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SOUTHEAST ASIA BUILDING



The Sustainability Issue

Climate Change

ON THE COVER: The Lodsi Community Project for Forest Essentials / India

Exclusive Content:

Decarbonisation in the Built Environment Covering Interviews with Green Building Council Heads On Current Strategies and Challenges Ahead



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Photo: Courtesy of Singapore Marriott Tang Plaza Hotel.
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On the Cover: The Lodzi Community Project for Forest Essentials in the Himalayan Foothills, Rishikesh, India by Morphogenesis. Photo credit: Noughts And Crosses

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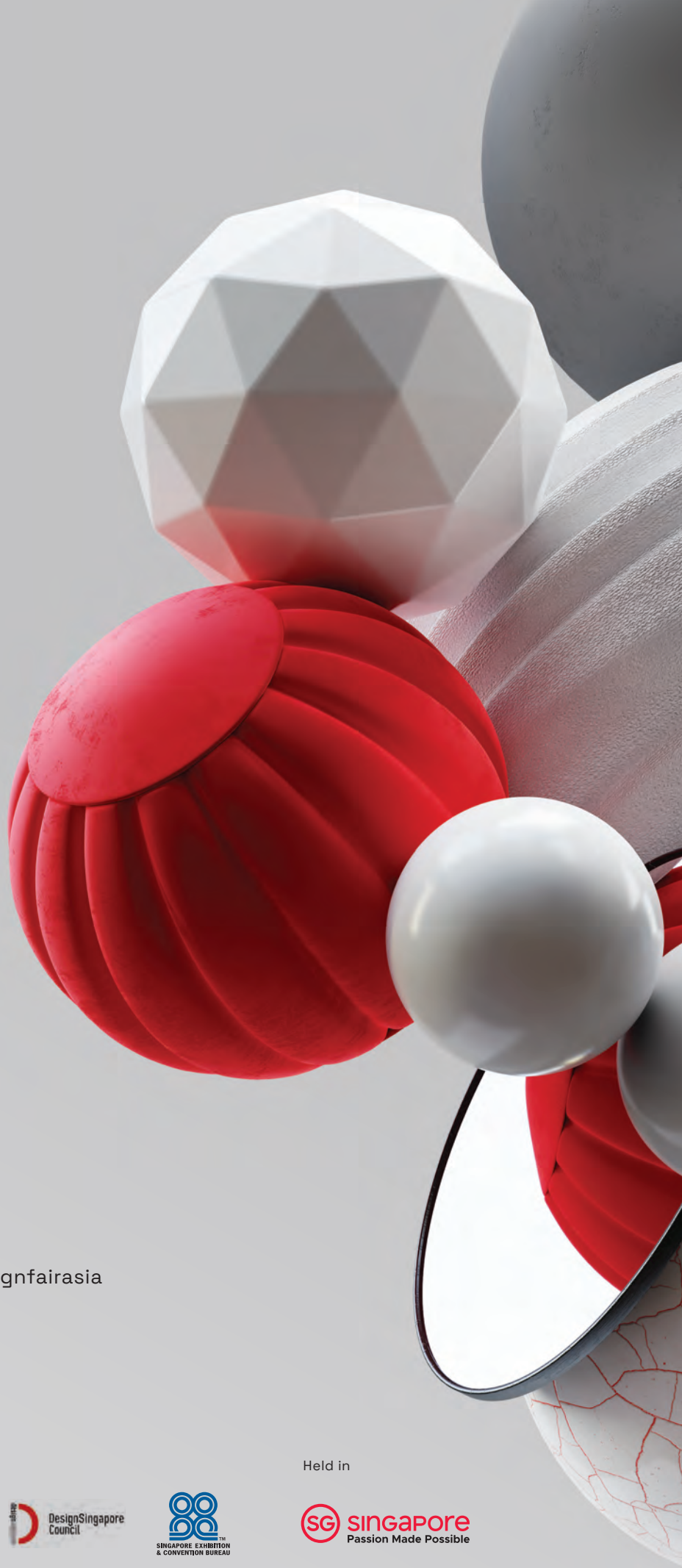


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Welcome to Sept/Oct issue!

Every day, the world wakes up to some kind of extreme weather patterns. Either there are heavy rains and flooding or heat waves in major cities. The climate has really changed and we are all feeling the effects of it. The 2022 Global Status Report for Buildings and Construction, released at the latest round of climate talks in Egypt, COP27, states that the building and construction sector accounted for over 34 percent of energy demand and around 37 percent of energy and process-related CO2 emissions in 2021.

