger in mind was noted as an "important element" by one of the client bodies, University Paris-Sud, says Kaan. The architects visited the existing facilities and got to know the scientists that would be working in the building, in order to get a better understanding of their habits and the type of environment they required. "They tend to be very introverted, so they hide away in dark laboratories and little offices," he says. "We tried to organise the building in such a way that of course they'll still be able to do their work – they have these facilities where they can focus – but on the other hand we wanted to make something where they would be encouraged to walk through the building, meet other colleagues, and engage."

It's for this reason that the practice designed what Kaan calls a "very compact" building. "We stacked, we made a lot of floors," he says. As well as wanting to encourage communication and interaction among the building's users, the compactness meant the building had as little impact on the surrounding landscape as possible. "It's a beautiful site amongst trees, and doing a building with a smaller footprint allowed us to keep as much of the green space as possible intact."

The nature of the work taking place in the laboratories means they often need to be relatively dark, so the practice designed the building with a large number of these spaces located in the basement. Where the work allowed them to be daylit, rooms have been stacked one above the other, on the northern side of the building. "On this side you don't have very much sunlight on the facade, so it allowed us to open it up, make it transparent, without the laboratories becoming too hot or too exposed to sunlight," explains Kaan.

When it came to organising the remaining rooms, the architects wanted to do something a bit different. "We sort of turned the building inside out," says Kaan. On the east, south and west elevations, the corridors are arranged around the outside of the building, with the offices in the middle, organised around two courtyard areas.

This brings more light into the building but also creates interaction with the campus outside in the form of visual connection with the circulation areas, while the offices are more private. "When you go from the laboratory to your work room, you're walking a little bit through the campus," he explains. "You have a view of the beautiful green spaces, and you're not walking down an internal corridor with neon lights and dark spaces." He stresses that it was "very important" to make these circulation spaces "of a very high quality."

Arranging the building in this way also means the offices benefit from more privacy from the outside world, while still receiving plenty of natural light from the central courtyards. "It allows people to withdraw there," Kaan says. "They still have daylight, but have their own workspace. It's private."

Aside from the labs and offices, Kaan says the third most important element to them as designers was the meeting spaces. It's for this reason they designed a full-height, open atrium to greet users. "The atrium is one space from which all the corridors spill out," he explains. It's also home to a two-storey library, located to the right of the entrance and connected by an enclosed spiral staircase, plus a cafeteria, various balconies designed for meetings that project into the open space, and a staircase that leads down to the labs and parking garage.

"It's really the core, the heart of the building," says Kaan. "It was a very important element because it's from this you understand the sections of the building, the scale, you connect all the different floors and the building merges into one 'house' for the people that work there."

Scientific requirements

KAAN Architecten describe the building as being "divided into two architecturally expressed realms, intertwined into a single entity". The reason for this, says Kaan, is due to the differing requirements of the


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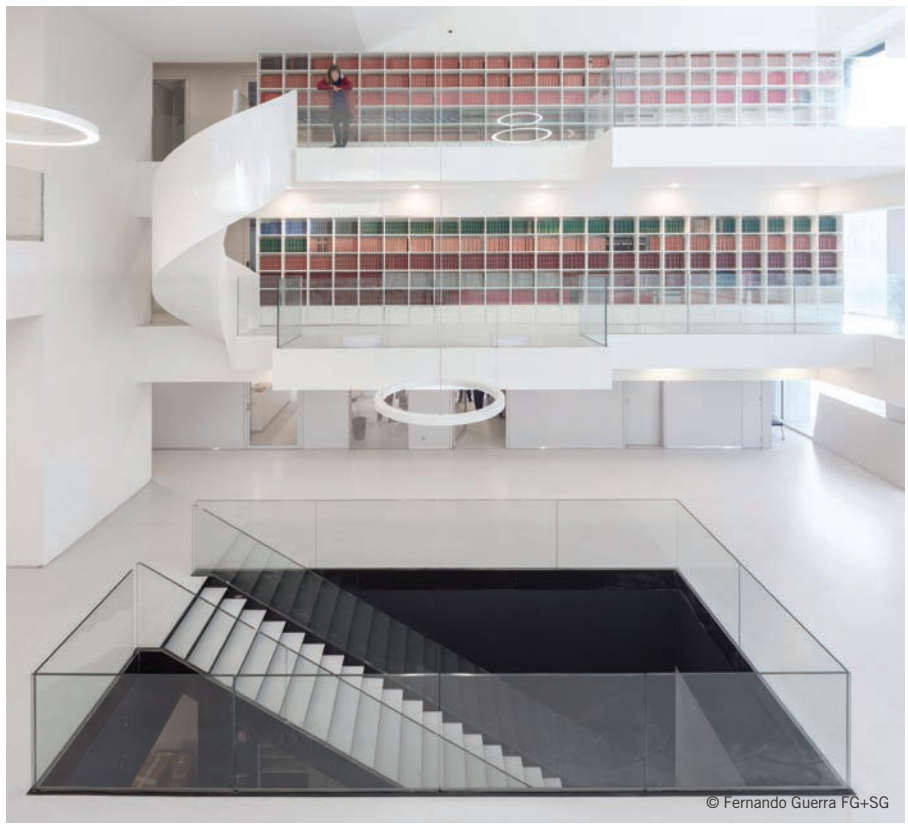
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laboratories and offices. "The laboratory spaces are lofty, they were designed as high, open spaces," he explains, while the offices are "relatively standard spaces." The height of the laboratory spaces means where there are five office floors, there are three lab levels. It also meant there was leftover space on the roof to hide the air handling equipment and so on behind the glass facade. "The north facade is very much a factory look," explains Kaan.

The facade running around the remaining three sides consists of a glazed concrete grid, with floor-to-ceiling glass set 80 cm back. "You could say that you take the concrete grid of the east, west and south facades and as you go north you slice it, and then you have one big glass facade," Kaan says. "Behind that you find all these labs and equipment, it's a very technical section. That's how it was brought together in one volume."

Designing for the laboratories themselves actually proved something of a challenge due to lack of information on who would be using the spaces, and what for. "Because of the merging units of the faculty, they could only start thinking about who was going to use which laboratory after the winner was chosen, and the design was more or less final," Kaan explains. "It was designed, in the preliminary stages, as a relatively flexible set up that could be filled in during design development."

Designing them as open, lofty spaces worked well as it allowed plenty of room to add more detail including technical equipment. "It was a very interesting dilemma," says Kaan. "You have to design a building which is relatively specific, for a specific use – you have to anticipate that in your design, but during design development you still need to do a lot of adaptation."

Although the building is predominantly used for research purposes, Kaan says around 20 per cent of the building is used for teaching. For this reason a small auditorium/lecture theatre is "suspended like a box" over the atrium. However, as Kaan explains, "It's not a building for students, if it was, we would have made larger floor areas where students could hang out, etc. This is much more scientific – in that sense it's drier, it's more tough, it's not as 'pleasant' as it would be for education."

Materials

The main material used throughout the building is concrete – the building's concrete

"Doing a building with a smaller footprint allowed us to keep as much of the green space as possible"


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The laboratories were designed as a relatively flexible set up that could be filled in during design development

structure supports itself so no columns were required. "The facade is load-bearing," says Kaan. The building also features unpainted concrete floors throughout, and is as a result mostly grey – only the atrium (white), hall to the parking garage (black), and auditorium, which features light oak cladding, are not. "It's all very simple, very modest," explains Kaan. This was in part due to the relatively tight budget.

Kaan's preference for concrete is also due to its weightiness and the design flexibility it facilitates. "It allows you to cast elements and make the building feel very monolithic, something that's difficult if you work with steel and cladding," he says. "The depth of the facade gives it this weight which many contemporary buildings don't have any more, because they have a very thin skin." He asserts that the idea of putting the structure outside is a "really strong" feature of the building.

