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Hello readers, warm greetings from the team of *Southeast Asia Building*. Every day, there are news of how climate change is affecting our daily lives. Extreme weather conditions are becoming more frequent resulting in wildfires in some parts of the world and flooding in other parts. People are forced to evacuate their homes and even towns for safety reasons.

In architecture, green buildings can make a big difference in fighting climate change. They are an effective means of addressing climate change as they generate less greenhouse gas emissions. Architects around the world are making every effort to design green buildings and even zero-energy buildings to deal with the climate crisis. In this issue, you will get to read how design has played an important role in making buildings sustainable and even zero energy.

Since this is a green issue, we have included some industry news about corporates who have adopted green practices. In addition, we have compiled some architecture and design news related to the coronavirus outbreak.

We hope that you enjoy reading this issue as much as we enjoyed making it.

Amita Natverlal

NOVEMBER/DECEMBER ISSUE THEMES

- Projects – Medical Facilities
- Trends – Universal Design
- M.E.P. Systems (Refer to the media kit for topics)
- Products – Window & Door Systems (Advertorial)



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Architecture & Building Services 2021 goes hybrid

Singapore – Architecture & Building Services (ABS) 2021 is a premier exposition comprising seven relevant exhibitions which are co-located to present a comprehensive and integrated mega platform for all building needs for markets in Singapore and Southeast Asia. Integrating digital elements such as virtual conferences, ABS 2021 will be going hybrid.

The ABS series will present seven specialised shows – ArchXpo 2021, the inaugural Design Asia 2021, International Facility Management Expo 2021 (iFaME), Lighting Asia 2021, Safety & Security Asia 2021, Fire & Disaster Asia 2021, and Work Safe Asia 2021. ABS 2021 will also host 10 major



conferences, symposiums and forums led by industry experts which will be held concurrently with the seven exhibitions. The conferences are designed to address new developments, trends, challenges and solutions that directly impact the built environment, providing valuable insights for conference delegates on how they should position their businesses

going forward.

The physical event will take place from 24 to 26 November 2021 from 9 am to 6pm daily at Marina Bay Sands Expo & Convention Centre. The virtual event will take place from 10 November 2021 to 9 December 2021.

For more information, visit <http://architecturebuildingservices.com>.

Meliá Hotels International to open a remarkable urban hotel in Chiang Mai

Chiang Mai, Thailand – Meliá Chiang Mai, a 260-key urban hotel that towers over the River Ping and bustling Night Bazaar in the heart of Chiang Mai city in Thailand's mountainous north, is slated to open its doors for business in the fourth quarter of 2021.

Owned by Thailand's leading integrated lifestyle real estate group Asset World Corporation (AWC) and launched by Meliá Hotels International, the five-star hotel is part of the Meliá brand's roll-out plan in key destinations across Thailand. Meliá Koh Samui debuted in January 2020 with a nautical theme underscored by boat suites made from refurbished merchant vessels. INNSiDE by Meliá Bangkok Sukhumvit, the first property of its brand in Thailand, housing 176 guestrooms and located close to the Suvarnabhumi Airport, is due to open in 2022.

Meliá Chiang Mai will be situated six kilometres from the Chiang Mai International Airport on the vibrant Charoen Prathet Road, located near a broad spectrum of tourist attractions, markets, and Buddhist temples.

With a design that pays tribute to Chiang Mai's charming history and culture with a contemporary flair, the hotel will comprise a striking 22-floor tower fronted by an adjoining seven-floor podium building.

Meliá Chiang Mai's jewel in the crown will be a 360-degree rooftop bar – the highest in the city – on the 22nd floor. Featuring two bars connected by a glass bridge, the bar will



offer spectacular views of the River Ping to the city's east and famed Doi Suthep Temple on the mountaintop to the west.

"With its exceptional location in the heart of Chiang Mai and an unparalleled array of facilities, Meliá Chiang Mai is a landmark project of our strategic roll-out of the Meliá brand in Thailand, in line with AWC's growth-led strategy," said Mrs Khun Wallapa Traisorat, Meliá Chiang Mai's owner and AWC's CEO and President. "Partnering with Meliá has allowed us to set a new benchmark for Thai hospitality and together, we aim to build a better future for Thailand's tourism landscape and economy," she added.

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MAD unveils design for the Aranya "Cloud Center"

Beijing, China – MAD Architects, led by Ma Yansong, has unveiled their design for the Aranya "Cloud Center" in Qinhuangdao, China. Situated close to the scenic Beidaihe coastline in northeastern China, the building is designed to appear as a "floating cloud by the sea". Upon completion, the scheme will offer a new multi-purpose public space for Aranya – one of China's most vibrant seaside arts and culture communities.

The building is designed to host a variety of functions, with a press conference room, small theatre, and exhibition space. Externally, the scheme is surrounded by a sculpted landscape imagined as a "white stone garden."

When viewed from a distance, the building appears as a "cloud floating in the forest" with a polished, reflective form activated by the changing light, sky, and landscape. The simple, pure aesthetic of the building is achieved through a façade of hyperbolic white stained glass, creating a seemingly floating form when viewed from afar. Upon approach, the winding entry road opens up, and the building's cloud-like form becomes visible. At its entrance, a pool reflects both the building and the clouds above, blurring the boundary between architecture and nature, and interior and exterior.

The building's primary internal space, the multi-purpose room, extends skyward through a swirling ceiling. Above the spaces, a series of skylights allows ample natural light into the interior to enhance the building's energy efficiency. The building's open spaces and movable walls offer a high degree



Photo: © MAD Architects

of spatial flexibility to meet the needs of exhibitions, theatrical performances, conferences, and a variety of other functions. Surrounding the building's exterior, a low circular wall forms the boundary of a tranquil landscape detached from reality. This cosmic theme continues within the garden, where a series of white rocks and undulating greenery evoke the imagery of floating planets dotted across the universe.

Construction of the Cloud Center began in March 2021. The project's civil construction is expected to be completed by the end of 2021, with the entire project completed and opened in 2022.

Aedas-designed Zhanjiang Yunhai No.1 – A new all-weather tourist and entertainment destination

Hong Kong – Located at the southernmost tip of mainland China and being surrounded by sea, Zhanjiang is known for its unique harbour culture. In response to its growing attraction as a tourist destination, Zhanjiang Yunhai No. 1 is designed as an all-weather tourism and leisure resort, whose 266 metres tower will become the tallest building in the area.

The project is perched in the intersection of the three major urban areas, and closely connected to the city centre via the Zhanjiang Bay Bridge across the waterways. Overlooking the sea promenade of Jinsha Bay and the urban park nearby, it is an important city portal. Through volume shifting, the podium is designed in a streamlined wave shape, to mirror the temperament of the coastal city.

The project integrates its five-star hotels, apartments, retail streets, and vibrant leisure squares by linking a series of key nodes with extensive public space. The design is informed by Zhanjiang's southeast monsoon climate and the daylight conditions to arrive at a parallel layout. The high-rise hotel

and serviced apartments stand in the southwest of the rectangular site while three residential towers and one serviced apartment are situated in the north, where they face a peerless sea view.

"We wish to obscure boundaries in the project, where the distinction between indoor and outdoor, business and art, are blurred. The vision is to create a space where all these elements could coexist to generate interesting experiences," said Dr. Andy Wen, Aedas Global Design Principal and Yi Jun Qian, Aedas Executive Director.



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BDP wins competition to rejuvenate Singapore's Geylang Serai market

Singapore – BDP has won an important cultural project in Singapore to redesign the popular Geylang Serai market into a modern, vibrant place for local people and visitors.

The design competition was sponsored by The People's Association and organised by the Singapore Institute of Architects. BDP's winning concept design, which included a multidisciplinary approach, was chosen as the winner from a shortlist of competition entries.

Following BDP's appointment to the project, the popular market area will be rejuvenated so that visitors can make use of new cycling lanes, sheltered areas and green spaces. A festive plaza in front of Joo Chiat Complex and a landmark structure on Changi Road that symbolises the transition of the area from a former Malay settlement to a vibrant community precinct connects the past and the present of the market and ensures there will be flexible space for meetings, events and entertainment.

These new developments aim to strengthen the cultural heritage of the area and make it a more exciting and meaningful place for all visitors. The site is enriched with Malay culture and heritage and has progressively evolved into a modern community neighbourhood through urban transformation. By designing in spaces that connect the modern neighbourhood with the heritage of the area, BDP aims to create a new market where multiple cultures and generations can thrive, feel real sense of arrival, utilise smart technology make their way around a beautiful, well-organised and successful shopping district.

Architect Director, Andrew Loke, explained: "Geylang Serai is an important cultural hub. We wanted to design a place where people can come together, that appeals to both Malays and non-Malays, at the same time making sure that the space is activated by community activities throughout the day."



Gateway. Photo: © BDP



Cyclist Park. Photo: © BDP

RDA announces design for Hong Kong University Faculty

Hong Kong – Rocco Design Architects Associates Ltd (RDA) has announced the design of a new academic complex for the Faculty of Business and Economics at Hong Kong University. Embracing the university's ethos, the design creates spatial and programmatic loops that encourage the holistic cultivation of mind, spirit, and body. The design incorporates a curving set of buildings onto a triangular plot tucked between two winding roadways that descend a steep hillside in Kennedy Town on the western tip of Hong Kong Island. The building meets the intersections of the roads with a long and low volume that carves out a pedestrian plaza and climbs the hill, culminating in a tower that establishes a defining presence in the area.



Full view of Hong Kong University Faculty. Photo: © Rocco Design Architects Associates Ltd

The new academic hub combines a stack of programs combining spaces for undergraduate and postgraduate students with faculty offices, athletics centers, and conference facilities. At the centre is the Ideas Forum, a commons lined with casual seating that fosters chance encounters and the exchange of ideas. An expansive staircase rises from the Ideas Forum and leads to the postgraduate teaching facilities, housed in a curvilinear form that traces the contours of the hillside. Flanked on one side by the Scholar's House and on the other by a conference centre and undergraduate residence tower, the postgraduate facilities define the edges of the central plaza and funnel circulation through it, filling the square with activity.

Athletics facilities, including tennis courts and gymnasiums, are incorporated throughout the plan, and a secluded nature walk anchored by Lily Pond extends the surrounding landscape into the learning complex and connects it back to Kennedy Town.

Each of these spaces is conceived as parts of three interconnected loops that encourage the holistic cultivation of mind, body, and spirit. The first – the Spiritual Loop – treats interconnectivity between spaces for learning, athletic training, and individual contemplation as equal components of a comprehensive student experience.

The second loop is the Spatial Loop, enhanced by carefully designed connections linking diverse spaces conducive to generate mobility, encounter, and interaction. The third loop is the Green Loop, which invites the surrounding landscape into the campus to create a soft edge, blur boundaries between built and natural environments, and provide a healthy environment that energizes the mind and spirit.

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B+H appoints new Director of Healthcare and Director of Medical Planning

Hong Kong and Shanghai – Global design and consulting firm B+H Architects has bolstered its leading healthcare team with the recent additions of industry experts, Andrew Humphreys and Tan Zheng.

Humphreys joined the firm's Hong Kong studio in late 2020 as Director of its healthcare practice with an extensive portfolio of work across the United Kingdom, Asia, and the Middle East. Endlessly fascinated by different cultures and experiencing new perspectives, Humphreys has built his expertise over the last 30 years on the philosophy of creating spaces that are not only beautiful but most importantly, contextual and contribute positively to their communities.

The healthcare veteran specialises in the delivery of major acute care hospitals, specialist clinical department planning, scientific research laboratories, and local community facilities, as well as having undertaken educational, commercial, social infrastructure, and mixed-use developments. He has led projects at all stages of procurement, from new build full-service commissions to advisory consulting roles, and has spent many years working directly with client organizations providing consulting advice on their strategic planning and development aims.



Andrew Humphreys.
Photo: © B+H Architects



Tan Zheng. Photo: © B+H Architects

Tan Zheng also joined B+H in late 2020 as Director of Medical Planning for the firm's Shanghai studio. With over 10 years of experience in the healthcare sector leading all aspects of project delivery from planning and design to construction documentation, Tan brings with him a pragmatic and client-focused approach that has resulted in a portfolio of successful projects across North America and Asia. Tan specialises in medical planning across a broad range of healthcare typologies, ranging from small clinical renovations to large-scale hospital campus designs.

Conexus Studio designs Nu Skin Southeast Asia's Future Forward Office

Singapore – Global beauty and wellness product leader and business opportunity platform provider, Nu Skin recently completed renovations for its new Southeast Asian Headquarters at 18 Cross Street, designed and built by workplace specialist Conexus Studio.

The project's innovative design puts the future of work at the centre of the conversation and offers a fresh perspective on the needs of a modern workforce. Working closely with the regional Nu Skin leadership, Conexus Studio configured the 5,590 square feet space to suit the modern hybrid workforce by intrinsically supporting flexibility in how people work.

Designed with employee feedback on their working needs and preferences, the inclusive design is an inviting experience that supports the diverse ways Nu Skin employees like to work. The wide

variety of work settings include a lifestyle café, hospitality-inspired lounge settings, private pods, phone booths as well as height-adjustable desks to configure sitting or standing workstations as desired. These activity-focused seating options encourage employees to change their seat as required throughout the day.

To further enhance team connectivity, the layout blurs traditional barriers, offering almost complete openness from one end to another. Rooms are fitted in glass in line with Nu Skin's transparent company culture, displaying activity that would otherwise happen behind walls and doors.

To ensure a balance of vibrancy and privacy in the open layout, a progressive zoning approach was adopted, with



Photo: © Conexus Studio

social and focus work areas delineated with very different materiality. A setting for team gatherings, the Nu Skin Café is infused with energy and warmth, while a subdued and predominantly white space takes up the opposite end of the office, creating a distraction-free and calm setting. Lower-stimuli team collaboration areas sit in the centre of the office, with phone booths and meeting rooms on the fringes.





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SOM to lead design of 2026 Milan-Cortina Olympic Village

Milan, Italy – COIMA SGR and its partners Covivio and Prada Holding have revealed that Skidmore, Owings & Merrill will design the Olympic Village for the 2026 Milan-Cortina Olympics as part of the updated Porta Romana railway yard master plan. SOM was selected to design the village following an international competition involving 27 groups comprised of 71 studios from nine different countries.