Decarbonising the built environment is critical to reducing overall carbon emissions. In our exclusive content, we ask some regional green building council heads on what strategies can be adopted and the challenges ahead. We also have a case study from Beca, which explains why Environmentally Sustainable Design or ESD is a growing priority for the building and construction industry. And in the MEP section, we have an interview with two Cundall executives who tell us more about what decarbonisation means to MEP specialists.

Don't miss our other stories on climate change – projects, news and more.

Enjoy reading this Sustainability issue and take care.

Amrita Natverlal

November / December 2023 Issue

FEATURES:

- Luxurious Hospitality
- Office Interior Design
- Playgrounds & Landscaping



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HKGBC participates in WorldGBC's new Advancing Net Zero Status Report 2023

Hong Kong – The World Green Building Council (WorldGBC) released the fifth edition of the Advancing Net Zero Status Report that highlights action being taken now to decarbonise the built environment from businesses, governments and the global Green Building Council (GBC) network. The report is packed with examples of industry collaboration and accelerated action to address emissions from the built environment.

The report showcases breakthrough action from across the Green Building Council (GBC) network including the 35 GBCs participating in WorldGBC's global Advancing Net Zero programme, 175 signatories to the Net Zero Carbon Buildings Commitment, the wider GBCs network, partners and more. In addition, the report also highlights collaborative efforts from the market that support WorldGBC's mission to achieve 100 percent net zero carbon buildings by 2050.

As a member of the WorldGBC, Hong Kong Green Building Council



(HKGBC) is proud to be one of the 35 GBC's participating in the WorldGBC's Advancing Net Zero programme, working towards achieving a breakthrough moment for the built environment and accelerating action towards a net zero future.

This year, HKGBC has made significant progress through the launch of Retrofitting Guidebook in January, with over 4,000 downloads

including 40 percent from outside Hong Kong, and its Climate Change Framework for Built Environment in June, which has over 50 supporting organisations and over 10 major developers participating. In addition, the green building rating system BEAM Plus has been widely adopted, with an estimated 1,182,700 tons of carbon emissions saved per year from the certified new buildings.

IOI Central Boulevard Towers conferred WiredScore Platinum certification

Singapore – IOI Central Boulevard Towers, developed by IOI Properties Group, has been awarded the coveted WiredScore Platinum certification.

The WiredScore Platinum certification, the highest-awarded mark from WiredScore, is given to the most outstanding buildings around the world. This achievement is a testament to IOI Central Boulevard Towers' digitally connected space, forward-thinking design, and ability to support the future technological needs of its tenants. The building is the first in the Central Business District (CBD) to achieve the Platinum certification after meeting exceptional standards for the quality of its wired infrastructure, resilience, and wireless network.

The development is also Green Mark Platinum Certified, a mark of sustainable building design awarded to projects that demonstrate 30 percent energy and water savings, as well as environmentally sustainable building practices and innovative green features.

Biophilia is a key component integrated throughout the development, with over 120,000 square feet of green landscaping, including Central Green – Marina Bay's largest urban sky park which also features a 200-metre jogging track and meeting pods. These create spaces for tenants to relax, unwind, and reconnect, prioritising wellness in the workplace.



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R+T Asia 2023 attracts over 50,000 international visitors

Shanghai, China –The 18th edition of R+T Asia concluded successfully with a historic record of visitation and high international participation, leaving a significant impact on the industry and signaling a new era of international-format gatherings in post-pandemic China.

The total number of visitors, hailing from 98 different countries (including China), surpassed all predictions and reached 50,881, marking the highest attendance since the show's inception. Despite the logistical challenges posed by extended visa processing timelines and ongoing flight route adjustments, an impressive total of 11,506 industry professionals from overseas chose to visit R+T Asia 2023, reaching 90 percent of the international visitation recorded in the 2019 edition. The significant presence of international participants reaffirmed China's pivotal role as an important hub for international trade in the industry, marking a restored confidence in the region.

702 companies from 13 countries exhibit

A remarkable total of 702 exhibiting companies from 13 countries converged to showcase their latest offerings, ranging from smart automation systems to energy-efficient sun shading solutions and advanced technologies for doors/gates, covering a space of 100,000 square metres. As networking and business expansion opportunities thrived at this year's edition, leading companies, including renowned names such as A-OK, Ateja Tritunggal, Baolong, Bestex, Bofu, Coulisse, Doortec, Elitex, Hsin Huan, Ider, Lander, MYT Shutters, Novo, SofiDecora, Teh Yor, Xera, Xianfeng, Xidamen and others, have already confirmed their participation in the 2024 edition.