The surrounding trees also played a part in the overall look of the building. "From day one, I felt you would never see this building as one piece," says Kaan. "You would always see it shining through from behind something else." It was this overarching idea of viewing the building through the trees that gave Kaan the idea to use the concrete grid. "It's a very geometric backdrop to an organic front, being set in this undulating landscape," he says. "You get this beautiful contrast of this meteor that fell in the forest."

These contradictions – the concrete among the trees and the "inside out" nature of the building's layout – are things KAAN Architecten often play with in their designs. "There are often these kind of oxymorons we use," says Kaan, "making two contradictions meet and connect, and develop into a concept."

While KAAN Architecten were responsible for the design, FRES architectes – featuring the ex-KAAN duo of Gravier and Martin – took on several responsibilities such as coordination of the engineers, and general site supervision. "The fact they had worked with me meant they immediately understood everything, and made things better," Kaan comments.

The building was opened in September last year and the architects report that it has been well received by those working in it. "We went to the opening, and I got a lot of positive feedback," says Kaan. "They gave us a good feeling, and apparently they are very happy."

In particular Kaan is pleased with the support and backing the whole project has received from the French Government. "I like that they've put so much effort and energy into developing a completely new campus for scientific research of a very high level," he says. "It's really something that Europe should do more often, invest in these kind of things – education and research – and do it in a qualitative way." ■

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BUILDING
PROJECTS

HU UNIVERSITY OF APPLIED SCIENCES UTRECHT

Colourful connections

The HU University of Applied Sciences in the Netherlands has gained a porous and interconnected new building from schmidt/hammer/lassen, as part of a project to 'densify' the school's assets. Jack Wooler spoke to architect Pim Ijsendoorn about how the design plays with colour and connectivity and does more with less

The new Heidelberglaan 15 building is the last of five to be finished at the HU University of Applied Sciences in Utrecht, the Netherlands, constructed to consolidate the faculty's properties into one campus. Designed by architectural firm schmidt/hammer/lassen (SHL), the building takes shape as a 22,310 m² metal-clad volume with staggered heights and a patched aluminium facade, and now houses eight institutes covering the university's numerous educational disciplines.

Before the project started, the university's functions were spread across the city, comprising around 30 separate properties. These buildings varied from small to large, ranging from century-old listed buildings to 60s, 70s and 80s properties.

It was decided that a streamlining process was necessary to densify and modernise these faculties, and scale down the overall space used. To realise this, the university wanted all its educational facilities to be located centrally in just five buildings, and as such the new buildings would need to be deep-planned.

Along with the densification of the buildings themselves, the university also wanted to reduce the classroom schedule by a few hours to an 8am – 5pm day, and so the classrooms needed to go from a 40 per cent occupancy rate to over 65 per cent. This means that as well as having a reduced amount of available space inside the buildings, the square metres remaining is much more heavily used.

In this SHL-designed project in particular, more than 5,800 students, faculty and visitors need to move through the building's 3,000 m² footprint each day to gain access to the more than 60 classrooms, 20 project group rooms, two lecture halls (seating 200 and 260 people respectively), and two smaller lecture halls (each seating 90 people), as well as its television studio and meeting hall. In the light of this, it was essential that the building's connectivity be a major focus.

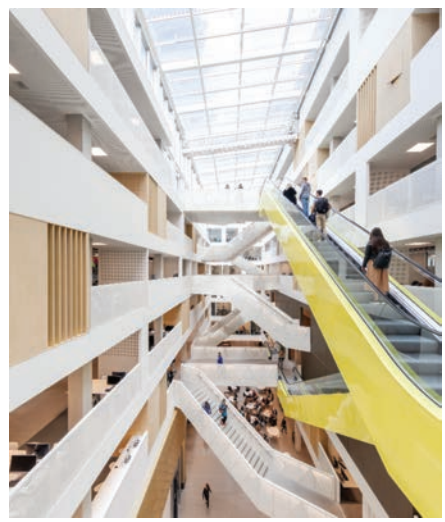
From the outside

The final instalment of the university's consolidation rises eight floors above a newly developed courtyard, displaying a prominent bronze and golden facade of neutrally-coloured anodised aluminium around substantial areas of glazing. One colour 'dissolves' into the next to create what the architects have described as a "gentle patchwork effect."

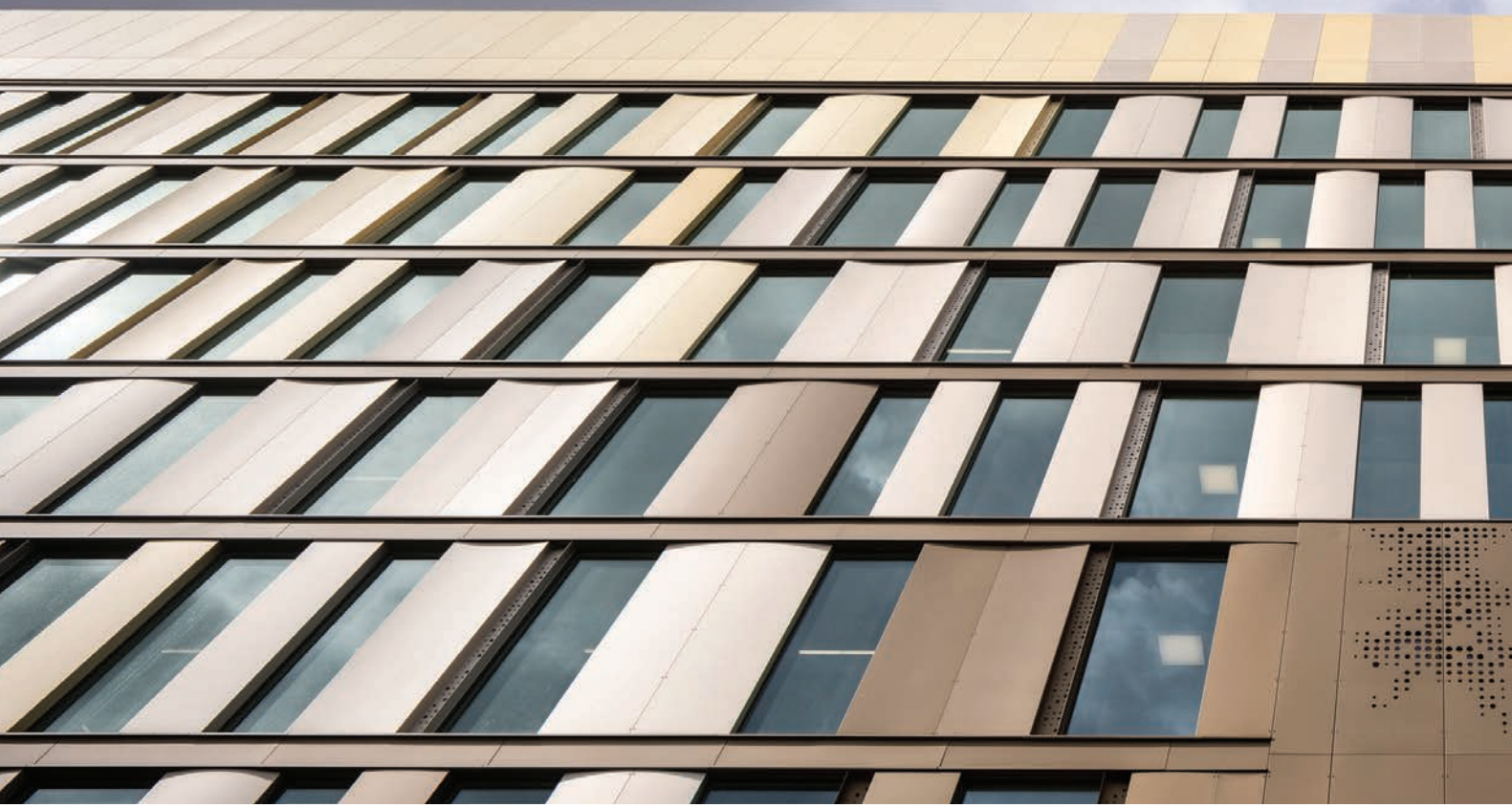
SHL wanted to differentiate the various institutes inside the building by using several colours across the building's exterior, while keeping them connected within the same colour spectrum that is expressed through the cladding.