Developed by COIMA SGR and its partners in collaboration with the Milano-Cortina Foundation, the Municipality of Milan, and the Lombardy Region, the Olympic Village will transform the Porta Romana district, creating a sustainable urban community and offering a powerful new model for Olympic facilities to serve post-Olympic social goals. Thanks to innovative sustainability features, the village will target minimal environmental impact in accordance with NZEB (Nearly Zero Energy Building) requirements.

Designed first and foremost to become an integral part of Milan's urban fabric, the village encompasses a set of public green spaces, the transformation of two historic structures, and six new residential buildings that will serve Olympic athletes in the short term. Following the Olympics, the athletes' homes will be reused for student housing; the park and railway side buildings near the Olympic Square will be used for affordable housing; and the Olympic Village Plaza will become a neighbourhood square, with shops, bars, restaurants, and cafes planned at



Milano Olympic Village. Photo: © SOM | Pixelflakes

street level, along with outdoor space for farmers' markets and other community events.

The new buildings take architectural inspiration from the historic buildings of Milan, while featuring striking, contemporary materials and dramatic communal terraces. Shaded by vertical plantings, these terraces serve as bridges between the buildings, becoming signature gathering spaces and outdoor study rooms for students and lending the complex a sense of energy and life on every level. The integration of greenery within the outdoor areas will contribute to the neighborhood's climate resilience, and also create space for urban farms that enable on-site food production.

The entire Olympic Village is designed according to the principles of a smart

and sustainable city, creating a complex that is at once connected and self-sufficient. The village's mechanical systems will tie in to the precinct's loops, yet passive cooling strategies, solar panels, and rooftop gardens — among other features — will ensure that more than 30 percent of the energy utilised will be produced on site. Stormwater will be collected on site and reused, with a reduction in the use of drinking water by over 50 percent and a CO2 reduction of 40 percent for heating and cooling. In addition, the new buildings maximise the use of sustainable materials, from the mass timber structure of the residential buildings to low-embodied carbon facade materials.

Construction of the Olympic Village is scheduled to be completed by July 2025.



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Margaritaville by Stonehill Taylor cuts a striking silhouette in the New York City's skyline

New York, New York, USA – Located at 560 Seventh Avenue, New York City's new Margaritaville Resort Times Square – complete with an outdoor pool – cuts a striking silhouette in the city's skyline. The 32-storey, 234-room hotel designed by leading hospitality architecture firm Stonehill Taylor with interiors by The McBride Company boasts several food and beverage concepts, including a rooftop bar and retail space on the ground and below-grade floors that extend underground for 30 feet.

A synagogue will also be housed within the building to replace the worship space that was formerly on-site within the previous building belonging to the Parsons School of Design. This storied site was originally owned by the synagogue for the Garment District. On the ground floor is an entrance to the double-height synagogue occupying two floors of the building's cellar.

The building's façade is covered in a glass curtain wall with a setback on the southern elevation to allow for the pool terrace. The entrance, which is marked by a marquee, leads to a retail space on the first floor, and elevators that take you to the hotel lobby on the fifth floor, where Joe Merchant Coffee & Provisions offers coffee, grab-and-go quick bites, and merchandise. The lobby is outfitted with a fireplace on the adjacent outdoor



Rendering: © The McBride Company

terrace, which houses the License to Chill Bar, and a set of stairs leads downstairs to the pool on the fourth floor, as well as the indoor/outdoor LandShark Bar & Grill. The second and third floors are occupied by the Margaritaville Restaurant, which is accessible by an escalator on the ground floor.

The guestrooms sit above these main public spaces, through floor 28, with mechanical functions on floors 29 and 30. The 5 o'Clock Somewhere Bar spans the top two floors, floor 31 and 32, with terraces that offer striking views of Times Square.

RSHP wins commercial tower in Shenzhen

London, UK – Rogers Stirk Harbour + Partners with AUBE Conception have won the design competition for the Qianhai Financial Holdings Headquarter Tower, a mixed-use commercial high-rise in the centre of the Qianhai district, Shenzhen, China.

With a building height of 220 metres and clad in a metallic bronze finish, the design is punctuated by triple-height sky lobbies, a central atrium and skyline pagoda, all supported within four mega columns. Its features will introduce a striking new landmark tower to the skyline of Qianhai Bay, while on the ground, a sense of shared community will thrive within and around a powerful, classically proportioned tower and public realm.

Qianhai Financial Holdings and Century Securities will occupy the top 12 storeys as their headquarters. The remaining floors will contain commercial

office space – with a typical floor area of around 2,000 square metres – and 4 entrance podium floors of green wing-tiered balconies that embrace the local linear parkway.

RSHP will aim to achieve LEED International Platinum rating and the construction process will largely use off-site manufacturing and modularisation, to drive up quality and drive down waste. Ben Warner, Managing Director, RSHP Asia, said: "Winning the design competition for the Qianhai Financial Holdings headquarters on the 10th anniversary of our presence in China is an important milestone for RSHP. The design reflects the brief in terms of its scale and elegance and at the same time, it has given us the opportunity to create a building of outstanding beauty and quality in Shenzhen. Whilst drawing on our core beliefs of creating accessible and green public spaces at ground level,



Photo: © ATCHAIN

its simple but unique and iconic form will become an iconic feature on the skyline of Qianhai."

UNStudio wins competition for Chungnam Art Museum in South Korea

Amsterdam, The Netherlands – In a nail-biting online jury deliberation on July 19, 2021, UNStudio and DA Group's proposal for the Chungnam Art Museum was selected as the overall winning design. The initial proposals (by UNStudio, BIG, Steven Holl, Snohetta, Grafton and ALA) were first whittled down to three, then two finalists, before the winning design was finally announced.

The winning consortium comprises design partners UNStudio and DA Group, Squint/Opera (digital content and exhibition design), Loos van Vliet (landscape design) and UNSense (community content).

UNStudio and DA Group's design for the Chungnam Art Museum goes far beyond a traditional art museum. It is a fully immersive cultural and social experience for the whole community; a living, breathing space that will grow and change over time. The museum is designed as a place of inspiration, participation and contribution – to both art and the community. It also aims to become one of the first Zero-Energy museums in Korea.

The Chungnam Art Museum will



Landscape perspective. Visualisation: © Bloomimages

provide a new form of interactive engagement between art and the public. It does this by turning the museum inside out, bringing in the city and community of Chungnam to create a diverse and vibrant cultural experience. For the future of the museum, we see the opportunity to create vibrant and interactive spaces through which art and technology can be experienced in new ways.

The Chungnam Art Museum will be a marketplace for culture that embraces flexibility and the concept of 'art for all'. It will ultimately be a place for the community, now and for the future.

Ben van Berkel: "Art has the power to bring people together. It inspires, it teaches and it fosters communities. The Chungnam Art Museum will be a place for people to experience this...and much more."

ST International and SongEun Art & Cultural Foundation announce details of new space opening and inauguration exhibitions

Basel, Switzerland – ST International Corporation and SongEun Art & Cultural Foundation have announced the opening of their new office building and cultural site – ST/SongEun Building – designed by the internationally acclaimed Swiss architecture firm, Herzog & de Meuron, launching this September in Seoul. This project is the architecture firm's first realised project in Korea, and their hope and aim is to establish this building to become a new and significant landmark in Seoul. The inaugural programming of the new building will comprise of two exhibitions: the first curated by Herzog & de Meuron (opening September 28, 2021), followed by the 21st edition of

the SongEun ArtAward (opening December 10, 2021.).

Herzog & de Meuron was selected to design the new building due to their carefully considered and organically crafted approach to their design process. The building pays an homage to a plethora of architectural motifs whilst maintaining a strong and harmonious connection to local contexts, cultures and environments. Located in the heart of Cheongdam Dong, the building will be nestled in one of the busiest commercial and luxury fashion epicenters in Seoul. The project aspires to become a cultural anchor that will further attract visitors and broaden the exposure around Korean artists as well as



Photo: ST / SongEun Building 2021 © Jihyun Jung. All rights reserved

the international contemporary art scene.

One of the most prominent design features of the project is the concrete surface that is textured by using formwork of

rotated wooden boards. This motif is an ode to the meaning behind the name SongEun, which is translated as "hidden pine tree", in which the patterns and veins of these wooden boards add a tactile quality to the volume. This design element is sharply contrasted, yet seamlessly integrated with the building's sharp, geometric, minimal, monolithic structure, which is 11 storeys high and 5 floors underground and spans more than 8,000 square metres. The art spaces on the lower floors open up towards the main street through a long window. The upper floors are dedicated office spaces with another long window at the top.

Chairman Sang-Duck Yoo said, "We commissioned this groundbreaking building with culture at its core to emphasize the need and importance of the arts in our contemporary society. As an architecture firm, Herzog & de Meuron has often looked to artists for inspiration. We hope that our building will also be a source of inspiration for our community and will attract even more attention and visitors to the promising contemporary artists we earnestly try to promote."

Herzog & de Meuron commented: "Our experience designing contemporary art museums has increasingly focused on how we can bring art and people together. How can we make a space that works for the art and the artist, for the collector and the public? Many different needs have to be factored in to make a whole that works for everyone. Only then can such a place become a new attractor for urban life in a city."

Adjaye Associates designs the new African Institute Campus in Sharjah

London, UK – The Africa Institute in Sharjah, United Arab Emirates – the first centre of its kind dedicated to the advanced study, research, and documentation of Africa and the African diaspora located in the Arab world – has commissioned Adjaye Associates to design its new campus in downtown Sharjah.

Designed by David Adjaye, the architecture creates an enclosed campus with four wings between four and seven stories each. Connected by a series of open-air interior courtyards and punctuated by large overhangs which produce shade and relief from solar heat, the low carbon concrete structure enhances the desert typology which requires a sensitive and contextual response. The open-air courtyards span the first and ground floors are punctuated by water features and native planters which improve air circulation and provide natural cooling. The 31,882-square-metre (343,175-square-foot) campus will include spaces of differing character and scale for classes and seminars as well as a research library and climatized archive facility, flexible auditorium and performance space, a restaurant and café, and a bookstore. Entryways on each of its four façades will welcome the public and connect The Africa Institute with surrounding institutions and public walkways.



Aerial day view. Photo: © Adjaye Associates

The Africa Institute is also commissioning artists to create site-specific installations throughout the public spaces of its new building, which will be announced at a later date. The campus building is scheduled for completion in 2023.

Top 5 Access Control Trends of 2021 (and Beyond)

Text by Adriana Voegeli. Photos courtesy of dormakaba.

From personal hygiene to crowd control, the COVID-19 pandemic has heightened many security sensitivities – and it might even be increasing the pace of digitisation. The race is on, as innovation and developments continue to produce access control trends that will likely continue to shape the world of physical security for the rest of the decade.

Here are 5 top access control trends of 2021 (and beyond) to watch for!

1. Mobile Technology Takeover

While they are no longer a novelty, mobile technologies will continue to be the dominating access technology trend in 2021. These will be anything but static, as advanced features and improved efficacy are continually integrated. The accessibility of mobile technology means that this transformation will be ubiquitous, from private residences to the commercial sphere.

Mobile badging has begun to replace physical badges or keys in many homes and facilities worldwide, allowing the entry and exit process more hassle-free and secure. About a fifth of organisations already use smartphones instead of traditional access cards, and this percentage will continue to rise.

Recognising its ability to minimise touch and enhance hygiene, many corporations, and even government facilities, have adopted mobile access in the fight against the pandemic.



Mobile access solutions by dormakaba gives you secured access with your mobile device.



dormakaba's cloud-based software grants access in real time according to your needs.

2. The Future is in the Clouds

There has been a palpable shift from on-premise access systems to cloud-based access systems in the world of access control.

What distinguishes cloud-based access systems from their on-premise counterparts is that they are hosted on the

vendor's servers and accessed through a web browser. They typically function through an app that can authorise entry for specific persons in customisable spaces and timings.

With the COVID-19 pandemic, monitoring crowd flow is more critical than ever. With the convenience and accessibility it brings, cloud-based access control has become a prominent physical security trend.

3. Hybrid Approaches to Security

In 2021 and beyond, access control strategists and security consultants will likely adopt an increasingly hybrid and holistic

approach to safety and security. This entails a combination of digital and physical methods.

Multi-factor authentication (MFA) is a process that reinforces safety by ensuring digital users are who they say they are, and requires at least two pieces of credentials to prove their identity. Pieces of evidence must be from a different category: something the user knows, something they have, or something they are. To mitigate risks and have the best of all worlds in security, multi-factor authentication is likely to emerge as a more universal solution.

4. Faces Instead of Keys

Driven largely by the demand for touch-free entrances, the growth of facial recognition as an access control solution is expected to gather significant momentum. Riding the wave of the COVID-19 pandemic, the market size for facial recognition technologies will expand five-fold by the end of the decade, reaching USD 70 billion globally.

Meanwhile, thanks to the rapid advancements and growth, these technologies will continue to advance, becoming more accessible, safer, accurate, and considerably more sophisticated.

Like any other touch-free access control method, facial recognition also has the potential to improve public hygiene for many years to come.



Facial Recognition Terminal 91 60 is one of the latest in a series of Touch-free Solutions offered by dormakaba.

5. Flexible Business Models



dormakaba's exivo offers a subscription-based service which does not require additional IT infrastructure nor dedicated staff to manage and maintain it.

The rapid and profound changes made necessary by the COVID-19 pandemic reinforced the importance of flexible, agile, and scalable business models and expenditures.

Flexible business models in the world of access solutions such as subscription-based services allow companies to switch easily with minimal downtime depending on their needs at any given point in time. There has also been a trend of corporations opting for

outsourcing, as it frees up internal resources and offers a greater degree of agility.

Access control solutions have certainly come a long way from the humble lock and key. Whether it is subtle, or life-altering on a global level, changes lead to different preferences; and in chasing global trends, new innovations and inventions take hold and spur further developments. Monitoring global trends in access control allows us to continually produce innovative products and solutions to propel the industry into the future.

New report sheds light on impact of pandemic on architecture

Washington, USA – A new report released from the American Institute of Architects (AIA) – in partnership with Oldcastle BuildingEnvelope – is providing an in depth look at the impact of the pandemic on design firm business conditions.