R+T Asia 2023 Hosted Buyer Programme: A success

The 2023 show accomplished another feat by successfully organising a Hosted Buyer Programme. This innovative initiative brought together buyer group delegations from Europe, North America, and Southeast Asia, fostering cross-continental collaboration and enabling tailored interactions that maximised value. The Programme extended invitations to esteemed buyer groups, many of whom were attending R+T Asia for the first time. More than 50 visiting buyers were treated to tailor-made booth tours, aligned with their specific product group interests, ensuring a focused and efficient exploration of exhibitor offerings. Furthermore, a newly-established partnership with ACMI, the Italian Association



Traffic on-site at the R+T Asia 2023. Source: R+T Asia



Opening ceremony of R+T Asia 2023 at the Build Asia Mega Show. Source: R+T Asia

of manufacturers of doors and shutters for residential and industrial applications, introduced its associates to R+T Asia's exhibitors from the door/gate section, exploring synergies on a global stage.

R+T Asia 2023 seminars and workshops elevate industry insights

Beyond its comprehensive product showcases, R+T Asia 2023 captivated attendees with an array of seminars and workshops, establishing a platform for industry experts to share invaluable insights. This strategic initiative underscored R+T Asia's commitment to fostering knowledge exchange and innovation. One of the standout highlights was the International Window and Door Summit (IWDS) and the Low-Carbon Interior Decoration Innovation Conference which created a synergistic environment that offered attendees a comprehensive view of sustainable building practices and environmentally conscious interior design. The Designing For A Better Future, a compelling seminar organized by cadex, unveiled the pivotal role designers play in shaping a more sustainable world. The Material Matters, a visionary concept aimed at fostering efficient communication channels between innovative material suppliers and the architecture and design community. The 2028 Fay's Home, a full-day interactive event, gathered authoritative figures in science, technology, and contemporary art, aimed to facilitate cross-industry dialogues and spark insights into smart home trends and the art of home soft decoration.

Co-located events create comprehensive experience

R+T Asia 2023 continued its tradition of joining forces with a powerhouse lineup of co-located events, including DOMOTEX asia/CHINAFLOOR 2023; HD+ 2023 Home Decoration Asia; and cadex, Under the roof of Build Asia Mega Show, the innovative platform aimed to foster a robust cross-industry dialogue, allowing for seamless multi-channel integration and offering attendees a comprehensive experience that spanned various aspects of the construction and design landscape.

The 19th edition of R+T Asia will return from 28 to 30 May 2024 at the NECC in Shanghai.



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Parametric design for tendril structures: A new service from Jakob

Tendril structures in novel organic shapes with depth effect - now this is made possible by a new service from Jakob Rope Systems. The key is parametric design integrated into a digital planning process.

With a new service Jakob Rope Systems offers more possibilities for the design of trellises. The previously geometric shapes of the trellises are now being expanded to include more complex organic structures with variable depths. The key to this is parametric design, which is integrated into a digital planning process and subsequent production and execution.

"We bring a 3-dimensionality to our customers' greening architecture" explains Fabian Graber, Head of Technology at Jakob Rope Systems. "In this way, we want to provide urban planners, architects, landscape designers and builders with highly individual and novel forms that can be used to develop tendril structures and thus urban greening in new dimensions".

The first customer projects are already being created for vertical greening on building facades and on infrastructures running along railroad lines and roads. Other areas of application are also conceivable. "On the one hand, we support our customers on specific requirements and realize their project up to the finished installation. But we can just as well accompany the development of an initial idea as a partner and help with further

concretization," says Fabian Graber.

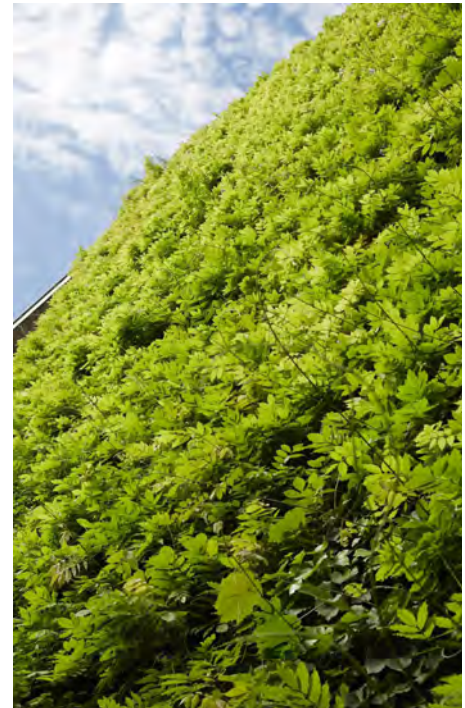
Parametric design – Realization with GreenSolutions

Based on ideas, customer wishes or concrete requirements, Jakob Rope Systems develops a parametric model that virtually maps the desired tendril structure. This makes the shape visible on the screen and allows it to be varied for further planning steps. Certain parameters are digitally stored in the computer, such as the length of the spacers, their position and distances from each other. In this way, further tendril structure patterns can be derived virtually very quickly from a basic shape.