Originally, the team looked at using eight colours on the facade, one for each institute. After some deliberation however, it was decided that it would be too hard to distinguish between that many shades, and just five were used.

The larger spaces inside the university, such as the television studio and the meeting centre, are clearly identifiable in this external cladding, adding an extra element of porosity to the project, besides the extensive glazing. To achieve this effect, the facade's patched sequence of windows



ABOVE
The atrium is criss-crossed with a web of transparent white stairways made of perforated aluminium
Images © Adam Mørk for Schmidt Hammer Lassen Architects



"The university wanted to demonstrate what they are doing, both internally and externally – one of the main elements of the brief was that their core activities were visible"

Pim Ijsendoorn, schmidt/hammer/lassen

and panels is broken up intermittently with larger spaces of continuous cladding in a single colour.

Additionally, the two main lecture halls jut out from the exterior into the courtyard, clearly identifiable from the building's exterior because of the step floor cantilevered from the wall. The building's footprint being a priority, no space has been wasted beneath, and so bicycle and moped parking have been placed under the stairs. On the inside of the lecture halls, the architects have designed a large retractable wall that can connect the spaces to the main entrance hall.

"The university wanted to demonstrate what they are doing, both internally and externally, and one of the main elements of the brief was that their core activities be visible," said Pim Ijsendoorn, who is associate/project manager at SHL. "They wanted to showcase that they are an educational establishment," he says, "so it is not hidden."

Another example of the open nature of the site is that there is no access control in the building, so visitors from outside are able to enter the university. "You can go in, buy a coffee, go up to the fourth floor and sit at one of the workstations around the atrium, and there's nothing stopping you from doing that. They want it to be open to the world, to embrace the community, and enhance it."

Heading in

The main entrance into the facility is on the north side of the building, a short distance from a tram line which has recently added a dedicated stop for the campus.

Visitors can enter the building through a set of large revolving doors and head towards the information desk at the front of the facility, with glazed curtain walling either side providing further porosity to the outside world.

"We have only used closed facades were we needed to," says Pim. "That means that when you are inside there is limited obstruction to what's happening outside, and also when you are outside, you can see what's happening inside."

Passing the information desk, visitors then enter a large atrium, towards the centre of which is the ground floor's escalator, one of several built on every other floor of the building.

Around the atrium, and throughout the project, the interior design in the main features a combination of off-whites,

greys and timber, except for the notable exception of the bright gold/yellow casing to the escalators.

"We didn't want to make a lot of visual noise," explains Pim. "If you've got 5,800 people within a building, then there is already a whole lot of things happening at once."

He tells *ADF* that the bright yellow colour choice was however intended to "express the flow of people into the building," and as such needed to be "sharp and crisp," being the only element of the project's interior design that intentionally draws attention to itself.

Beyond the escalators are food and drinks outlets, including a student-run cafe. There are a number of soft seats and study places in this area, intended to encourage serendipitous encounters between fellow students, as well as their teachers. There are also toilets and showers on the ground floor, alongside technical facilities and the two main lecture halls.

Going up

Turning back to the atrium, and up towards the higher floors, the softly lighted vertical space of the atrium is interspersed with a web of stairways, escalators and indoor bridges crossing overhead.

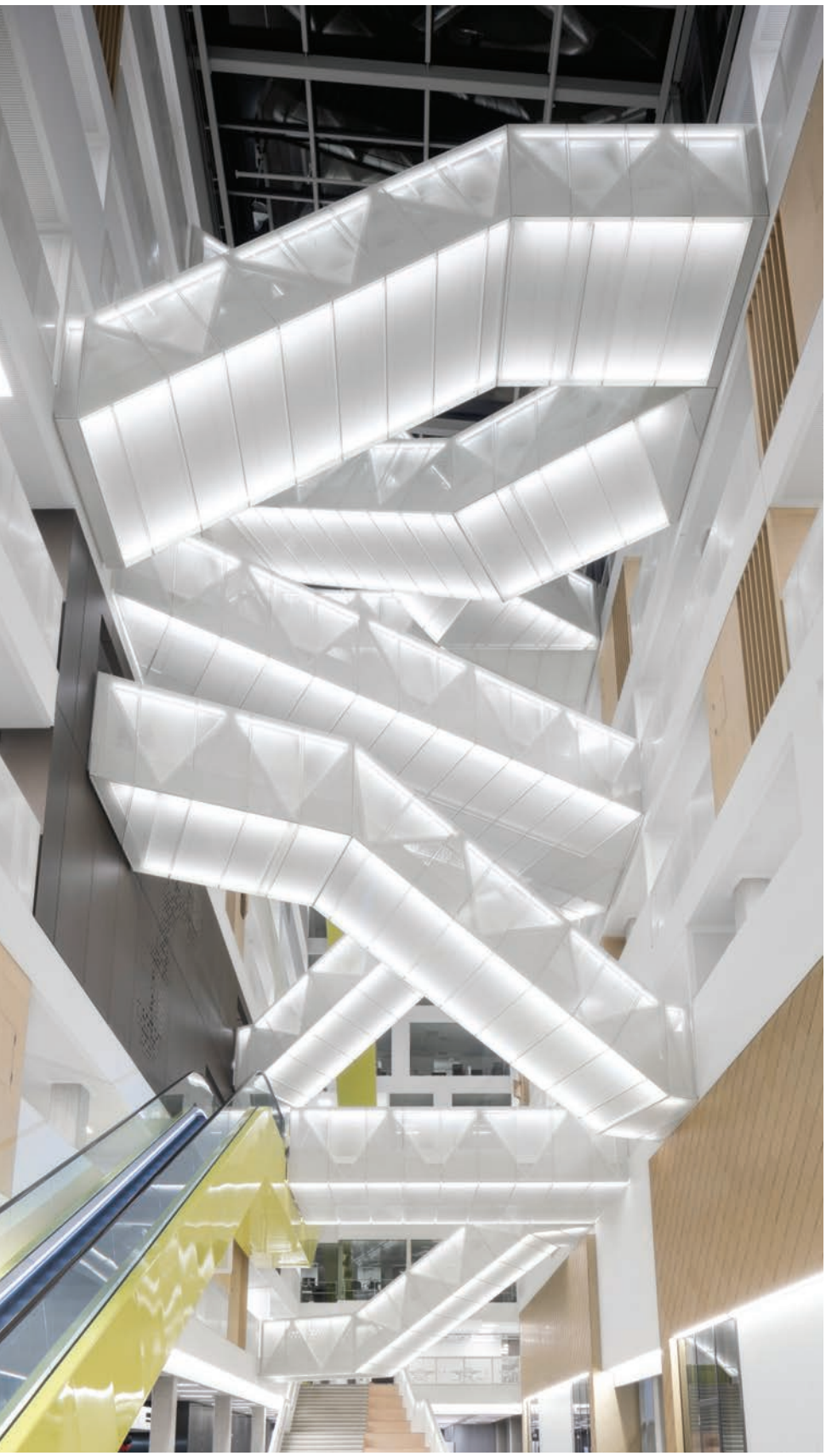
These routes, criss-crossing up and down, are made up of a contrast between the yellow escalators and the bright white staircases, and from below they are not unlike the 'floating stairs' of JK Rowling's Hogwarts. Instead of magical stone however, these staircases and bridges have transparent finishes on their balustrades and soffits, made of perforated aluminium sheets, with integrated lights and acoustic absorption.

According to the architect, it was a significant challenge to facilitate a high level of traffic into such a dense building, and the escalators were a key logistical element of the egress solution. They avoid bottlenecks by carrying people up two floors at a time, from ground to second, second to fourth, and fourth to sixth.