"Growing concerns over building design from the pandemic and public awareness of health risks will continue to drive the refurbishment, expansion, and remodeling markets throughout 2021," said AIA EVP/Chief Executive Officer Robert Ivy, FAIA. "As the end of the COVID-19 crisis comes slowly into view, it is clear that the pandemic-induced recession created two contrasting economic realities: a strong residential market and a weakened non-residential market."

Despite demand for design services and construction activity decreasing significantly during 2020, other design and construction sectors accelerated existing trends and even created positive business conditions for some architects depending on their design focus.

According to the report, *Business Opportunities & Sustainability Trends Amidst a Pandemic*, the impact on commercial and institutional non-residential projects was especially negative while demand for architectural services

on single-family home projects increased. The report also found that while clients engaged less on sustainability issues during the pandemic, architects working on sustainable projects were not negatively impacted by the pandemic.

"We were pleased to join AIA to support this important research as it uncovers our current uncertain landscape while also demonstrating a continued commitment to sustainability," said Oldcastle BuildingEnvelope President Liz Haggerty. "It was encouraging to learn that a majority of architects – almost 80 percent – are finding clients willing to invest in buildings that lead to better occupant health and productivity."

Business Opportunities & Sustainability Trends Amidst a Pandemic is available on AIA's website www.aia.org.



AIA EVP/Chief Executive Officer Robert Ivy, FAIA. Photo: © AIA

Studio Hai creates Nomo Fomo collection

New York, New York, USA – Nomo Fomo is a collection of functional art objects by Studio Hai. Each object can be interpreted in multiple ways; either as sculpture, planter, or an object of interaction that is suitable for sitting on, standing on, leaning against, or playing around. As a collection, Nomo Fomo creates a space that is flexible and invites interpretation. Nomo Fomo's intent is to give people a space to gather, relax, or rest. The gathering element of the design gives reason to both the names and forms of the work – Nomo (no more) represented as a smile, and Fomo (fear of missing out) as a frown; when composed together, a tongue-in-cheek way of saying don't be alone, instead connect with nature and each other – Nomo Fomo. Studio Hai constantly seeks to connect people to nature by adding planting or other elements to create designs that celebrate how when we combine art with nature we can delight, surprise, and even comfort. The material choice for Nomo Fomo is a hard-coated (polyurea) EPS with an internal aluminum frame. Being both lightweight and affordable, yet extremely durable and resilient, hard-coated EPS is the smartest choice. The finish of each hard-



Nomo Fomo collection. Photo: © Studio Hai

coat reinforces the conceptual narrative of each object's design by being in contrast – one smooth and representative of a polished stone, the other with an orange-peel texture in a warm, moody red.

Studio Hai is an art and design practice dedicated to enhancing the celebrity of nature within our daily lives. Via objects, experiences, and environments, they conjure visions of what people intrinsically yearn for: a more connected, inspired, and eco-centric world. Their body of work successfully blends nature

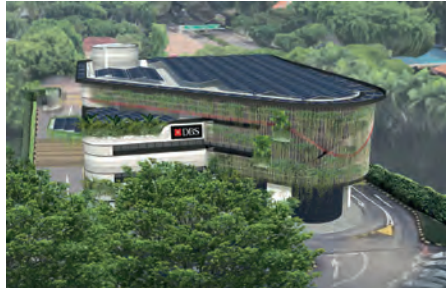
and the built environment to create a new wave of imaginative, immersive, and inclusive experiences; revealing to the world that nature is as much a part of our cultural heritage as language, art, and history. Founded in 2020 by Andrew Furmanski, the studio currently practices between New York and Shanghai. Their work has been featured, amongst others, in Dezeen, Elle Decor, and Designboom. In 2018, Andrew Furmanski's architectural canopy in Qingdao, China, titled 'Emergence', was short-listed for the Best Use of Metal Award by World Architecture News.

DBS sets the pace for Singapore's corporate sustainability efforts with plans for nation's first net zero building by a bank

Singapore – Building on its commitment to achieve net zero operational carbon emissions by 2022, DBS has announced plans to transform an existing four-storey office building located at 135 Bukit Timah Road into Singapore's first net zero development by a bank.

When completed, the building, located a stone's throw from the Newton MRT station, will join the rarefied but growing ranks of zero energy buildings in the world – as there are currently only over 500 net zero commercial buildings globally, according to estimates by the World Green Building Council. This is in line with Singapore's national agenda to green 80 percent of its buildings by Gross Floor Area by 2030 under the Singapore Green Building Masterplan, which is part of the Singapore Green Plan 2030 [1].

DBS will invest over SGD 5 million to retrofit the office block, with a portion of the cost covered by a grant awarded by Singapore's Building and Construction Authority (BCA) under the national Green Buildings Innovation Cluster



Artist's impression: © KAIA Architects

(GBIC) Programme [2], attesting to the extensive integration of innovative sustainable technologies throughout the building.

DBS plans to incorporate a slew of net zero technologies and design features to ensure that its Newton development produces as much energy as it consumes. When completed, the retrofitted building's net energy consumption is projected to be brought down from about 845,000 kWh annually, equivalent to the energy consumed by about 200 four-room HDB homes in Singapore for an entire year,

to zero. This will be achieved through a reduction in energy consumption by over 580,000 kWh annually, with the balance energy requirements generated via an on-site solar panel array.

The design of the Newton project was developed together with architecture house KAIA Architects, mechanical and electrical engineering firm CCA & Partners, and sustainability consultancy GreenA Consultants – all homegrown firms actively involved in Singapore's net zero space.

[1] The Singapore Green Building Masterplan is an action plan that sets out Singapore's environmental sustainability ambitions for the Built Environment. It is part of the Singapore Green Plan 2030.

[2] Administered by BCA, the GBIC Programme aims to accelerate the development and adoption of promising building energy efficient technologies and solutions in the Built Environment.

Multi-floor "Biophilic Design Garden" Graces Kumamoto Station Building debut

Kumamoto, Japan – The highly anticipated April 23 opening of JR Kumamoto Station Building was a spectacle for visitors, as it debuted a



Photo credit: SS

large indoor multi-floor biophilic design garden of water and greenery. The seven-floor indoor garden extended from the ground is filled with dozens of plants native to Japan, arranged and optimised via digital simulation. The visual spectacle is highlighted by an artificial 10 metres x 10 metres waterfall, partially illuminated by penetrating natural light. All of the features are designed to reflect the region's natural beauty and symbolise its recovery from the 2016 Kumamoto earthquakes.

As the core unit of railway company JR Kyushu's aim to create "a city where people want to live, work, and visit", the

12-storey facility was designed to bring vitality to the area around Kumamoto Station, where fresh urban development is underway. The building also features "Amu Plaza Kumamoto," a visitor-friendly complex of shops, restaurants, theatres, a wedding hall, and recreation areas, as well as the hotel "THE BLOSSOM KUMAMOTO." Kumamoto-City is located approximately 1,200 kilometres southwest of Tokyo on the island of Kyushu.

The JR Kumamoto Station Building has been designed by Nikken Sekkei Ltd., a leading architectural, planning and engineering firm in Japan.

Warema's nationwide campaign for climate protection

Bavaria, Germany – Warema's diverse shading solutions are crucial to boosting well-being at home and the efficient use of energy. And it has plenty of other projects that also promote well-being and sustainability. The company has joined forces with several of its specialised retail partners to donate 5,000 trees as part of the nationwide 'Wipfelstürmer' (Treetops) campaign. With this nationwide campaign aimed at protecting and reforesting German forests, Warema is advocating for a better and more sustainable future. The company is committed to climate protection with its energy-efficient products and sustainable actions, and wants others to do the same. It has therefore paved the way for its prime partners, who are members of Warema's company-own loyalty programme, to take action without things getting complicated. Until the end of 2020, the specialist retailers were able to use their prime points to donate trees to the project and thus to improve their own commitment to sustainability.

"We felt it was important to make things as easy as possible for our prime partners so that plenty of them would get involved," said Marion Fischer, Head of Marketing at Warema. "Sun shading and environmental protection are quite simply a perfect match. We have provided our prime partners with a communication package, as we are sure their customers will



Warema donates 5,000 trees with several of its specialised retail partners. Photo: © Warema

also be interested in learning about this scheme. This will allow our partners to raise awareness of their tree donations in their region and on their social media channels."

Naturally, members don't have to dig the holes and plant the trees themselves. The "Unternehmen Wald" (Project Forest) foundation was more than happy to take on this task, and the trees were planted in January in Schleswig-Holstein.

ACC promotes sustainable living with 100 Green Building Centres across India and 50 more under construction

Mumbai, India – ACC Ltd, one of the leading producers of cement and ready-mix concrete in India, offers a unique and sustainable model of living through Green Building Centres (GBC). In 2020, GBCs enabled 31,477 affordable homes across India through GBC products.

Green Building Centres are designed to provide durable and affordable housing solutions in India by promoting sustainable building materials, building techniques and locally trained workforce. Green Building Centre, an initiative of rural-connect, acts as a catalyst in rural and semi urban development. It goes beyond cement and concrete to create environmentally friendly, and affordable alternatives to traditional clay burnt bricks, creating a new place in the market for masonry and paving products. This is in line with the Sustainable Development Roadmap 2030 of its parent company LafargeHolcim.

Based on a franchise business model, unique across the world, local entrepreneurs supported by ACC have established 100 centres operating in various districts in India. In 2020, the total number of beneficiaries at GBC, receiving direct livelihood support was more than 3,150. Furthermore, GBCs also help in generating livelihoods through their Mason Training Program, which aims to develop skills in construction. Each centre contributes directly to the creation of 30 livelihoods and indirectly to 120 livelihoods.

Mr. Sridhar Balakrishnan, MD & CEO, ACC Limited said: "Green Building Centres is a unique programme that aims to provide affordable housing, sanitation solutions, rural and semi-urban pavement solutions which is a key pillar in our plan for people and communities in India. At ACC, we believe in embracing communities and

working together to effect real change. Through the Mason Training Program at GBCs, we also give real opportunities to young Indians for self-development. We not only want to build our nation with sustainable building solutions, but also empower the nation's youth through entrepreneurship, livelihood and skill development initiatives."

In 2020, ACC established 43 new GBCs, bringing the total number to over 150 centres, of which 100 are in operation and the rest are under construction. With the sustainability agenda at their core, GBCs in 2020 collectively contributed to the use of 70,740 tons of fly ash, the conservation of 1,53,271 tons of the Earth's natural topsoil, and the avoidance of 10,788 tons of CO2 emissions. Through ACC, LafargeHolcim India has the vision of facilitating the creation of 1 million houses and toilets in Semi-Urban and Rural India by 2025.

Exquadra Tower breaks boundaries as the first LEED Platinum certified building in Pasig

Ortigas, Pasig, Philippines – On July 9, 2021, Exquadra Tower was awarded by the Green Business Certification Inc. (GBCI) using the rating system by the US Green Building Council (USGBC), a LEED Platinum certification. LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world and a recognized international symbol of excellence in green buildings.

The Exquadra Tower is the 6th building in the Philippines and the 1st in Pasig to earn LEED Platinum certification, the highest level in the LEED – Building Design & Construction – Core & Shell (LEED BD+C: CS) rating system for its design, sustainable construction, efficient operation and maintenance practices that improve environmental and human health.

The 38-storey Ortigas prime office tower on Exchange Road joins the rank of the world's most renowned state-of-the-art, environment-friendly buildings such as Bank of America Tower in New York, Asia Square in Singapore, and Taipei 101.

Unioil's commitment to developing a sustainable project in the heart of Ortigas is a testament to its leadership in today's world-class "green" architecture. The LEED Platinum-certified Ortigas Landmark signifies Unioil's legacy: one that is future-proof, iconic, and speaks of the longevity Unioil is known for.

"On its 50th anniversary five years ago, the company decided that despite its significant efforts in protecting the environment, it needs to do more... much more. That is why Unioil formed its first property development company, Exquadra. Today, this is just beyond dreaming. Exquadra Tower is now a LEED Platinum certified building in the heart of the Ortigas CBD. The most exciting part about all this is that we are just getting started," said Janice Co, Director of Exquadra.

Even before the project's inception, Unioil intends to build an innovative, people-centric, and technologically advanced structure. This is evident in the plans integrated by the team of architects and design consultants behind the Exquadra Tower. While Barone International, Exquadra's sustainability consultant, monitored the construction process to ensure that Exquadra adheres to LEED requirements.

"The developers of Exquadra opted for LEED certification by the US Green Building Council because it is the most "holistic" measure of sustainability...not just considering environmental impact but more on tenant wellbeing," said Kelly Cada, Project Manager of Exquadra.

The resource-efficient systems and green technologies behind Exquadra Tower are designed using an integrated, whole-building approach. The building was designed to provide significant energy savings from the latest, efficient water-cooled chiller system with Magnetic Levitation Technology. It is the same technology that cools the Changi Airport in Singapore and the Louver in Paris. This is the first installation of this technology in the Philippines.

The Exquadra Team emphasises the importance of Indoor Air Quality (IAQ) within the building to prevent sick building syndrome by providing dual-stage (MERV 8 & MERV 13) filtration system which was designed to introduce pre-cooled, fresh,



Photo: © Exquadra Inc.

clean air exchange to every office unit in the building – a feature that has proven to be vital during this pandemic and compliant with the new DOLE Guideline for Ventilation in the Workplace.

The tower is also installed with double-glazed curtain glass that efficiently reflects heat to reduce internal building temperature. It also boasts LED lighting throughout the building, and provisions for energy-efficient destination control elevators. The building's parking lot is also equipped with (scalable) electric vehicle charging stations, and high speed under-chassis camera for better security. The Exquadra Tower is also the first 5G-ready building in the Philippines with picocells in every office unit to optimise coverage.

"Achieving LEED certification is more than just implementing sustainable practices. It represents a commitment to making the world a better place and influencing others to do better," said Mahesh Ramanujam, President, and CEO, USGBC. "Given the extraordinary importance of climate protection and the central role buildings play in that effort, Exquadra is creating a path forward through their LEED certification," he added.