"The escalators, especially in the morning rush hour, allow a lot of students to get into the building at once," details Ijsendoorn. "The building is made for 5,800 people being present simultaneously. From these 5,800, lets say 5,000 will enter the building between the 7:45 to 8:45 rush hour; that's a whole lot of students."

It was also necessary to supplement the escalators with the wide set floating

BRONZE & GOLD
The building has a bronze/gold facade of anodised aluminium, with each colour 'dissolving' into the next



staircases, which allow for travel between each floor – especially important for those floors that the escalators do not connect with.

There are four main cores in the building, and each of these cores has two independent staircases. "This is driven by the amount of people that need to be able to evacuate the building," says Pim. "Within one minute you need to be within a safe place, and then within 15 minutes you need to be outside the building."

Separate cores

Each of the building's eight institutes has its own 'heart'. Going up the stairs, the institutes have been spread fairly evenly across the floors, with the more related subjects located close to one another to encourage collaboration.

Every institute has its own 'plaza' with two separate spaces, one which is predominantly for students, with a 'coffee corner,' copier, printer, information boards and screens, and a space directly adjacent for the staff which is slightly more secluded. These staff areas are not completely blocked to students, but there is an implied threshold, to give teachers some separation.

Generally the distribution is around one plaza per floor, with each floor hosting the necessary facilities for each available topic to study. Though many of the classrooms are 'generic,' and as such can be used by any institute, the university's idea is to schedule lectures so that each subject will be confined to a floor for most of their time spent there in the day.

The spatial arrangement for each floor follows the pattern of the traditional educational spaces being located along the external facade, containing all the regular classrooms, lecture halls and studios, with corridors adjacent that run around the main atrium, hosting a number of study places in the remaining footprint. These study areas include timber-clad 'concentration workspaces' that allow for one or two people to work in a private environment, without any acoustic or visual disturbance.

The interior of the cores have been designed to separate these various educational functions visually, and allow for clear movement throughout the building, as Pim explains: "When we developed the material and the colour scheme, we didn't want to have a rigid, repetitive stacking of functions.

"An individual function should be

identifiable," he adds. "The concentration workspaces for example are clad in timber finishes, both on the outside and inside. Then facing the main atrium, there are two different types of balustrade, and the use of the space behind each will differ."

He continues: "Where there is a fully closed balustrade, there will be a working desk behind it, and where there is a semi-transparent balustrade, there will be soft seats behind it."

Another example of what Ijsendoorn calls "identification through detailing" is the flooring. The architects specified an uncovered, thin cement-based screed, and as such the building's flooring is almost entirely grey. In specific areas however, there are colour coatings around the edges that indicate that a particular area belongs to a certain zone.

While also performing a visual function, this flooring was reportedly chosen due to budgeting issues. "When we won the competition, we knew that there was some tension between the ambition of the client and the available budget," explains the architect.

"We had to focus specifically on where we were going to put money on high end quality, and see what elements could be what we sometimes call 'industrial chic,' where we didn't need to spend excessive money," he says, the flooring being one such element.

Moving past these educational areas and onto the final remaining space on the top floor, roof gardens have been created, accessible to both the students and the staff. On the east side, the building is eight floors high, and then it steps down in order to connect with the neighbouring buildings. It is here that the roof gardens have been placed, providing a significant amount of recreational space for the university's users.

Enthusiastic reception

Through this process of consultation and meticulous design, schmidt/hammer/lassen has effectively tackled a complex spatial design challenge, and created a porous educational facility that directly informs users of its nature through its materiality.

Pim believes this is largely due to the fact that the team worked closely with the university's building supervisor – the university owning all land within the campus perimeter. "[The client] has a semi-private supervisor who needs to pre-approve all building proposals.

'We worked extensively with him," says the project architect, "and he is very happy with the end result, and thinks it fits really well into the overall campus."

The completed building is now fully operational, and sees thousands of students and faculty alike enjoy the new spaces every day, and, according to Ijsendoorn, they have been very happy in doing so.

"People have been very, very enthusiastic about the building," says Ijsendoorn, "especially its users."

He concludes: "They say that having a fit for purpose building, even with its large scale and dense plan, really makes them happy." ■

PROJECT FACTFILE

General contractor: Strukton Worksphere and Besix
Precast floorslabs: VBI
Revolving doors: Assa Abloy
Escalators/lifts: Otis
Curtain walls: Alkondor
Windows: Alkondor
Cladding panels: VPT Versteeg
System walls: Intermontage
Insulated wall panels: MBS (Machiels Building Solutions)
Mobile separation walls: Nusing GmbH
Solar blinds: Verosol
Skylight: Braat
Balustrades: MCB (Moors Constructie en Machinebouw)
Sprinkler/fire fighting: Chubb
Steel structure: Bentstaal
Fire rated walls and doors: MHB

Natural remedies for learning

It's a given that schools need good quality daylight for good learning environments; Tony Isaac of Brett Martin explains why enabling natural light to enter has never been more important

Good quality daylight is a readily available and sustainable natural energy resource, and one which is widely recognised as one of the best ways to improve the happiness and wellbeing of building occupants. It helps in not only maximising student performance and productivity, but also contributes to lowering a building's energy use. Natural lighting should always be the main source of lighting in schools, but with daylight illumination falling off as distance from windows increases, the role that rooflights play in the provision of daylight can provide in facilities is crucial.

The school environment is critical for promoting the wellbeing and resilience of children. After all, children spend more than 7,800 hours at school throughout their education and a large amount of time in the classroom. Studies have shown that students felt at their best under natural lighting, while teachers appreciate the low glare, good colour rendition and good behaviour demonstrated under the conditions created by rooflights.

Daylighting the interior environment has a direct and positive impact on student and teacher performance. A study released by the Herschong Mahone Group, 'Daylighting in Schools', looked at the effect of daylighting and human performance. Analysing maths and reading test scores for more than 21,000 students from elementary schools in different regions of the western United States, the study found that throughout one year, students with the most daylight in their classrooms progressed 20 per cent faster in maths and 26 per cent faster in reading, compared to students who had less natural daylight in their classrooms.

The pressure on schools coming from the combination of shrinking budgets and ever-changing teaching requirements has meant that teaching spaces need to be flexible and adaptable. By introducing rooflights, including domes, vaults, pitched skylights or panel glazing systems, it is

Natural daylight is recognised for its enormous physiological benefits and this is reflected in CABE's assessment of secondary school design

possible to deliver educational spaces that encourage learning, concentration and positive student behaviour.

From partnering with local authorities, architects and schools on many projects, we have a keen understanding of the specific requirements of the education sector. Providing expert, impartial technical advice on rooflight specification. Intuitive, experienced designers ensure compliance with Part L and help to achieve higher BREEAM ratings and can develop daylighting solutions to meet the individual demands of the nursery, primary, secondary and tertiary education sectors.

Since 2016 the Priority School Building Programme (PSBP) has been addressing the fact that there are many older school buildings requiring maintenance and refurbishment. Taking an innovative approach, it is possible to transform courtyards into classrooms, provide canopies and covered walkways, replace existing rooflights and develop bespoke daylight solutions for halls and circulation areas, leisure facilities and classrooms, according to each project.

Many specifiers are aware of the environmental credentials of natural daylight, seeking to maximise the potential of this abundantly available natural energy resource. Rooflight systems can maximise the transmission of natural light to the interior of school buildings. Building Bulletin 90, 'Lighting Design for Schools' actually states: "The school designer should assume that daylight will be the prime means of lighting when it is available."

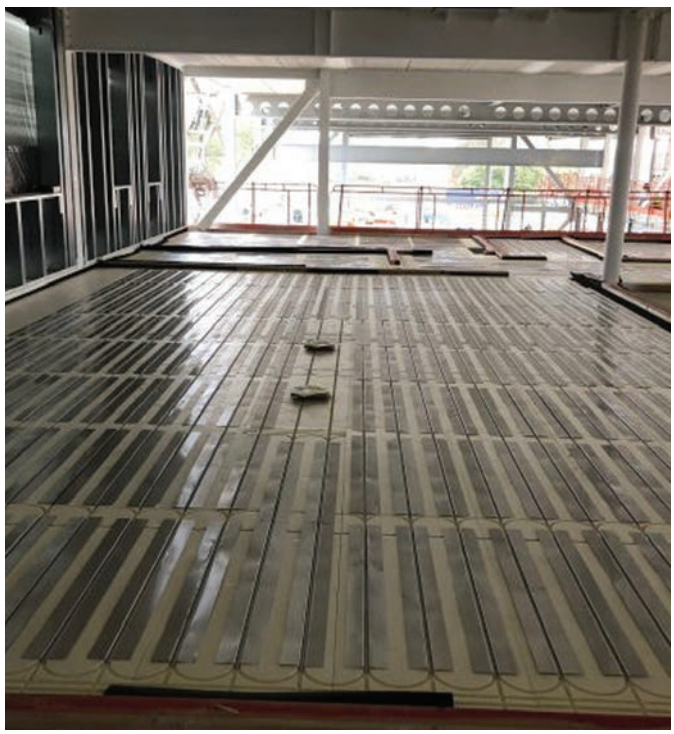
The introduction of natural light helps to reduce the need for artificial lighting, thereby not only lowering carbon emissions in line with the Carbon Emissions Target for all new schools, but also reducing energy costs for the end user too. In turn, the passive solar gain achieved through the introduction of rooflights provides additional free heat to the building.

Rooflight manufacturers are able to help specifiers deliver educational spaces that encourage learning, concentration and positive pupil behaviour. Natural daylight is recognised for its enormous physiological benefits and this is reflected in CABE's assessment of secondary school design. In addition to improving the energy performance of the school building, including rooflights in the school design is fundamental to ensuring attention, concentration and overall pupil behaviour is maximised to enhance academic performance.

Tony Isaac is national commercial sales manager at Brett Martin

A lesson in underfloor heating

Mark Crowsley of Cellecta discusses the continued need for large new schools to install underfloor heating floating floor solutions that achieve excellent acoustic performance as well as efficiency



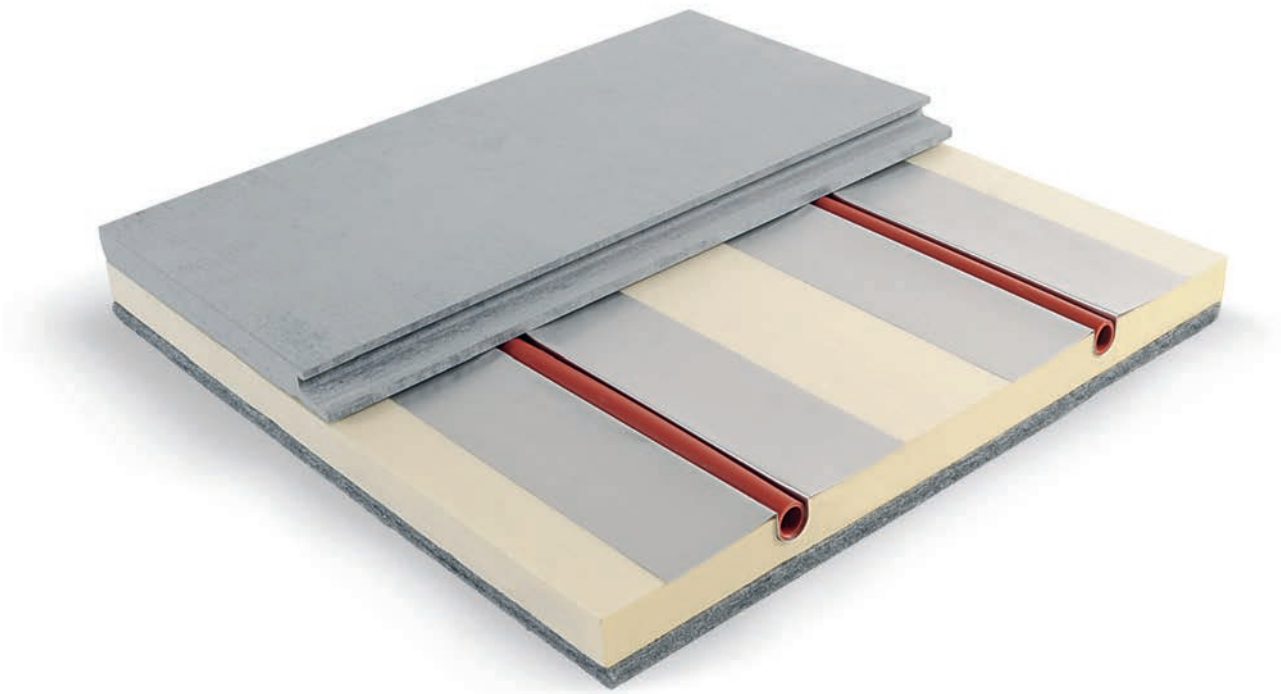
Schools can be noisy environments – excessive background noise, loud corridors, and adjoining rooms with differing sound requirements equate to a bigger conundrum than that of separating floors and walls in apartments. Get this wrong and it can affect concentration and levels of learning.

Utilising the stipulations laid out in both Building Bulletin 93 and Part E of the Building Regulations, manufacturers are able to put forward a suitable solution that can answer a multitude of situations. The key questions for such projects in terms of underfloor heating systems include:

- how is the building's structure constructed?
- what are the requirements for each room and separating element?
- is the underfloor heating system suitable for activity in the room, and is it the most efficient for its thermal performance and response?

Working alongside the specifiers, contractors and interior fit-out supply chain at key stages allows the manufacturer's technical team to offer the most suitable solution.

In a plethora of school projects across the country, there has been an increase in requirements for both better acoustic performance and underfloor heating solutions that are more responsive. In the UK we can experience a multitude of different weathers in one day – cold in the mornings and mild in the afternoons.



In a plethora of school projects across the country there has been an increase in requirements for both better acoustic performance and underfloor heating solutions that are more responsive

Screeded floors can take a lot of time to heat up large class rooms and then retain the heat when temperatures outside have risen, thus leading to windows needing to be opened. The aim then is to have more responsive systems that can still handle the rigours of a school environment such as extruded polystyrene UFH panels under screed boards.

Fast installation

Installing a high-density gypsum panel flooring system can significantly reduce development build times by removing the drying times associated with wet screed floors.

A recent time analysis study showed that dry screed flooring could save between four to eight weeks on a build programme.

Dry-fix solutions

Most high-density gypsum panel flooring systems have an interlocking edge detail, not all of which require screws – which provides further time saving benefits. Once installed it accepts foot traffic immediately. Workers are able to install ceramic tiles, carpets and vinyl flooring two hours after applying the adhesive.

A high-density gypsum panel typically weighs 25 kg in comparison to 130 kg for sand cement screed, or 80 kg for 40 mm of anhydrite screed. Utilising a lighter system can reduce the weight of the structure, which can reduce the number of piles required to support the building.

Underfloor heating

A high-density gypsum panel has low thermal resistance, and its thin profile allows an underfloor heating system to respond quicker, reducing energy needs and lowering running costs. This makes it an ideal solution over screed, particularly where large room volumes are involved.

Educational environments

High-density gypsum panel systems also offer significant logistical benefits through fewer site deliveries. For example, 22 lorry loads would be required to transport 250 cubic metres of traditional wet screed for a 50-unit building; in contrast, only four lorry loads carrying 40 cubic metres of a high-density gypsum panel would be required for the same building.

Underfloor heating within a school environment is ideal; it's hidden heating, which gives design freedom with clean lines and even controllable comfort.