Nippon Paint takes the heat off Singapore, one surface at a time



Photo credit: Nippon Paint Singapore

Singapore – In recent years, climate change and global warming have become increasingly urgent concerns. In countries like Singapore, the Urban Heat Island (UHI) effect, a phenomenon where pavements, buildings, and other surfaces in cities absorb and retain heat, is compounded by the warm tropical climate and the heat generated by air-conditioner compressors. These factors have contributed to Singapore's mean surface air temperature increasing at more than double the global average rate. Nippon Paint's COOL-TEC range is thus a means the brand has anticipated and fulfilled this market need to combat rising temperatures, underscoring the brand's leading role in offering innovative functional paints and coatings.

Nippon Paint's COOL-TEC range is Singapore's first complete range of cooling coatings for exterior walls, roofs and floors. Paints in the COOL-TEC range are fast-drying, easy to apply, environmentally friendly, low-odour and non-toxic. When solar heat hits a surface coated with Nippon Paint COOL-TEC coatings, it is reflected or 'bounced' back into the atmosphere without warming the surrounding air. COOL-TEC coatings thus create a cooling 'envelope' that effectively reduces surface temperatures by up to 5°Celsius. This in turn lessens occupants' reliance on electric fans and

air-conditioning, reducing greenhouse gas emissions and the amount of hot air that is generated by air-conditioning compressors. The net result of cooler building surface temperatures and lighter usage of air-conditioners has the knock-on effect of lowering outdoor air temperatures, mitigating the UHI effect.

To date, Nippon Paint COOL-TEC coatings have been successfully applied on a number of public, residential, commercial and industrial buildings. These include National Heart Centre, Temasek Club, Hwa Chong Institution Sports Complex Costa Del Sol, Regency Suites, E-Bridge Infant Care & Preschool at Sengkang, Keppel DC Singapore 3 (T27) Data Centre and Woodlands Hospital.

The COOL-TEC range comprises SolaReflect, an acrylic-based cool paint for exterior walls; SolaReflect Si, a silicon-based cool paint for exterior walls; SolaReflect Roof-Seal Waterproofing; and SolaReflect CoolFloor, a multi-part coating system for exterior flooring and paving. This complements Nippon Paint's existing offerings of first-in-market products that have transformed consumer mindsets and radically raised the bar of the paint industry. These include Nippon Paint's VirusGuard+, Singapore's first antiviral paint, and MozzieGuard, the market's first anti-Aedes mosquito paint.

Flexible plastic packaging recycled into Kraft Heinz Roofing Material

Pittsburgh / Chicago, USA – The Kraft Heinz Company has announced the successful completion of a pilot project to demonstrate the use of roof board made from recycled flexible packaging. The test was made possible by the Company's participation in Materials Recovery For the Future (MRFF), a non-profit research collaborative that set out to prove technical and economic feasibility to collect, sort, bale and recycle flexible plastic packaging.

The project installed roofing material made from post-consumer flexible plastic into two Kraft Heinz manufacturing plants in Beaver Dam, Wis., and in Holland, Mich. The recycled roofing materials were installed late in 2020. The materials were comprised of 4' X 8' boards; 94 percent of each board was made of post-consumer recycled plastic

and fiber. This was an important project for Kraft Heinz because the Company uses flexible plastic packaging across its product portfolio.

The pilot project will be monitored for performance versus standard building materials. If the recycled materials perform as well or better than standard building materials, Kraft Heinz will strongly consider standardizing use of this recycled material in the future. The Company will report on its use of recycled content to the Association of Plastic Recyclers Demand Champion program, after having joined late last year.

"It was a privilege being part of MRFF, which not only helped identify ways to curbside collect and recycle flexible packaging, but also identified end markets that we could leverage within our facilities. Our test project



Kraft Heinz food packaging transformed into roofing material. Photo: © Kraft Heinz

highlights the company's commitment to sustainable packaging and the priority it places on its Environmental, Social and Governance commitments. Kraft Heinz continues to search for ways to make our packaging recyclable and to incorporate recycled content within our supply chain," said Erik Groner (Senior Principal Packaging Engineer).

Laminam launches a new line of green bioactive treatments for exteriors and interiors

Fiorano Modenese (Modena), Italy – The Italian company driving a sustainable future. Ambience marks an epochal shift: buildings that behave like living plant organisms, by neutralising harmful substances in the air and releasing oxygen. The new bioactive treatments also strengthen the bacteriostatic qualities intrinsic to Laminam surfaces, and cleaning is made easier, whether indoors or out, reducing environmental impact and the costs of standard maintenance.

The future is here and it is far from dystopian. Alberto Selmi, CEO of Laminam: "Being sustainable also means seeking to drive positive change which will benefit the whole of society. With Ambience we aim to be one of the agents of that change, building a better world for the generations to come."

Tests carried out by certified external laboratories show a reduction of up to 99.9 percent in bacteria, mould and mildew with the new Ambience treatments for interiors. Totally safe for both people and pets, they ensure continuous sanitisation and constant inhibition of the growth of microorganisms.

With Ambience treatments, cleaning the surfaces is even easier because they increase surface hydrophilic properties and activate a natural breakdown process of the organic compounds deposited there. Indoors, they can be cleaned with common detergents. Outdoors, rainwater is sufficient.



Hotel Nodo in Santiago, Chile, South America's first bioactive building thanks to Ambience treatments on Laminam surfaces, Legno Venezia series, used to cover the façades. In one year it purifies as much air as a 1.5 hectare forest, helping to combat pollution. Photography by Christian Klotz - Architecture & Interior Design by Riccardo Stein

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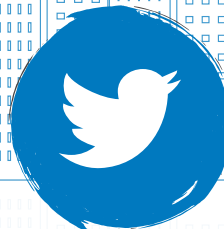
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Attica Rehabilitation Center



Large-size ceramic tiles were installed in the communal areas with KERAFLEX MAXI S1 adhesive. Tile joints were grouted with KERACOLOR FF mortar.

MAPEI WAS PROUD TO BE PART OF THIS STATE-OF-THE-ART MEDICAL FACILITY COMPLETED WITH HIGH-TECH PRODUCTS FOR BUILDING.

The Attica Rehabilitation Center, located a couple of kilometres away from Athens within the Attica region (Greece), is a state-of-the-art medical facility offering rehabilitation services. The centre started operating in 2020 and can boast the largest hospitality capacity in Greece with its facilities covering a 15.000 square metres surface. The building's design was oriented towards energy efficiency solutions. The MAPETHERM system was chosen for thermally insulating external walls. In detail, MAPETHERM EPS panels were installed on the walls using MAPETHERM AR1 GG cementitious mortar. The panels were further secured with MAPETHERM LTX fixing plugs. MAPETHERM AR1 GG was used as a smoothing and levelling compound over the thermal-insulation panels and was reinforced with MAPETHERM NET glass fibre mesh. QUARZOLITE BASE COAT coloured acrylic undercoat was applied, before the application of QUARZOLITE TONACHINO coloured acrylic protective plaster.

Waterproofing the pools

When building the two swimming pools of the complex, MAPELASTIC SMART two-component, high-flexibility cementitious mortar was used for waterproofing and protecting the substrates of the internal surfaces. Ceramic tiles were installed thereupon using KERAFLEX MAXI S1 deformable cementitious white adhesive. The tile joints were grouted using KERAPOXY CQ two-component epoxy grout. The floor and wall substrates in the bathrooms



The substrates of the swimming pools were waterproofed with MAPELASTIC SMART before installing ceramic tiles with KERAFLEX MAXI S1.



were waterproofed with MAPELASTIC AQUADEFENSE. MAPEBAND PE120 PVC waterproofing tape was used in combination with MAPELASTIC AQUADEFENSE waterproofing membrane and applied on all the floor to wall and wall to wall corners. Porcelain tiles were installed over the waterproofing layer with KERAFLEX MAXI S1 adhesive while the tile joints were grouted with ULTRACOLOR PLUS.

Cementitious coatings and ceramic tiles for communal areas

ULTRATOP LOFT system was applied on the vertical surfaces in the bar-restaurant area to create decorative cementitious

coatings with a mottled effect.

In all communal areas, both internally and externally, large-size porcelain tiles were installed with KERAFLEX MAXI S1 adhesive while the joints were grouted with KERACOLOR FF. In all external areas, a waterproofing layer of MAPELASTIC two-component, elastic cementitious mortar was applied beforehand to ensure protection.

Mapei Products

Thermal insulation: Mapetherm AR1 GG, Mapetherm LTX, Mapetherm Net, Mapetherm EPS

Wall coatings: Quarzolute Base Coat, Quarzolute Tonachino





Preparing and waterproofing substrates: Eco Prim Grip, Mapelastc, Mapelastc Smart, Mapelastc AquaDefense, Mapeband PE 120

Installing and grouting ceramic tiles: Keraflex Maxi S1, Ultracolor Plus, Keracolor FF, Kerapoxy CQ

Laying cementitious coatings: Primer SN, Quartz 0.5, Primer LT, Ultratop Loft F, Ultratop Loft W, Ultratop Easycolor, Ultratop Base Coat, Mapefloor Finish 52 W

Article source: Realtà Mapei International no. 84/2021

For more information, email mapei@mapei.com.sg.

PROJECT DATA

Project Name: Attica Rehabilitation Center

Location: Magoula, Greece

Period of Construction: 2019–2020

Year of the Mapei Intervention: 2020

Owner: Christos Papastergioy

Design: Argyro Varvarousi

Main Contractor: Drosos Construction

Ceramic Tile Installation Contractor: Drosos Vangelis

Project Manager: Drosos Vangelis

Mapei Coordinator: Maria Vardava, Mapei Hellas (Greece)

Photos: Michael Koronis



Organic India Facility



THE INTEGRATED PRODUCTION FACILITY FOR ORGANIC INDIA IN LUCKNOW IS A SPRAWLING CAMPUS DESIGNED BY **STUDIO LOTUS** TO SUPPORT THE PRODUCTION, PROCESSING, AND ADMINISTRATIVE FUNCTIONS FOR THE HOLISTIC WELLNESS BRAND.

Located in Chinhat, an industrial area on the outskirts of the state capital of Uttar Pradesh, the site surroundings are characterised by low-rise developments and small manufacturing plants interspersed with small fields of barley and legumes. This upcoming industrial zone creates a verdant backdrop for the facility that has been designed to capitalise on the abundant open space to provide an atypical work environment for its factory workers and administrators alike.

Two sets of intersecting axes characterise the building footprint of the facility; the resulting interstitial spaces emerge as courtyards, lightwells, and lawns that provide space for interaction as well as relaxation to the facility staff. The built vocabulary of the facility has been articulated in brick and concrete, with sleek lines and planar symmetry characterising the façade design.

The axes conceptualised for the facility's design have been staggered to lay at an angle to the site boundaries – the resulting footprint creating large open spaces along the periphery to accommodate staff parking, heavy vehicle manoeuvring and off-loading, and recreational zones towards the east,



west and north sides; the southern side of the site has been reserved for services, in tune with Vastu recommendations. To segregate worker and visitor traffic as well as pedestrian and vehicular access, however, the entrance for the Production Wing has been provided from the western flank.

This relatively private access provides workers the opportunity to assemble before starting work as well as clears the driveway for incoming lorries. Preceded by a large lawn, the entrance along the western flank opens into a set of decontamination chambers for the workers, which allows them to systematically execute hygiene procedures before entering the production wing and subsequently the Raw Materials section.

The Production Wing has been designed to ensure seamless transfer of raw material to individual processing



units, and their subsequent movement to the packaging department. The Raw Materials section is a triple-height space, with a sophisticated pulley system installed to move goods to the top floor – from where they are moved laterally to the processing units. The processing units are housed in modular rooms that are 3 metres wide each, each designed to specification for the machinery housed within. The goods are then moved through a top-down processing system, with preliminary steps like sorting and drying executed at the topmost floor, and more sophisticated secondary functions

executed on the ground and first floor.

The goods, having moved down the production line, are loaded onto a conveyor belt connecting the Production Wing to the Finished Goods Block, which is located towards the Northern end of the site. Here, the processed goods are inspected, packaged and made ready for dispatch. The Finished Goods block – which sets adjacent to the Quality Control Department – opens into a driveway with restricted access, allowing approved goods to be moved off-site without disturbing the functions of the rest of the facility. This movement

of goods from the Eastern to Western side of the site marks the production line, forming the functional spine of the facility.

The spaces supporting the administrative functions of Organic India complement this functional spine, extending from the Finished Goods block to the drop-off for the Raw Materials section. The built vocabulary of these blocks is porous and composite, as compared to the monolithic appearance of the processing wings. To the eastern end is the Experience Centre for Organic India, a two-storey space wrapped in a





tessellated brick screen; the facility's amphitheatre and temple precedes this centre – the three, in conjunction, mark the visitors' zone of the facility. The office spaces, expressed in a similar vocabulary, about the Experience Centre – extending towards the west in a linear configuration, and housing the Finance, HR and Sales departments. Ancillary functions for the administrative staff are located towards the end of Administrative Block, and comprise of

meetings rooms, a gym, and the cafeteria. The administrative spaces of the facility wrap around a large lawn, facing north. A large tree retained on site stands in this lawn, and has been christened the Bodhi Tree for the campus to pay homage to Organic India's commitment to mindfulness for the self and for the community. The administrative spaces, through numerous balconies and box windows, look into this lawn; the provision of nooks and perches along

the building envelope lends a meditative quality to the workspaces.

The design scheme of the facility imbibes local influences to create a sustainable built environment, the primary among these being the use of bricks as the primary infill material. Left exposed, the facility's brick shell harkens to the regency structures of colonial Lucknow; bricks are also locally available due to abundance of labour-intensive kilns and availability



of pliable clay, lowering the carbon footprint of the campus. The fenestration strategy, in tune, has been devised to provide the optimal wall-window ratio to each zone: the processing blocks have limited ingress of light, facilitated through skylights and north lights, to prevent spoilage of goods. On the other hand, high ingress of light has been enabled in the administrative blocks, to help lower dependence on artificial means of lighting.

The interstitial open spaces on campus further aid climate control in multiple ways, primarily by enabling passive cooling of the blocks through stack effect. The abundance of open spaces and limited hardscaping also increases potential for recharging the ground water table. The design of the facility also ensures the channelling of surface run-off for reuse, as well as recycling of greywater discharge – the result has been the reduction of potable water consumption by more than half of the initial demand.

The design scheme utilises, in addition, a gamut of passive cooling techniques – such as terracotta filler slabs in the large-span spaces, and recessed openings to cut out solar glare. Over one-tenth of the material used in the construction of the facility is recycled; as a result of these interventions, among many others, the project has been awarded a LEED Platinum rating.

PROJECT DATA

Project Name: Integrated Production Facility for Organic India
Location: Lucknow, India
Client: Organic India
Architecture Firm: Studio Lotus
Site Area: 4.2 acres
Built-Up Area: 1,20,000 square feet
Completion: March 2019
Photographer: Studio Noughts & Crosses LLP; Andre J Fanthome



Amrish Arora. Photographer: Studio Noughts & Crosses LLP; Andre J Fanthome

“The facility combines the production and administration sides of the wellness brand to create a campus that stands as an exemplar of sustainable development – not only in tangible terms of material use and energy consumption, but also through the provision of a built environment that caters to the physical and psychological wellbeing of its occupants. The project has a paramount focus on creating a hospitable user experience; careful details have been put in place to meet international standards for hygiene. All the internal services are designed to ensure clean, dust-free corners. The project’s hierarchy-free planning brings the management and the factory workers together by creating the central building as a congregational space. Furthermore, the programme encompasses ancillary provisions for truck drivers to include areas for rest, relaxation, dining, and washing. These interventions allow for the campus to engender social inclusivity uncharacteristic in such building types. The expansive open spaces, permeable built fabric, focus on community and introspection, and prioritization of the workers’ safety and comfort over all else has created an architectural template for all future properties for the company.”

Amrish Arora, Principal, Studio Lotus



South Quarter

**SOUTH QUARTER,
DESIGNED BY WKK
ARCHITECTS, IS A
HIGH-END MIXED-
USE DEVELOPMENT
AND ONE OF THE
MOST SUSTAINABLE
PROJECTS IN
JAKARTA.**

WKK Architects Ltd created the concept design of this high-end mixed-use development called South Quarter. WKK is the UK based partnership of Tom Wright, Hakim Khennouchi and Geku Kuruvilla. The development comprises of offices, retail mall and food & beverage outlets set across three towers in Phase 1. It is located in South Jakarta with its surroundings tipped as a preferred location for multinational corporations setting up business ventures in Indonesia. The overall design for South quarter was inspired by the nature of Indonesia, the buildings and landscape create a harmonious natural environment which promote healthy working and living spaces.

The elements of architecture are muted to minimal natural shapes and geometry, with earthy shades of colour set within green park life. South Quarter strives to be one of the most sustainable developments in Jakarta with integral strategies to curtail energy use and conserve water. An innovative organic façade contributes to an overall reduction in energy demand of 35 percent. The canopy that connects the towers has deep overhangs and adds as a nature roof for rain harvesting. Grey water recovery systems provide an integrated water conservation strategy with a 25 percent reduction in fresh water demand for the project. Construction on Phase 1 started in August 2012 and was completed by



South Quarter - Phase 1 & Phase 2 -
matched to surroundings.



South Quarter, Phase 1

October 2015. South Quarter Jakarta was runner up in the Mixed-Use Building of the Year Category in the 2013 Emirates Glass LEAF Awards.

Inspiration for South Quarter – Phase 1

The Phase One office towers were designed with an organic form that takes its reference from the traditional woven baskets of the region. The windows are recessed between the concrete floor slabs so that they are shaded from the sun. The façade was carefully designed to provide further shading to the building, the form of the louvers changing to cope with the demands of the building orientation.

South Quarter – Phase 1 – Awards

- Winner Best Office Architectural Design – South East Asia (South East Asia Property Awards 2016)
- Winner Best Office Architectural Design, Best Office Development & Best Commercial Development (Indonesia Property Awards 2016)
- Winner The Iconic Business Park, Jakarta (Properti Indonesia Award 2016)
- Winner Best Green Office Building (Property & Bank Award 2016, Indonesia)
- Gold Winner Green Property Award (GPA 2015) Commercial Project – Office Category, Indonesia
- Gold Certification Green Building Council Indonesia
- Silver Winner Best Design Consumer Choice Award, Indonesia

South Quarter - Phase 2 (SQ Rés)

SQ Rés is the second phase of the South Quarter development. Three new residential towers are linked to the original office towers via a sweeping Treetop Walkway. This Walkway loops around the two main residential towers, through the trees and over the residential gardens.

The towers are 'draped' in GRC louvres that feature the parang motif, inspired by the traditional Indonesian patterns found in Batik fabrics. The techniques,





The ETFE Dome and Plaza Area are the focal points in the centre of the three office towers of South Quarter Phase 1.



South Quarter, Phase 2



South Quarter, Phase 2



South Quarter, Phase 2

symbolism and culture surrounding Batik permeate the lives of Indonesians from beginning to end, and the craft intertwined with their cultural identity and spirituality.

The GRC louvres are not only functional but also an aesthetic link to Phase 1, both in colour and form. The hourglass silhouette and vertical flow of the residential tower louvres complement the organic shape and horizontal rhythm of the office tower louvres.

To differentiate it from its siblings, the third residential tower is clad in waved louvres that create diagonal ripples

over the building, imitating the movement of fabric in the wind. The louvres taper at the top and bottom to give it the familiar concave profile seen in Phase 1.

Inspired by the lobes of the mangosteen, 'The Botanics' is a series of outdoor spaces designed for leisure and relaxation. Among the meditation and contemplation gardens are a putting green, BBQ grill, play area, and native flower collections. Nestled in the heart of it all is the pool, with plenty of shaded decking.

Inspiration for South Quarter – Phase 2 (SQ Rés)

The Phase Two residential towers, follow a similar design philosophy. Still organic in form, although based on a more orthogonal plan to suit the apartment layouts. Inspired by Indonesian patterns the façade shading louver blades are perforated with a traditional Batik print design that will help root the buildings in the local context.

South Quarter – Phase 2 (SQ Rés) - Awards

- Winner Best High-End Condo Development Jakarta (Indonesia Property Awards 2019)



PROJECT DATA

Project Name: South Quarter

Location: South Jakarta, Indonesia

Client: PT Intiland Development TBK

Architecture Firm: WKK Architects Limited, United Kingdom

Gross Floor Area:

South Quarter – Phase 1: 254,335.00 square metres including basements

South Quarter – Phase 2 (SQ Rés): 135,255.00 square metres including basements

Completion: South Quarter

– Phase 1 completed in October 2015

– Phase 2 (SQ Rés) is under construction

Photos: © 3D Visualisations and © WKK Architects Ltd



Tom Wright
Director at WKK Architects Ltd



Geku Kuruvilla George
Director at WKK Architects Ltd

South Quarter was led during concept design by Tom Wright & Geku Kuruvilla George.

“South Quarter is designed to be both elegant and understated, offering a clear interaction between exciting built forms and landscape. To meet aspirations of Intiland, one of the most experienced premium developers in Indonesia, WKK have tried to keep sustainability, technology and natural beauty in perfect harmony while designing this distinctive key destination in South Jakarta.”

WKK Architects Ltd



Tekka Place

PREVIOUSLY KNOWN AS THE VERGE MALL, THIS INTEGRATED DEVELOPMENT, DESIGNED BY **ONG&ONG**, DELIVERS AN ILLUMINATING RETAIL EXPERIENCE.



Singapore's Little India houses streets chock full of diverse cultures and are visited by local shoppers and tourists alike. With Tekka Place located at the tip of Serangoon Road, it was vital for the architecture to capture the soul of the precinct. The development comprises a 10-storey main block, a seven-storey annex block with a rooftop deck, Citadines Rochor's serviced residences and five levels of parking.



Tong Pey Haw

“Tekka Place is an amalgamation of the multi-faceted colours of Little India. A place born from the sight, sounds and texture of its urban landscape. A place that resonates harmoniously with its community and context.”

Tong Pey Haw, Associate Director, ONG&ONG



Previously called The Verge Mall, this integrated development is envisaged to provide an illuminating retail experience, underscored by its positioning as the gateway to Little India.

Cultural references such as the lotus petal (a prevalent motif in Indian culture) are utilised as motifs on the facade screens, in a rhythmic pattern to represent Little India's shophouses with open and closed louvred windows.

The spatial experience continues within the building, extending the vibrant and bustling streetscape into the commercial podium. An internal street bisects the podium, connecting Serangoon Road to Clive Street through Tekka Place. To further embrace the area's rich culture, dedicated spaces will host relevant arts events.

The mall spans 70,000 square feet of retail space encompassing 80 units spread across the basement and first two floors of the main block. F&B choices with exclusive views of the city will be perched on the outdoor rooftop area. Occupying the upper floors of the main block is Citadines Rochor, a 320-unit serviced residence with studio and one-bedroom units. Facilities include a lounge, gymnasium, launderette and swimming pool. Designed as a vertical neighbourhood, the block is split into two smaller massings, with verdant greenery softening the form, in parallel with the streets below.

Tekka Place was awarded the BCA Green Mark Gold^{Plus} award in 2020.



PROJECT DATA

Project Name: Tekka Place
Location: Singapore
Client: Corwin Holding Pte Ltd
Architecture Firm: ONG&ONG
Size: 22,162 square metres
Completion: 2019
Photography: ONG&ONG



Kolon One & Only Tower



MORPHOSIS MARKED THE RECENT OPENING OF THE NEW 820,000-SQUARE-FOOT RESEARCH AND DEVELOPMENT (R&D) FACILITY FOR THE KOLON GROUP.

The Kolon Group is a leading textile manufacturing company in South Korea. The design of the tower features flexible laboratory facilities, administrative offices, and active social spaces that encourage greater interaction and exchange across the company departments, with a visually striking façade that demonstrates Kolon's commitment to innovation, technology, and sustainability.

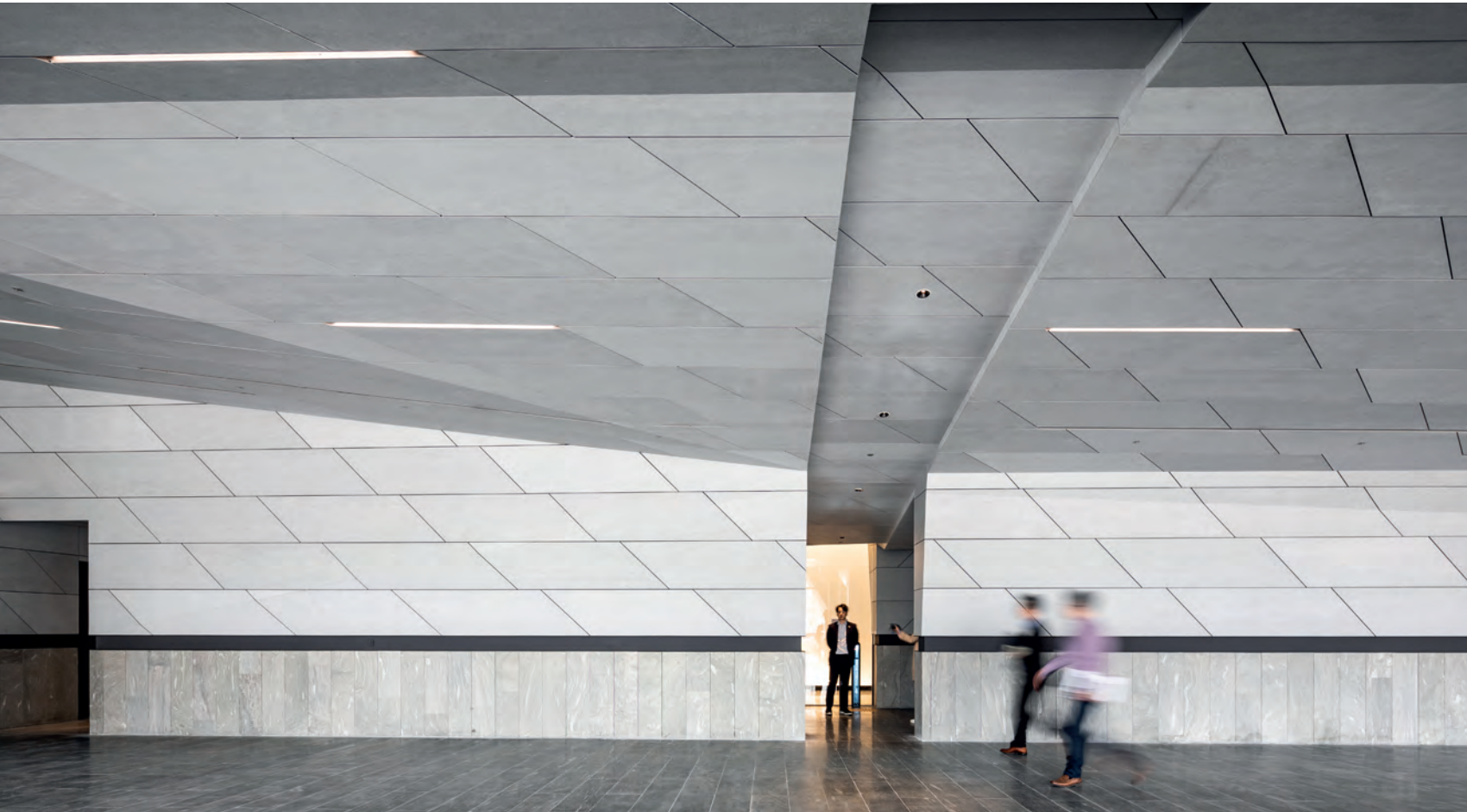
Led by CEO and Chairman Lee Woong-Yeul, Kolon (which takes its name from its original product, KOrean nyLON) is a diverse corporation that covers R&D, primary material manufacturing, and product construction. The company produces textiles, chemicals, and sustainable technologies as well as original athletic and ready-to-wear clothing lines across its 38 divisions. Kolon's all-encompassing scope allowed the company to draw from its own resources to construct the new facility, christened the Kolon One & Only Tower, and assume a unique position as both client and contractor. Fifteen percent, or approximately 123,000 square feet, is devoted to active social spaces, supporting Chairman Lee's vision of creating collaborative and interdisciplinary spaces that prioritize employees' well-being. Fifty-five percent of the building is laboratory space, with the remainder designed for offices.