Mark Crowsley is technical business development manager at Cellecta

Putting students' safety first

David Hoyle of Hoyles Electronic Developments discusses the fire risks in student accommodation, as well the possible solutions including combatting false alarms

The last thing students off to university will be thinking of is fire safety. Shared accommodation such as university halls of residence and privately-owned student accommodation is however considered vulnerable and much more likely to see a fire occurring, mainly due to unattended cooking, cigarettes or candles.

Or course halls of residence these days tend to be designed and built to a high standard and must comply with the latest Building Regulations, in addition to having all the relevant fire precautions including:

- means of fire detection by heat or smoke detectors;
- means of raising an alarm manually;
- means of escape, accompanied by; emergency lighting and suitable signage;
- means of extinguishing a fire by fire extinguishers, fire hoses or sprinklers.

The greatest fire risk generally arises from unattended cooking. An unattended pan on a stove is an accident waiting to happen, and it can happen very quickly. Ironically, if not accompanied by correct training, the provision of fire extinguishers can make

A hob needs watching carefully, and should never be left unattended when switched on – but with students' habit of late-night cooking, this is easier said than done!

matters worse. A fast jet of water aimed into a pan fire is likely to spread the fat and the flames very quickly onto surrounding surfaces, or even people.

A hob needs watching carefully, especially when preparing anything with fats and should never be left unattended when switched on – but with students' habit of late-night cooking, this is easier said than done!

Full blown fires in student accommodation are quite rare – the more usual event is smoke from a toaster or perhaps food burning while cooking. In many circumstances this would only cause, at worst, a small localised fire that could be dealt with by the student opening windows and wafting a tea towel around. However, it's inevitable that some kitchen doors will be left open while cooking.

While kitchen doors will most certainly have automatic door closers and intumescent strips edging the door, students could wedge the door open to be sociable and for their convenience. Doing this allows the smoke generated to escape into common areas such as corridors where the smoke detectors are sited. This can at best be an annoyance to other students in the block and at worst, trigger the main smoke alarm, potentially causing evacuation.

If a fire alarm has been triggered, automatically calling the fire brigade, there will also be further cost implications such as call out charges. Whether the cost should fall on the university, the students or the public purse is an ongoing debate.

However, the risk of fires occurring and students being injured far outweighs the potential inconvenience of false alarms. It is not just the safety of the students at stake but also the cost of refurbishment, loss of valuable books, computers and lecture notes.

Technology can come to the rescue here. Rather than relying on the student to switch the hob off or repeated checks ensuring that kitchen doors aren't wedged open, there are devices that can do the job automatically. For example, count down timers can switch the hob off after a predetermined period of time, and kitchen door alarms can be installed that once triggered will only silence by closing the door.

Although practical, these technologically advance solutions are available, they are not immune to the efforts of students seeking to tamper with them. The universities take a dim view of students who tamper with this type of equipment. It is important that measures such as protective cages and anti-tamper fixings are used to prevent students from seeking to compromise the alarm, either deliberately, or perhaps in ignorance of its potential lifesaving function. Technically speaking, these are preventable alarms rather than false alarms, but are still part of the debate.

Fire alarms are for the many not the few, and it's important to take measures to prevent a fire starting in the first place.

David Hoyle is managing director of Hoyles Electronic Developments

Introducing AVT's new heat recovery units

Models from **Air Vent Technology's** extensive range of heat recovery units are suited for installation into a wide range of residential/commercial premises – schools, hospitals, hotels etc – ensuring that buildings are properly ventilated and keeping heat loss during the winter months to a minimum. The new range of Infinity® low profile heat recovery units (HRPSL/EC) are available in 10 standard sizes with airflow up to 4.33 m^3/sec. They combine low energy with very high efficiency (and an EC motor). Internal models with side access are standard, but they can be manufactured with bottom access, or for a stacked arrangement, and for external installation.

sales@airventtechnology.co.uk www.airventtechnology.co.uk

Continuous ventilation for occupied spaces

The BB101 compliant Ventive Windhive is a passive stack ventilation system with intelligence at its core. Combining passive ventilation, heat recovery and system intelligence, Windhive can provide continuous ventilation for occupied spaces, without the use of electricity. It adapts to real-time conditions to deliver an optimal balance of ventilation and comfortable temperatures, whatever the weather. Windhive can recover up to 75 per cent of heat from the outgoing air, improving occupant comfort and reduces heating costs making it an ideal passive ventilation system for schools, commercial buildings and large domestic homes.

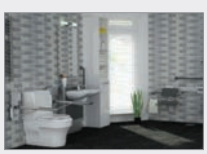
020 8560 1314 www.ventive.co.uk

Helping manage send capital funding

Councils have been promised an additional £250m over the next two years to provide specialist support and tailored facilities specifically for children with complex needs, be it in mainstream or special schools. To help council specifiers get it right, **Closomat** has produced a white paper. 'Considerations & Specification of Assisted Accessible Toilet Facilities in Educational Buildings' in one place covers the key elements of the revised Building Bulletin 104, and BS8300:2018. It enables specifiers to easily cross-reference their specifications and designs to ensure appropriate compliance on accessibility and special needs.

0161 969 1199 www.clos-o-mat.com

Update accommodates disabled students



New 'best practice' guidelines have been published that, for the first time, specifically address disabled student accommodation. Simultaneously, one of Britain's leading providers of disabled toileting solutions, **Closomat**, is announcing new developments that enable providers to comply, stylishly, with a unique package from specification, through fitting to future service and maintenance. The options help enable providers to meet the growing number of disabled students, which now represents almost 10 per cent of the student population in the UK!

0161 969 1199 www.clos-o-mat.com

Designed to please the eye as well as the ears

Architects are under increasing pressure to ensure the comfort of building occupants – particularly regarding acoustics. Will Jones of Ecophon discusses how acoustic solutions can be included within the design of the building without sacrificing the aesthetic

From sales of activity trackers to the growing interest in mindfulness and other stress-relieving activities, it is clear that health and wellbeing is becoming firmly embedded within the public consciousness. It is of little surprise then that the wellbeing discussion has taken root within the construction industry too, with occupant comfort being increasingly prioritised by specifiers in all sectors.

Established in 2014, the WELL Building Standard is gaining ground as a certification for architects looking to design spaces that support and advance human health and wellness. Developed by integrating scientific and medical research on environmental health, with leading practices in building design, construction and management, the standard places a welcome emphasis on acoustic design – recognising that poor noise control can seriously hamper the wellbeing, and performance of, a building's occupants.

We are all familiar with the frustration that nuisance noise can cause, but the potentially harmful effects it can have on our health are perhaps less well known.

In addition to the general annoyance, nuisance noise can also have far more serious consequences, potentially including hearing impairments, cardiovascular issues through stress, cognitive impairment and unwelcome metabolic effects, as well as resulting in decreased mental performance and lower productivity.

Specifying effective acoustic solutions at

the design stage is clearly crucial to delivering a fit-for-purpose building that supports the long-term health of its occupants – yet traditionally, the aesthetic options for achieving this were often thought of as uninspiring. Fortunately, there are now a number of high-quality sound absorbing solutions that can also create a dramatic statement, or even become an integral part of the interior design.

For example, when a full ceiling is not desired for design or structural reasons, free hanging sound absorbing panels – known as acoustic clouds – provide a versatile solution that can achieve both the required acoustic performance and desired aesthetic. The panels are available in a range of shapes and sizes including rectangles as large as 3000 x 1200 mm. These sizes are an ideal solution for very large areas or can be utilised to make a statement in a smaller space.

Acoustic cloud panels are also available in a range of colours to either match the interior design or create an eye-catching feature using a contrasting colour. The choice of the colour of the acoustic panels provides a new way to introduce tones into the space, these could either be in bold blocks of colour or used more subtly to create contrast.

In addition to the standard options, leading manufacturers are also able to create custom shapes. This allows geometric design concepts or elements of a corporate brand to be extended and reflected in the acoustic panels. Alternatively, the bespoke shapes can be used creatively to achieve a particular look, allowing a design to be created that specifically suits the purpose of the space or building.

The versatile installation of the free hanging systems also allows creative freedom. The panels can be installed in the position required, regardless of ceiling height, or fitted close to the soffit if needed. Furthermore, the panels can be suspended in multiple levels to provide a functional and visually striking solution to sound control, for example in a high-ceilinged atrium.

In addition to horizontal panels, vertically installed unframed baffles allow specifiers to create an interesting vertical visual feature within a space; these can be hung from the ceiling or mounted on a wall. The baffles can be installed in different alignments to create striking straight lines, dynamic patterns or even grid shapes. Baffles can be combined with free hanging acoustic products, or other ceiling designs to create a truly unique appearance.

Furthermore, specially shaped baffles, designed to be installed as a system can be used to create contours and depth. For example, Ecophon Solo Baffle Wave allows designers to give the ceiling the look of a gently rolling sea – either across an entire room or in a specific area.

With such a wide variety of options now available, from full ceilings to acoustic clouds and baffles, there is no longer any need to sacrifice aesthetics for the sake of acoustic performance – indeed, the most discerning clients now expect architects to be able to deliver on both fronts. Given the complexities of achieving high quality, design-led acoustics, however, it is always worth enlisting the help of a specialist manufacturer early on in the specification process. They will be able to provide practical advice on achieving the perfect balance of form and function.

Will Jones is marketing manager at Ecophon

With such a wide variety of options now available, from full ceilings to acoustic clouds and baffles, there is no longer any need to sacrifice aesthetics for the sake of acoustic performance

A Modern Finish from Flowcrete UK for Menai Science Park

Anglesey's new Menai Science Park required an iconic and modern flooring solution and consulted **Flowcrete UK** to help. Menai Science Park, or M-SParc as it's known, is a facility where collaborations are encouraged and ignited by chance encounters in the shared spaces, and the client was eager for this energy to be reflected in the building's interior. M-SParc delivers space, support services and outstanding facilities to businesses of all sizes. To achieve the aesthetic, two different materials were used to provide the ideal amount of contrast for the design to pop. Peran Comfort from Flowcrete UK was chosen in Light Grey and Signal White for the stairs, landing and foyer areas of the Open Innovation Space. The noise reduction and durability properties of this flooring system are ideally suited to these areas, where heavy footfall and the accompanying noise is expected. In contrast to the matt, self-smoothing polyurethane-based Peran Comfort floor coating, Flowcrete UK's Rustik Natural Stone was utilised in the entrance way. Its noise reduction, slip resistance and durability properties make it ideal for use in entranceways where heavy footfall is expected on a regular basis.

01270 753000 www.flowcrete.co.uk/contact-us

Metal Technology enhances student living at Capital Quarter Cardiff

Capital Quarter Cardiff student accommodation is a sterling example of premium architecture that is practical without compromising on quality. The project brings together an impressive collection of multi-functional systems from architectural aluminium systems' company, **Metal Technology**. The development spans an impressive 140,000 sq ft and consists of two multi-level blocks linked by an attractive architect-designed landscape scheme. The accommodation features Metal Technology's System 17 capped curtain walling with a combination of System 5-35HI+ tilt and turn windows and System 4-35 Hi+ thermally enhanced Casement windows. System 5-20D Hi+ thermally enhanced door systems are also used alongside System 10 commercial doors. A bespoke louvre system helped ensure adequate shading was achieved while providing a safe environment even when the windows are fully opened. Andrew Stapleton of APiC commented: "Metal Technology's state-of-the-art windows and doors were the perfect fit for this student accommodation project from an installation perspective due to the system's ability to be quickly but efficiently designed, fabricated and shipped to site."

028 9448 7777 www.metaltechnology.com

Bespoke, stylish addition to town mosque

Folding partition specialist **Building Additions** has helped to transform the inside of the Aisha Masjid & Islamic Centre in Reading with the installation of three of its multifold partitions. Building Addition's multifold partition systems consist of continuously hinged panels that are ideal for use when a ceiling head fixing is restricted or where rapid layout changes are required. Folding partitions or doors work well in many applications including offices, hotel meeting and function rooms, schools, clubs, restaurants and leisure centres. Mustafa Chaudhary of architectural designers SpaceOffice said: "We are delighted with the result."

01373 454577 www.buildingadditions.co.uk

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School achieves aesthetic fire performance with MEDITE PREMIER FR

A state-of-the-art sports and learning-centre in Cambridge features a dramatic space-defining acoustic system on the use of MEDITE PREMIER FR fire rated panels from MEDITE SMARTPLY The product was specified by architects Chadwick Dryer Clarke Studio (CDC) for acoustic panelling in the new sports hall for the prestigious Stephen Perse Foundation senior school.

The sports hall is part of a complete new building designed by CDC, combining sports facilities with new classrooms and social learning spaces – this mixed use made careful consideration of acoustic performance essential. The decision to use acoustic panelling as a solution then provided the opportunity to create an opulent interior that would not only be functional but inspiring.

Within the sports hall, approximately 530 MEDITE PREMIER FR panels were installed at high level above a storey-high 'plinth' of concrete blockwork. They were finished

in RAL 7044, a silk grey tone, which complemented the treated cross-laminated timber (CLT) finish in other areas. The same product was also used around the building for the creation of architraves, skirtings and window linings.

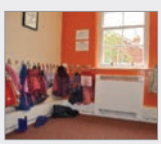
Within England, Building Bulletin 93 sets out performance standards for acoustics in schools. As building regulations also state that within schools or similar public buildings a Euroclass B or C fire rated panel must be used and MEDITE PREMIER FR offers the perfect solution.

A social working environment and a sense of community was central to the project: an important internal space that would become one of the main hubs of activity in the school. The whole school community, including governors, teachers and pupils, was consulted as part of the design development to ensure the right performance and aesthetic could be achieved.

The result is a functional, beautiful building, which uses calming colour and modern shapes to break up and add intriguing interest to the expanse of space within the immense, four-court sports hall.

info@mdfosb.com
mdfosb.com/en/medite/products/medite-premier-fr

Safe Heating Transforms Nursery School



The North Bristol NHS Trust are delighted with the LST radiator covers and vented pipe boxing that **Contour Heating** have supplied and installed to ensure safe heating in Somerset House nursery school. Contour transformed a healthy space for the new nursery school with DeepClean, low surface temperature radiator covers. Designed with drop-down front access doors, these casings allow fast and easy access to heat emitters. The radiator covers are also protected with BioCote® anti-microbial technology, which inhibits the growth of 99.9 per cent of bacteria within just two hours to reduce bacteria cross-contamination.