Working with a company like Kolon, that also has innovation at its core, allowed us to really push the limits of materials, technology, and design to create a building that is visually striking and sustainable. From the outset, our team worked in collaboration with Kolon to realize their vision for this new space that will serve the research needs of the company well into the future," said Morphosis Founding Principal Thom Mayne.

Kolon is one of the first firms to move its R&D operations to Magok, a new hub for technology and light industry, setting the standard for performance and design in the district. Seoul Metropolitan Government is leading an initiative to transform the district into an "industrial ecosystem" where a range of technology and information companies can relocate their operations centres. The five-acre project site sits adjacent to Magok's central park – a prominent location for what will be the district's first major completed building.

The building folds towards the park, providing passive shading to the lower floors. Bridging the three extending laboratory wings, this folding volume contains conference





rooms and social spaces while the street-level floor will be occupied by flagship retail and exhibition galleries to familiarize the public with the Kolon brand.

A transparent ground plane provides a connection between the landscape and the interior space, capturing light and movement in an expansive pedestrian atrium. At 40 metres tall and 100 metres long, the atrium serves as the building's social centre, and its translucent liner system – comprised of over 400 massive eight-metre panels that showcase Kolon's own fabrics – showcases the heart of the atrium space: The Grand Stair. Inspired by the Spanish Steps in Rome, the Grand Stair serves practical functions but also acts a vertical courtyard for informal, casual gatherings as well as end-of-year marquee ceremonies.

"The new research and development facility for Kolon sets the standard for sustainable design and construction in the emerging Magok district," said Project Principal Eui-Sung Yi. "Inspired by Kolon's severe-weather layered performance wear, our team worked with engineers and fabricators to apply a performance driven series of vertical layers to our design that challenges the conventional approach to sunshade design and enhances the building's sustainability."

The distinctive brise-soleil system on the main, west-facing façade of the building was created through a complex process early in the design development phase of the project, resulting in a unique sunshade that is both performative and symbolic.

The design of the façade features an interconnected array of



sunshades that form the monolithic, outer skin, analogous to a woven fabric – a reference to Kolon’s research in textiles, as well as a symbol of collaboration between the company’s many departments.

The units of the sunshade are parametrically shaped to balance shading and views and are made from fibre reinforced polymer (FRP) using one of Kolon’s own high-tech fabrics, Aramid, to dramatically increase the material’s tensile strength. One of the most notable features of the design is the lack of a visible support structures, allowing the sunshade to seemingly float outside the glazed wall and providing clear views from the interior spaces.

The Kolon One & Only Tower received the LEED Gold certification in October 2018. The building is also pursuing the most rigorous sustainability certification in Korea. The performance of the building focuses on energy efficiency, resource conservation, and environmental stewardship,

working in concert with education and employee health and well-being. Roof terraces and courtyards provide increased access to natural light and fresh air to invigorate the work environment.

Other sustainable measures include green roofs, photovoltaics (PV) and geothermal design, recycled materials, and utilizing a bubble deck slab that reduces the amount of concrete used by 30 percent.

Key performance and sustainable design strategies include:

- The development of building mass and orientation to respond to the solar path
- Incorporating solar self-shading to minimize cooling loads
- Daylighting in the atrium to reduce energy used for artificial lighting
- Providing natural ventilation to reduce cooling load
- A floor radiant system to provide thermal comfort





Eui-Sung Yi
Photo credit: Michael Powers

“The new research and development facility for Kolon sets the standard for sustainable design and construction in the emerging Magok district. Inspired by Kolon’s severe-weather layered performance wear, our team worked with engineers and fabricators to apply a performance driven series of vertical layers to our design that challenges the conventional approach to sunshade design and enhances the building’s sustainability.”

Project Principal Eui-Sung Yi at Morphosis

PROJECT DATA

Project Name: Kolon One & Only Tower
Location: Seoul, South Korea
Client: Kolon Industries, Inc.
Architecture Firm: Morphosis
Size: 76,300 gross square metres
Design: 2013–2015
Construction: 2015–2018
Photos: © Jasmine Park and © Sam Tannenbaum



Shenzhen Rural Commercial Bank Headquarters



THE NEW HEADQUARTERS, DESIGNED BY **SKIDMORE, OWINGS & MERRILL**, DEFINES A WORLD- CLASS BENCHMARK FOR SUSTAINABLE DESIGN.

The headquarters of Shenzhen Rural Commercial Bank, strategically located in the Bao'an Central Zone – the frontier of the development of the Guangdong-Hong Kong-Macau Greater Bay Area and the core engine of Shenzhen's economic development – is the new home to a bank that has grown from its roots as a rural credit union into a modern commercial bank. The new headquarters defines a world-class benchmark for sustainable design utilising naturally ventilated atria and a column-free externalised structure.

The design inspiration is drawn from natural systems and elements like water and wind which figure prominently in building features like the multi-storey water wall at the building's main lobby, the undulating striations of marble cladding the tower's elevator core, and the integration of a mixed-mode natural ventilation system that







Scott Duncan. Photo: © SOM

“We’re always exploring opportunities to synthesize inventive engineering solutions with architectural design.

The Rural Commercial Bank Headquarters gave us the chance to incorporate a diagrid — similar to an exoskeleton — that pulls the structure to the exterior and effectively suspends the tower within to create column-free workspaces.”

Scott Duncan, SOM Design Partner

allows for seasonal air flushing of the key common areas and office levels. Automated louvers in the vertical atria traversing the full height of the tower and mechanised window vents on each office floor comprise a flexible system that allows the building to “breathe” during the frequent periods of pleasant weather experienced in Shenzhen.

Building on SOM’s tradition of innovative structural engineering solutions, the design incorporates a tightly-spaced diagrid that serves two primary purposes. The first is to provide an exterior shading system for the building and its occupants, an important consideration in mitigating the region’s hot tropical sun. Solar gain is thereby reduced by approximately 34 percent and dramatically reduces glare in the office spaces within. The second purpose is to create an entirely column free floor plan and enable ultimate flexibility of office layouts. The resulting interior space is defined only by a simple perimeter glass wall with an automated solar control blind to preserve optimal daylight levels.

A glass and bronze-toned private banking pavilion adjacent to the tower’s main lobby incorporates a high-performance double-skin wall to provide environmental comfort and visual privacy to the consultation suites and areas for display of artwork within. Reflecting pools, grey granite paving and seating areas, and arrays of trees and ground cover define the main entrance spaces and small gardens at the base of the tower, relating to the adjacent large public park that is the centerpiece of the district master plan.

PROJECT DATA

Project Name: Shenzhen Rural Commercial Bank Headquarters
Location: Shenzhen, China
Client: Shenzhen Rural Commercial Bank
Architecture Firm: Skidmore, Owings & Merrill
Project Area: 91,200 square metres
Building Height: 158 metres
Completion: March 2021
Photos: © Seth Powers



Solforest Ecopark

Aerial view



**THE SOLFOREST
ECOPARK,
DESIGNED BY
DEWAN ARCHITECTS
+ ENGINEERS,
IS A 1,194-UNIT
DEVELOPMENT SET
TO OPEN NEXT YEAR
IN HANOI.**

Located in Hanoi, Vietnam, the Solforest Ecopark features vertical gardens that engulf the residential towers. Inspired by the Ecopark Master Plan model of green living life style and the community culture of Vietnamese cities, Dewan uses this in a modern organically induced vertical garden design, offering the users of the development many hidden gems to discover and enjoy on the plot. The two main towers with 42nd + 35th floors are generated by dynamic Vertical gardens which gives the feeling of living in the countryside and helping shade from the sun.

150 metres is the highest point of the development where stunning penthouses are allocated facing all Ecopark Masterplan. Developed mainly in G+1 floors the podium is composed with vibrant retail, F&B, Shophouse and Shopvillas, making a successful bridge between tradition and contemporaneity. Solforest Ecopark combines the tranquillity of countryside living and the conveniences of numerous amenities (gym, 200 square metre multipurpose kids' area, distinct swimming pools for both adults and children, barbecue and private garden) allocated on the top of the podium making the transition between commercial and residential area.

More than one million trees planted for the development provide insulation in the cooler months and shade in the warmer months, reducing residents' reliance on energy-draining heating and cooling systems. To ensure the vertical gardens will continuously thrive, Dewan also incorporated cutting-edge watering systems specifically designed for each balcony depending on the type of plants and the orientation of the space.



Eye view



Mohammed Adib
Photo: © Dewan Architects + Engineers

“Solforest Ecopark showcases Dewan’s ability to cultivate mixed-use properties that blend stunning design with innovative sustainable technologies. The project demonstrates how large-scale developments can enhance communities situated in rural areas without diminishing the beauty of the surrounding natural environment. By combining the tranquility of the countryside with the conveniences of living in urban communities, Solforest represents just one example of how architecture must evolve to meet the demands of increased density while actively fighting against climate change.”

Mohammed Adib, Chief Design Officer at Dewan Architects + Engineers



Balcony view at dusk.

PROJECT DATA

Project Name: Solforest Ecopark
Location: Hanoi, Vietnam
Client: Private
Architecture Firm: Dewan Architects + Engineers
Gross Floor Area: 129,000 square metres
Completion: 2022
Photos: © Dewan Architects + Engineers



Podium



Podium



Podium



**PARKROYAL
COLLECTION
Marina Bay**



PARKROYAL COLLECTION Marina Bay facade.
Photo: © Pan Pacific Hotels Group

PARKROYAL COLLECTION MARINA BAY RECENTLY OPENED AFTER A NINE-MONTH TRANSFORMATION. DESIGNED BY **FDAT**, IT IS SINGAPORE'S FIRST "GARDEN-IN-A-HOTEL".

Pan Pacific Hotels Group's PARKROYAL COLLECTION Marina Bay – Singapore's first "garden-in-a-hotel" – opened on 1 December 2020 after a nine-month transformation. Right after that, it earned the highest accolade, "5-star Best Hotel Interior", at the International Property Awards 2021.

With this recognition, PARKROYAL COLLECTION Marina Bay joins the ranks of its sister hotel, PARKROYAL COLLECTION Pickering, which has been consistently awarded for its green design.

A perfect balance of iconic design, eco-friendliness and well-being

Central to its commitment to sustainable development, PARKROYAL COLLECTION Marina Bay's original architecture – designed by neo-futuristic American architect John Portman in 1985 – was retained. Doing so prevented the production of 51,300 tonnes of carbon dioxide – equivalent to wiping out 8.7 million trees or an area larger than all of Singapore's nature reserves – that would come with demolishing a typical high-rise¹.

Featuring a 13-metre-high green wall at the entrance for a commanding

¹ <https://www.indesignlive.sg/insight/case-conservation-modern-architecture>



PARKROYAL COLLECTION Marina Bay concierge. Photo: © Darren Soh

welcome, the hotel's greenery, with 2,400 indoor plants, acts as a natural air purifier. The four-storey-high 'Sky-Bridge', a key feature, creates an immersive treetop walk experience accompanied by the aria of live songbirds. The overall ambience gives rise to a new concept of interior urbanism by bringing Singapore's lush gardens within the hotel.

During the renovation, all 583 guestrooms were overhauled to create a conscious living environment. Carpets were stripped and replaced with timber flooring (engineered wood) to reduce the volatile organic compounds (VOC) emissions, optimising indoor air quality. A large bay window area in the rooms also maximises daylight. Motion sensors have also been installed to conserve energy by turning off unnecessary usage of lights and air-conditioning when guests are not in the room.

Sustainable dining in a glass house, complete with an urban farm

Peppermint, the hotel's all-day dining restaurant, offers hand-harvested produce from its urban farm, which contributes 20 percent of the herbs and vegetables used at the restaurant. It also uses sustainable and locally sourced ingredients, keeping in line with the hotel's green push forward.

Food waste is also responsibly handled via a food waste bio digester. Every kilogram of food waste sent to the food waste digester is a kilogram diverted away from general waste incineration.

Leveraging green technology and sustainable practices

The Group's unyielding efforts in sustainability have earned PARKROYAL COLLECTION Marina Bay the BCA Green Mark Gold certification and made a visible impact on its carbon footprints. Green technology interwoven with the innovative designs of the hotel have also resulted in real energy savings.

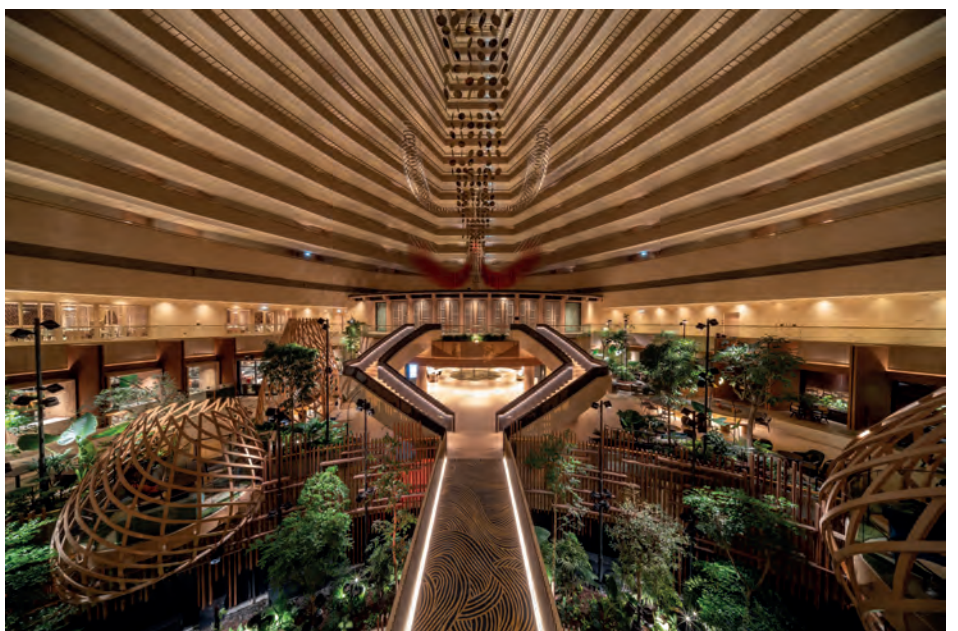
At PARKROYAL COLLECTION Marina Bay, solar panels are expected to generate 121,000 kwh of energy



PARKROYAL COLLECTION Marina Bay reception. Photo: © Darren Soh

per year. The hotel's design has also incorporated double-glazed glass ceilings, which help to optimise chilled water systems and promote energy efficiency, estimated to save more than 160,000kwh per year.