01952 290498 www.contourheating.co.uk

U can have secure parking at UCLan

Cycle-Works have helped to encourage cycling to The University of Central Lancashire (UCLan) which had an issue with bike theft and security for staff and students. This was discouraging regular commuters using their bikes. To help solve this, UCLan bought 48 Cycle-Works Velo-Safe lockers, that have been designed for campus's and similar sites. The university found the unique wedge shape to be attractive, flexible and space saving. The lockers support the university's Travel Plan and are helping to solve the problem of bike theft whilst promoting cycling.

www.cycle-works.com

Deanestor awarded furniture contracts

Deanestor, one of the UK's leading contract furniture manufacturers, has been specified by the development arm of Mace for two new student housing schemes in Exeter and Cardiff which will provide over 1200 student beds. The contracts for the manufacture of the kitchen and bedroom furniture are worth £4m to Deanestor. Oliver Gardiner, Development Director at Mace commented on Deanestor: "Their team has been responsive and professional, working with us to develop a range of furniture options which combine longevity, value and a high standard of aesthetics to create a fresh and modern appearance."

enquiries@deanestor.com

Profile 22 at the heart of major renovation

Optima Casement Windows were a central part of a £1.3 million renovation project at Woldgate School and Sixth Form College in Pocklington near York. Optima from **Profile 22** is one of the most widely specified commercial systems thanks to its impressive list of benefits that help specifiers meet even the most demanding of requirements. Optima delivers optimal thermal performance, achieving a 1.2 W/m²K U-value as standard, with U-values as low as 0.8 W/m²K possible. It is PAS24 compliant as standard, with Secured by Design options available as well. In its aesthetics and versatility, it sits comfortably in any architectural style.

www.profile22.co.uk

Partnership delivers sustainable, viable multi-site solution

BAM Construction is progressing with a £67m framework to build a batch of secondary schools in the North-East, won in part through its collaboration with **Gilberts Blackpool**. The four schools will all be ventilated using Gilberts' innovative MFS unit, which pioneered the concept of hybrid ventilation in multi-occupancy rooms such as classrooms – a concept recognised as a valid strategy by the Education & Skills Funding Agency. Crucial to the deal was the partnership between BAM and Gilberts, to evolve the core MFS unit to create a solution that was standardised as far as possible, and simplified the building's construction and operation. Martin Sibley, operations manager services engineering North East BAM Construction said: "Our collaboration with Gilberts proved invaluable in achieving a commercially viable alternative to conventional heating and ventilating strategies." Roy Jones, Gilberts' Technical Director added: "Our MFS had already been used as the preferred offering in other school batches, because of its performance and simplified installation." MFS is just part of Gilberts' range of ventilation solutions that have established it as a leading air movement specialist.

01253 766911 info@gilbertsblackpool.com

New PRO-TEK™ WPC engineered vinyl provides a fast-track flooring option

New **PRO-TEK™** WPC engineered vinyl provides a fast-track flooring option for education and student accommodation. Combining an LVT surface finish with an integral water-proof core and acoustic underlay, the award-winning floor provides a robust finish and dramatically cuts installation time. The new designs are suitable for all settings – including bathrooms, basements and over underfloor heating – and are offered alongside a range of matching accessories. PRO-TEK™ WPC features a multi-layered construction that comprises six layers. The traditional LVT layers sit above a waterproof wood plastic composite or 'WPC' core. This middle core has an integral joint, which locks the boards together without adhesive. The bottom layer comprises an attached IXPE foam underlay base. The integral construction maximises the floor's versatility, reduces the amount of floor preparation required and speeds installation. PRO-TEK™ WPC is offered in 40 nature-inspired designs to suit all interior styles. Wood-effects are divided into four distinct collections and the Excel Tile Collection includes slate, travertine and marble-effects. All materials used are phthalate-free and 100 per cent recyclable.

020 3917 5550 www.pro-tek-flooring.com

Creating inspirational spaces

Fordingbridge have broad experience in education through their 50+ years of trading. Creating inspirational spaces with their canopy and building solutions, the company are proud to have worked with hundreds of schools and colleges nationwide, helping them maximise their educational environment. Developing inspirational buildings, playground canopies and courtyard atriums, Fordingbridge are passionate about delivering practical but exciting projects for their clients. Fordingbridge operate fully in-house from their West Sussex facility. Contact Fordingbridge today to discuss your next project.

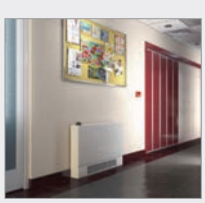
01243 55 44 55 www.fordingbridge.co.uk

record proud to be a part of redevelopment

record is proud to be a part of the redevelopment works to the world-famous Jodrell Bank Observatory in Cheshire, a place of learning, teaching and research for the many engineers, astronomers and students. The company's works included the supply and installation of a new record K41 fully automatic four-leaf revolving door to the main reception area of the SKA building. Constructed from glass to provide a modern, minimalistic look to suit the facility, it allows all staff and visitors to pass through the turnstiles safely and easily before they automatically rotate back to a standstill to conserve energy.

01922 669341 www.recorduk.co.uk

LST Radiators – Safe Heat



Low surface temperature radiators are increasingly being specified for school environments because they offer safe heat. They are also highly relevant in sports centres and other public service buildings where the owners want to take all the risk out of the building from 'day one' of it being in operation. LST casings never exceed 37°C in temperature taking away the chance of 'dry burns' making them 'safe to touch' and **Stelrad's** models cover all incoming pipework too to take away all the risk associated with radiator burns.

0844 543 6200 www.stelrad.com

Wernick delivers first energy positive office

The Active Office, was opened in June last year at Swansea University. Built by modular building specialist **Wernick** and designed by SPECIFIC Innovation and Knowledge Centre, the building aims to generate more energy than it consumes over the course of a year. The Active Office isn't just meant to be a high performance building for its own sake, but also to demonstrate how well buildings can perform with technology available today. The building is packed full of cutting edge, commercially available technology to help generate, store and manage energy for the building.

www.wernick.co.uk

A fast finish for Godiva Place with Eurobrick

As universities compete with each other to win new students, one area that has been given more attention over recent years is the quality of student accommodation. For some, the days of old fashioned accommodation blocks are gone, with the rise of stylish new hotel and apartment style schemes set to win new students.

Eurobrick Systems has been leading the brick cladding sector for 30 years and has recently been involved in one of these new developments for Coventry University. Godiva Place is a huge hotel style accommodation scheme by Galliford Try, and for Eurobrick, this is their biggest cladding project to date.

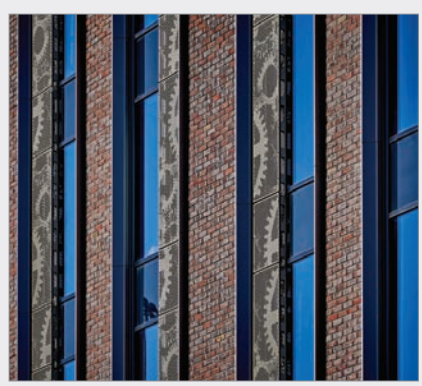
The £47.5m scheme is a 24,500m² project designed to provide student accommodation with a social hub, sports facility and parking as part of the university campus in Coventry city centre. Architects Lewis and Hickey designed the scheme for developer Regents Godiva, and were restricted by height limitations due to affecting views of historic buildings and daylight for adjacent residential properties. This means that the 5 block project varies in height between 4-9 storeys.

With a mix of studios, 'twudios' and cluster accommodation units, the student accommodation block provides a total of 772 bedrooms. Designed with a perimeter block to create a defined edge and shield from the noise and pollution of the nearby dual carriageway, the building also has a number of finger blocks that maximise daylight penetration to the interior spaces.

As this was a fast-build project, with many parts of the building being constructed off-site, a quick and effective brick finish that is flexible enough to be installed on-site was required. P-Clad is an external wall cladding system that was developed for use as a sheathing on structures where there is no requirement for insulation and it is also suitable for use on some high rise installations.

Godiva Place was constructed using a rapid erect, light-gauged, steel framed wall system with concrete floor slabs. The building was then sheathed in cement particle boards and Eurobrick's P-Clad system was installed onto horizontal rails. These rails were attached to the Nvelope helping hand bracket and vertical rail support system, which also incorporates an insulation element in the air gap behind.

Circa 5350m² of Eurobrick's P-Clad was supplied to the installing contractor Select Facades, along with Michelmersh First Quality Facings brick slips that were specially cut to 25mm thick, including corner slips and special angles. These were sent in staged deliveries over the course of 18 months to tie in with project timelines.



Eurobrick stock a wide range of brick and stone slips and can also source other finishes and specially cut bricks from a number of specialised manufacturer partners in the UK and Europe, including non-standard sizes, glazed bricks and bespoke products and colours.

A number of cladding materials were used to create the overall innovative design and eye catching exterior of Godiva Place, which now offers an aesthetically pleasing and unique style of living to the students of Coventry University.

01179 717 117 www.eurobrick.co.uk

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...we just build them better

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