Sustainability is an urgent global priority, with concerted efforts across industries to prioritise green growth and clean energy. As a pioneer for sustainable hospitality, Pan Pacific Hotels Group is paving the way for a more sustainable future through its demonstrated success in sustainable, innovative design at PARKROYAL COLLECTION Marina Bay.



PARKROYAL COLLECTION Marina Bay sky bridge. Photo: © Darren Soh



PARKROYAL COLLECTION Marina Bay urban farm. Photo: © Pan Pacific Hotels Group



Donovan Soon
Photo: © Memphis West Pictures

“PARKROYAL COLLECTION Marina Bay explores Singapore’s garden city within a new context - inverting the relationship between nature and architecture, and breathing new life into the older but still exuberant 21-storey urban scaled atrium complex – creating a one of its kind Garden-in-a-Hotel!”

*Donovan Soon, Director of FDAT,
Designer of PARKROYAL COLLECTION
Marina Bay*

PROJECT DATA

Project Name: PARKROYAL COLLECTION Marina Bay
Location: 6 Raffles Blvd, Singapore 039594
Client: Pan Pacific Hotels Group
Architecture Firm: FDAT
Gross Floor Area: 56,824 square metres
Completion of Renovation: 2020

TSINGHUA ECO STUDIO



THE-Studio (Tsinghua Eco Studio) is the first demonstrating and experimental Nearly Zero Energy Building of the Gui'an Innovation Park in southwest China, which locates in the park's entrance and connects with the constant ecological sponge city landscape, providing an extremely fascinating scenery for both users and visitors. Moreover, its two floors above ground can serve as large-space exhibition, VIP reception & conference and daily office, while one single underground floor can act as equipment and storage area.

THE-Studio is both a practical demonstration case which deeply integrates sustainable design strategies with ecological technologies, and an experimental platform for sustainable architecture based on the Moderate Zone in southwest China, aiming to examine whether the detailed design methods and building technologies can truly suit to the local conditions of climate, culture and even economy.

Oriented to the specific project positioning, the design team has developed the multi-system integrated design strategy from the very early design phase to minimise the negative impacts to local ecological system while maximising the indoor comfort and energy efficiency. The multi-system integration includes three levels: the paralleled construction systems, the integration of vernacular culture with sustainable technology and the BIM platform.

After the building was completed, a series of field measuring and monitoring for thermal, humid, ventilation and luminous environments are carried out and further analysed. The outcomes verify that detailed design methods and building technologies of THE-Studio at the early design phases were both effective and appropriate during the construction and operation processes, which can be the references to the similar sustainable buildings in the Moderate Zone of southwest China.

PROJECT DATA

Project Name: THE-Studio (Tsinghua Eco Studio)
Location: Gui'an Innovation Park in Guizhou province, China
Client: THHDG (Tsinghua Holdings Habitat Development Group)
Architecture Firm: SUP Atelier
Completion: 2015
Photo: © Xiazhi

ST. ANDREWS GIRLS' HOSTEL



The Girls' Hostel Block at the St. Andrews Institute of Technology and Management in Gurugram explores the intersection of education and sustainability through the lens of the vernacular. Completed in 2020, the design for the 25,000 square feet Girls' Hostel takes cues from the adjacent Boys' Hostel Block and is articulated in brick and fair-faced concrete, with exposed structural members abutting the structure along all sides. The hostel's design empowers students with freedom of movement within an environment that prioritises thermal comfort and functionality to become an exemplar of zero energy design.

The hostel is home to approximately 130 students, with dorm rooms spread across four levels in addition to hosting ancillary spaces like a pantry, recreational areas as well as social spaces. The ground floor comprises twelve double-occupancy rooms along with a double-height reception, pantry and indoor activity lounge where students can organize gatherings and social events.

The Girls' Hostel building is an exemplar of sustainability through its energy efficient design. The double-skin facade acts as thermal mass, reducing the incident direct and diffused radiations by 70 percent on the principal façade, thus, minimising heat gain within the habitable spaces behind the block wall. This further reduced the mechanical cooling loads by 35 percent, a marked increment from the ECBC (Energy Conservation Building Code) base case of public buildings.

PROJECT DATA

Project Name: St. Andrews Institute of Technology and Management – Girls Hostel Block

Location: Gurugram, Haryana, India

Client: St. Andrews Group

Architecture Firm: Zero Energy Design Lab

Built-Up Area: 25,000 square feet

Completion: December 2020

Photographer: Noughts and Crosses | Andre J. Fanthome

SUSTIE



SUSTIE is a Net Zero Energy Building Test Facility owned by Mitsubishi Electric Corporation. Opened in October 2020, the building received the top-level BELS 5-star rating (☆☆☆☆☆) and Net Zero Energy Building (『ZEB』) certification from the Building-Housing Energy-efficiency Labeling System, a third-party certification organization in Japan in August 2019. It became Japan's first medium-scale (over 6,000 square metres) office building to achieve this certification.

The rating, which measures energy-saving performance based on the Building Energy Index (BEI), is for the building's theoretical performance levels. Mitsubishi Electric constructed the Net Zero Energy Building Test Facility in Kamakura, Kanagawa Prefecture, south of Tokyo, to develop and demonstrate ZEB-related technology. The facility started operating in October 2020. Mitsubishi Electric is promoting technical developments based on its ZEB+ concept of constructing and upgrading buildings over their lifecycles for environmental efficiency, energy savings, productivity, comfort, convenience and business continuity.

The certification recognises the facility's projected reduction in energy consumption by 103 percent (includes production of photovoltaic energy) compared with its surrounding region's average consumption levels, measuring total energy consumption for air-conditioning, ventilation, hot water, lighting and elevators based on energy conservation standards introduced by Japan's National Institute for Land and Infrastructure Management in 2016. To qualify for certification, Mitsubishi Electric optimised design conditions for the entire construction process, maximised the efficiency of equipment and systems to be installed in the facility and introduced ZEB-based solutions for air conditioning, lighting and elevators. Mitsubishi Electric expects the global ZEB market to expand to 40 trillion yen by 2030 and Japanese market to expand to 130 billion yen by 2020 and 630 billion yen by 2030.

Mitsubishi Electric registered with the Ministry of Economy, Trade and Industry as an official ZEB planner in 2017. Going forward, the company aims to accelerate its development and application of ZEB-related technologies to contribute to the achievement of the United Nations Sustainable Development Goals and the realisation of greater energy savings and more comfortable living spaces, as well as contribute to more convenient office environments under its proprietary ZEB+ concept.

PROJECT DATA

Project Name: SUSTIE ZEB Test Facility

Location: Kamakura, Kanagawa Prefecture, south of Tokyo, Japan

Owner: Mitsubishi Electric Corporation

Architecture Firm: Takenaka Corporation

Completion: 2020

Photo: © Mitsubishi Electric's SUSTIE ZEB Test Facility

Tzu Chi Hospital

– A hospital with sustainability in mind

PT. Epcon Mitra Guna was awarded to supply and install the Isolation Room Automation, and Centralized Monitoring System all using ALC's WebCTRL Building Automation System (BAS) enterprise solution at the new Tzu Chi Hospital in Jakarta.



Photo credit: Tzu Chi Hospital

Overview

Tzu Chi Hospital is a new hospital that was established under auspices of the Buddhist Tzu Chi Medika Indonesia Foundation, which was built based on respecting the soul, prioritizing the life and love. The Tzu Chi Hospital was established because there are still many Indonesian people who seek overseas medical treatment, due the limitation of existing medical facilities in Indonesia. On the other hand, there are still many underprivileged patients who are not able to get optimal health services in the country. For these reasons, Tzu Chi Hospital prioritizes professionalism and humanist culture, as well as

international quality services, with warm and familial touch of humanity.

Built on the land area of 2.6 hectares, with a building area of 136,640 square metres, the Tzu Chi Hospital consists of 23 floors with a maximum capacity of 520 beds. The building structure is designed to withstand earthquake of up to 9 SR, with the current development of hospital concept design, with natural lightning, good air circulation and green space, high technology, and patient-oriented services.

The project also needed green building technology. Efficient use of electrical consumption to manage temperature and humidity on each floor with fully automatic maintaining it. High specification requirement asking 12x ACH Air Change on each room of:

- ICU (Intensive Care Unit)
- ICCU (Intensive Cardiac Care Unit)
- HCU (High Care Unit)
- SU (Stroke Unit)
- PICU (Perinatal Intensive Care Unit)
- NICU (Neonatal Intensive Care Uni)
- BMT (Bone Marrow Transplant Unit)
- Isolation Rooms
- Additional Isolation
- Palliative Care / Terminal Care
- Operating Theatre

PT. Epcon Mitra Guna Solutions

Tzu Chi Hospital project is managed by PT. Agung Sedayu Group (ASG), the partner of Yayasan Buddha Tzu Chi. PT ASG appointed PT HPM Consultant, a firm of professional Mechanical and Electrical Engineers, as their ME consultant.

Tzu Chi Hospital consists of three buildings: Hospital Building, Parking Building, and Energy Building. The hospital is located on Pantai Indah Kapuk Boulevard, North Jakarta, Indonesia.

HVAC designed by PT HPM Consultant adopts the state-of-the-art control systems from the building control industry.

PT. Epcon Mitra Guna was awarded the contracts to supply the Isolation Room Automation, and Centralized Monitoring System. PT. Epcon Mitra Guna was established in June 2000 by the EPCON Group, to provide solutions and expertise in Building Automation System (BAS) and Environment Monitoring System (EMS) for the Indonesian building industry. They worked together with PT. Daya Cipta Anugerah Mandiri (DCAM) as the cabling and equipment installer of the system. The system that PT Epcon deployed in the hospital (Isolation Room) aims to maintain the pressure difference between rooms and also maintain the temperature based on the setpoint, where PID is

the answer to the design needs, where the determination of the pressure and temperature difference is determined from the initial design approval, so that it can maintain efficiency in each room with its standalone system. With a smart system that performs monitoring and control, reports on energy use will be monitored and the controlled devices will work on time so that it will make operational costs more effective.

For the Isolation room, PT Epcon deployed ALC's standalone DDC controller, combined with Touch screen HMI display unit for dedicated control and monitor. The isolation room control is integrated with the Centralised Monitoring System for sustainable management. For the Centralised Monitoring System, ALC's WebCTRL is used to manage the entire hospital's M&E facilities with the aim of energy conservation. The Centralized Monitoring System is integrated with other 3rd party system via high level interface using Bacnet Protocol.

Challenges

PT. Epcon Mitra Guna faced many challenges when implementing the smart system for the hospital. One of the toughest challenges was to ensure that its devices that function as control and monitor devices can work according to design requests where devices (HEPA FAN) that provide room pressure and room temperature (FCU) are not items that they supply.

Client's Response

The technology system that was installed in the hospital, which aims to maintain the different pressure between rooms and temperature, is running well. This system also helps to monitor, controller and report on energy properly. So that it will make the operational cost more effective.

"With the system installed we can do monitoring, manage the differential pressure, temperature and humidity of the isolation room easily. And also, we can manage and reduce building energy consumption mostly in the critical area which need more energy than the other area," said Kalam Tukiman ST, MM (FMS - Facility Management Safety Manager), Tzu Chi Hospital.

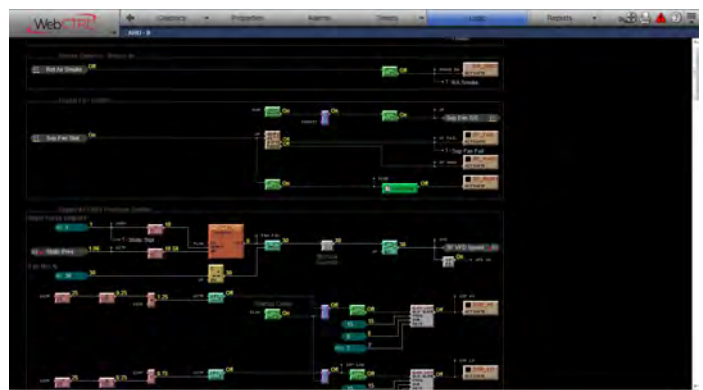
Construction work is still ongoing since early January 2020 and has entered the testing and commissioning stage at this time.



Dashboard Centralized Monitoring System. Photo credit: PT. Epcon Mitra Guna



Dashboard Centralized Monitoring System. Photo credit: PT. Epcon Mitra Guna



Dashboard Centralized Monitoring System. Photo credit: PT. Epcon Mitra Guna



Photo credit: Tzu Chi Hospital



Photo credit: Tzu Chi Hospital

Smart HVAC cloud-computing solutions for a changing world

Text by Rohit Mohindra, Lead System Architect for the Building Services and Performance Management Team, Armstrong Fluid Technology. Photos courtesy of Armstrong Fluid Technology.

The profound impact of the COVID-19 pandemic on the HVAC industry is being felt by all of us in the HVAC industry. The current challenges and threats have been well documented and, unfortunately, will continue to evolve over the coming days, weeks and months.

However, as with many tragic events, there can be positive changes that come from this tragedy. One of these positive changes will be the more rapid development and deployment of smart HVAC systems and remote asset management solutions.

Data and solutions to building owners

Although the development of technologies for smarter, more connected buildings has been underway for some time, it is now being accelerated by the need for social distancing and remote working conditions. It is now more critical than ever that HVAC systems learn, predict and optimize so they can provide critical data and solutions to building owners and other HVAC professionals remotely before problems occur.

And, once potential problems or challenges are identified, experts must be able to communicate digitally with technicians onsite in real time to provide virtual assistance and troubleshooting.

How can we accomplish this task under such difficult conditions? Different manufacturers offer a variety of solutions. At Armstrong Fluid Technology, we call it Active Performance Management.

"The technology can detect dead-heading, excessive heating, broken coupling, cavitation, excessive vibration."
- Rohit Mohindra



Active Performance Management

At its heart, Active Performance Management is a new approach to maximising performance in building systems through a combination of actively seeking system insights and applying those to improved performance. The technology aspect consists of connecting intelligent pumps with other critical HVAC components via cloud-computing to provide critical diagnostic analytics to building owners and managers through a neuro network.

This allows the system to learn, predict and optimise in real time so it can alert building managers to potential issues and predictive maintenance needs well before they become a pressing problem. The technology can detect dead-heading, excessive heating, broken coupling, cavitation, excessive vibration and many other potential issues before they become costly problems.

Equally important, it tracks such important operating efficiency data as energy savings, CO2 savings and much more. Over time, HVAC systems experience 'operational drift' as various components begin to operate less efficiently. This 'drift' can result in 30-40 percent wasted energy. By detecting and even predicting when this drift may begin to occur we can maintain peak

performance and achieve significant energy and cost savings.

"Digitization, digitalization via cloud computing, HVAC and building systems will exchange data, leading to smart building."
- Rohit Mohindra

Fifth Wave of Technology

We believe the HVAC industry is experiencing a Fifth Wave of Technology that is being fueled by the COVID-19 pandemic. This Fifth Wave is the decentralization of decision making which consists of adding 'brains' to equipment at all levels (pumps, heat exchangers, valves, etc.) to enable cross communications and create the neuro network mentioned previously.

By providing a higher authority to lower-level equipment, the analytics and decision-making process is distributed throughout the larger group. This augments a building's BAS system and provides combined brain power with more accurate data.



When enabled by digitisation and digitalisation and connected via cloud computing, all HVAC and building systems will exchange data, leading to smart buildings – that is, lighting systems talking to HVAC systems. Smart buildings will lead to smart cities that consist of similar buildings, all connected and learning from one another to further optimise performance and save energy.

Remote asset management

But what has all of this to do with the COVID-19 pandemic and the accelerated change we are now seeing?

The data and analytics provided by Active Performance Management services are available to building managers remotely anytime, anywhere, via cell phones, laptops and other connected devices.

Now that many people are working remotely it is more important than ever that they have all the data and analytics they need at their fingertips. It is no longer necessary for technicians to go to the jobsite to check the system's operation and/or switch control modes between manual, automatic, BAS or IO.

And although this Remote Asset Management capability has been available for a while, it seems many building managers are hesitant to fully trust these systems and/or have the need for hands-on operation.

“It is no longer necessary for technicians to go to the jobsite to check the system's operation.”
- Rohit Mohindra

Switching manual and automatic modes

In some instances, systems are put into manual mode for servicing but are never switched back to automatic mode. When this happens managers and building owners don't realize all of the benefits and energy savings possible.

There are also instances where building managers don't have intelligent pumps and components installed and think they don't have the budgets to upgrade. However, it is now possible to cost-effectively upgrade existing pumps and system components into intelligent systems.

Whatever the case, we are seeing more and more building managers and maintenance professionals feeling much more confident and accepting of these intelligent systems now that they must observe social distancing.

“Possible to cost-effectively upgrade existing pumps and system components into intelligent systems.”
- Rohit Mohindra

Digital trouble-shooting tools

But what happens when a potential problem or an emergency situation develops, and it is necessary for the technician to speak with a system expert? Thanks to new technology, mobile apps now exist that allow both parties to video chat so the technician

can show the expert exactly what is happening with the system.

They can collaborate in real-time and even see what button they need to push or valve they need to turn. There is a brand new augmented reality app that even allows both parties to draw on their screens and highlight various system parts.


Here again, we are seeing more and more customers that are feeling increasingly comfortable with remote service calls and probably will prefer this method moving forward.

“Augmented reality app that even allows both parties to draw on their screens and highlight various system parts.”
- Rohit Mohindra

What does the future hold?

Although no one knows what the long-term effect of the COVID-19 pandemic will have on the HVAC industry, we believe the positive outcomes will be customers more willing and accepting of intelligent systems, a greater comfort level with remote analytics and an embracement of remote diagnostic troubleshooting.

And of course, this will result in greater energy savings, greater cost savings and reduction in CO2 emissions worldwide. So, there is some good news that will come from this unfortunate pandemic after all.



About the Author

Rohit Mohindra has worked with Armstrong Fluid Technology since 2010, most recently as Lead System Architect for the Building Services and Performance Management Team. In that role he is responsible for directing and supervising code development for the Armstrong Pump Manager platform. Prior to joining Armstrong he held a variety of systems design positions with technology companies.

Surbana Jurong to deploy one of the largest Integrated Facilities Management platforms at Temasek Polytechnic

Singapore – Surbana Jurong has been appointed to deploy one of Singapore's largest Digital Integrated Facilities Management (IFM) Services platforms on Temasek Polytechnic's 30-hectare campus.

Temasek Polytechnic had called for a tender to develop a digital integrated facilities management services platform as part of the polytechnic's digitalisation plans to improve work processes and operational efficiencies for the entire campus including landscape, linkways and 49 buildings on site. With the help of its appointed Internet-of-Things (IoT) service provider UnaBiz, Surbana Jurong will deploy more than 3,000 sensors across the campus to provide real-time accurate data to a digital twin that can identify faults, anticipate risks and predict changing facility conditions with unprecedented accuracy.

The Digital IFM platform will collect and monitor data from the air-conditioning and mechanical ventilation system to ensure that temperature and humidity levels remain healthy for students and campus staff. Sensors installed at various locations around the campus will also be able to keep tabs on the number of



Temasek Polytechnic Campus. Photo credit: Temasek Polytechnic

persons in specific facilities to ensure that capacity limits are not breached. Data collected from these occupancy sensors will also help the campus manager identify usage patterns and potentially re-configure the campus to be more cost-effective to operate.

By aggregating the data collected from the various mechanical & electrical systems on the facilities management platform, Temasek Polytechnic will be able to monitor energy usage and identify opportunities to reduce costs and lower carbon footprint.

Accelerating the transformation of the FM industry

Singapore – At the opening of the Singapore International Facility Management Association's (SIFMA) new office on 22 July 2021, Minister of State for National Development & Communications and Information Mr Tan Kiat How shared on new and ongoing initiatives that will accelerate transformation in the FM industry. These include a new Certified Facilities Management Company (CFMC) accreditation scheme that will raise the competency and service quality of FM Companies (FMCs). He also announced the awardees of the Smart FM Proof-of-Concept (POC) Grant for projects that will help demonstrate the business case of integrated and aggregated FM to the wider FM industry.

Raising the professionalism of the FM industry through accreditation

To raise the professionalism of the FM industry, and the

capabilities and service quality of FMCs, the tripartite Facilities Management Implementation Committee (FMIC)¹ co-created a set of base criteria to benchmark FMCs in October 2020. The criteria cover four broad areas for the accreditation of FMCs, including their financial status, plans for manpower development, processes to enhance service quality, and plans to develop and adopt technology. SIFMA is the first industry association to develop an accreditation scheme based on these criteria. (See Annex A for details on the criteria.)

Driving the adoption of integrated and aggregated FM through the Smart FM Proof-of-Concept (POC) Grant

To encourage the shift toward stronger partnerships and reduce industry fragmentation, the FMIC, in 2020, proposed a longer term transformation towards integrated and aggregated FM. To kickstart the process, a grant call for the Smart FM PoC

Grant was launched in October 2020. To apply for this grant, interested projects had to present innovative solutions that could demonstrate more than 20 percent overall improvement in the productivity of FM services. This would need to be achieved through the integration of multiple FM services, and aggregation of FM services across a cluster or portfolio of buildings.

The grants have now been awarded to two projects from Certis and Ngee Ann Polytechnic. Both projects were awarded as they were able to illustrate significant productivity gains from the adoption of both integrated and aggregated FM. The proposed solutions under the projects will also leverage data and predictive analytics, and will deploy a common data standard to better integrate the multiple FM services such as

cleaning and security across their buildings.

Accelerating the pace of FM industry transformation through the tripartite FMIC

Transforming the FM industry to become more manpower-lean and productive is important, given our ageing local workforce and building stock. This has created manpower challenges and an increase in demand for building maintenance for the FM industry.

¹ Established in 2018, the FMIC is a tripartite committee which develops and implements FM transformation initiatives, comprising trade associations such as SIFMA, developers, FMCs, public agencies, and union

Toshiba Carrier celebrates new China facility opening

Kawasaki-Shi, Japan – Toshiba Carrier Corporation announced that its subsidiary Toshiba Carrier Air Conditioning (China) Co. Ltd. (TCAC) has relocated to a new engineering and manufacturing facility recently completed in Qiantang New District, Hangzhou, China. The subsidiary held a ceremony to celebrate the opening of the new complex on June 18. The ceremony took place under COVID-19 recommended guidelines and was attended in person and remotely by distinguished guests and government officials.

The 72,000-square-metre facility is located on 53,300-square-metres of land and manufactures variable refrigerant flow (VRF) and other heating, ventilation and air conditioning (HVAC) products. The new complex features advanced technology for manufacturing facilities and testing laboratories, including a 115-metre high testing tower that is essential to ensure the reliability for high-rise buildings and cellar manufacturing systems with an automated guided vehicle to accomplish high productivity and quality.

"I am confident that the new complex will allow us to better serve our valued customers with better products through continued commitment to innovative technologies and smart manufacturing driven by digital transformation and human touch," said Toru Kubo, President & CEO of Toshiba Carrier at

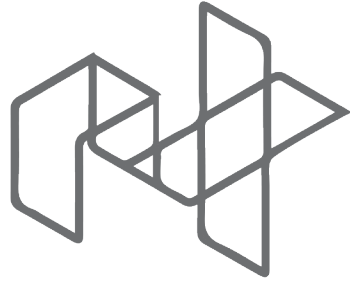


Photo: © Toshiba Carrier Corporation

the opening ceremony. "We will strive with the new complex to cater to challenges, such as energy issues and climate changes, and contribute to the local economy and communities through investment and job creation," he added.

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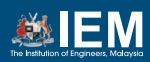
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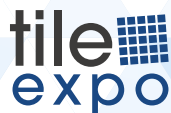
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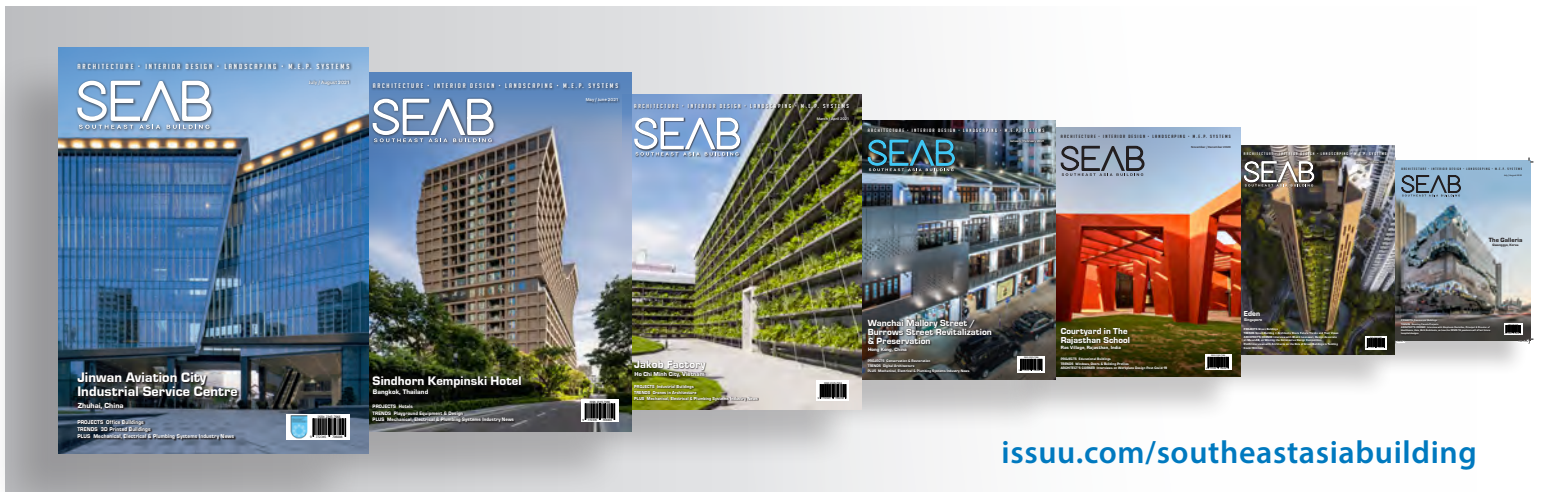
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See us at following upcoming events!

Event	Date	City	Country	Website	Page
Archidex 2021	3 - 6 Nov 2021	Kuala Lumpur	Malaysia	www.archidex.com.my	IFC
ArchXpo 2021	24 - 26 Nov 2021	Singapore	Singapore	www.archxpo.com.sg	74
The Surface + Design Event China 2021	30 Nov - 2 Dec	Shanghai	China	https://en.surfaceschina.com	78
Earthquake Expo Asia 2021	1 - 2 Dec 2021	Singapore	Singapore	www.theearthquakeexpoasia.com	IBC
Engineer 2021	1 - 4 Dec 2021	Kuala Lumpur	Malaysia	www.engineermalaysia.com.my	75
MARVEX 2021	1 - 4 Dec 2021	Kuala Lumpur	Malaysia	www.marvex.my	76
GEBT 2022	9 - 12 June 2022	Guangzhou	China	www.building.messefrankfurt.com.cn	77

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dormakaba c-lever air

Ultra-flat design

Elegant and compact design

Control access to the right areas at the right times with the c-lever air, our electronic door furniture – its ultra-flat design makes it as slim as a normal door plate. The c-lever air meets high aesthetic and functional demands for your access control. A special feature is its thin door leaf design, which at 10.5 to 11.5 mm, makes it possible to continue using existing lock cylinders. With multiple design awards under our belt, you

know we know what we're talking about. The c-lever air is part of the dormakaba evolo standalone portfolio. No wiring is required within the door because the unit is operated with two standard batteries. Combined with lever handle elements on the inside, the same look can be obtained on all doors.

Latest technology

The c-lever air can be integrated into all dormakaba system solutions and supports the latest RFID technologies.

With the optional wireless function, you can transmit your access rights from your computer to the components via a wireless gateway. Benefit from the advantages of this function, for instance in terms of security, programming and maintenance.

Ready to use

The c-lever air can be used on inside doors, such as on design-oriented architecture, in modern offices or museums and galleries.

Our ASEAN locations:

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