From the virtually finalized tendril structure, Jakob Rope Systems develops the further steps, such as the detailed calculations for construction and the material requirements. This is followed by the assembly of the tendril structure with the existing Jakob range of rope and net systems for greening (GreenSolutions).

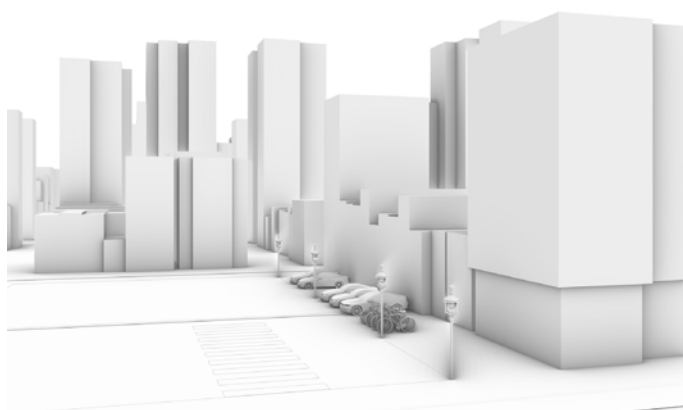
Digital planning – Limitless possibilities

The parametric design treats the spacers of the tendril structure as variable quantities. Thus, the length

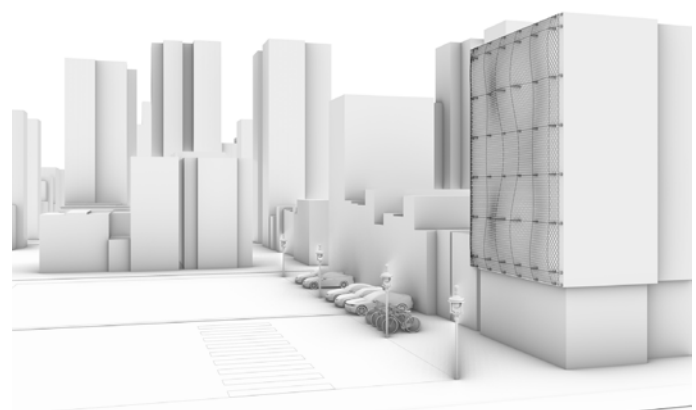


of the spacers as well as their number and their distances to each other vary within a defined tolerance range. The resulting variants of tendril structures are almost limitless.

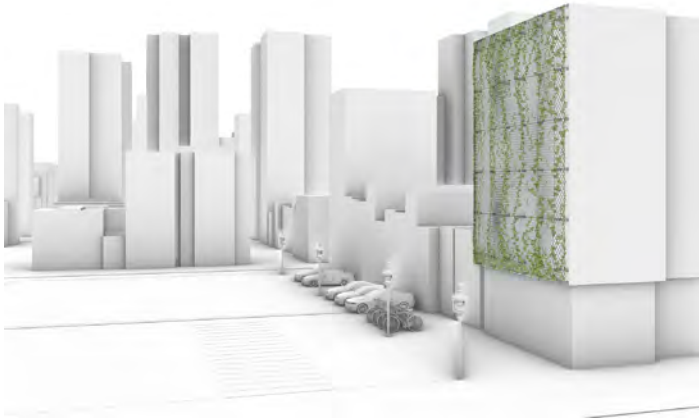
The lengths of the spacers can vary. This creates an organically curved and malleable surface of the tendril



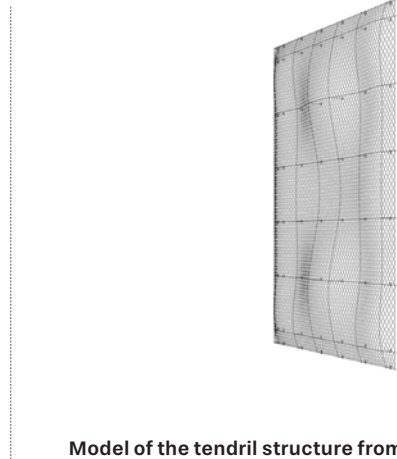
Initial situation: Urban space without greenery.



Facade with vertical tendril structure.



Facade with green tendril structure



Model of the tendril structure from parametric design

structure, which creates a depth effect.

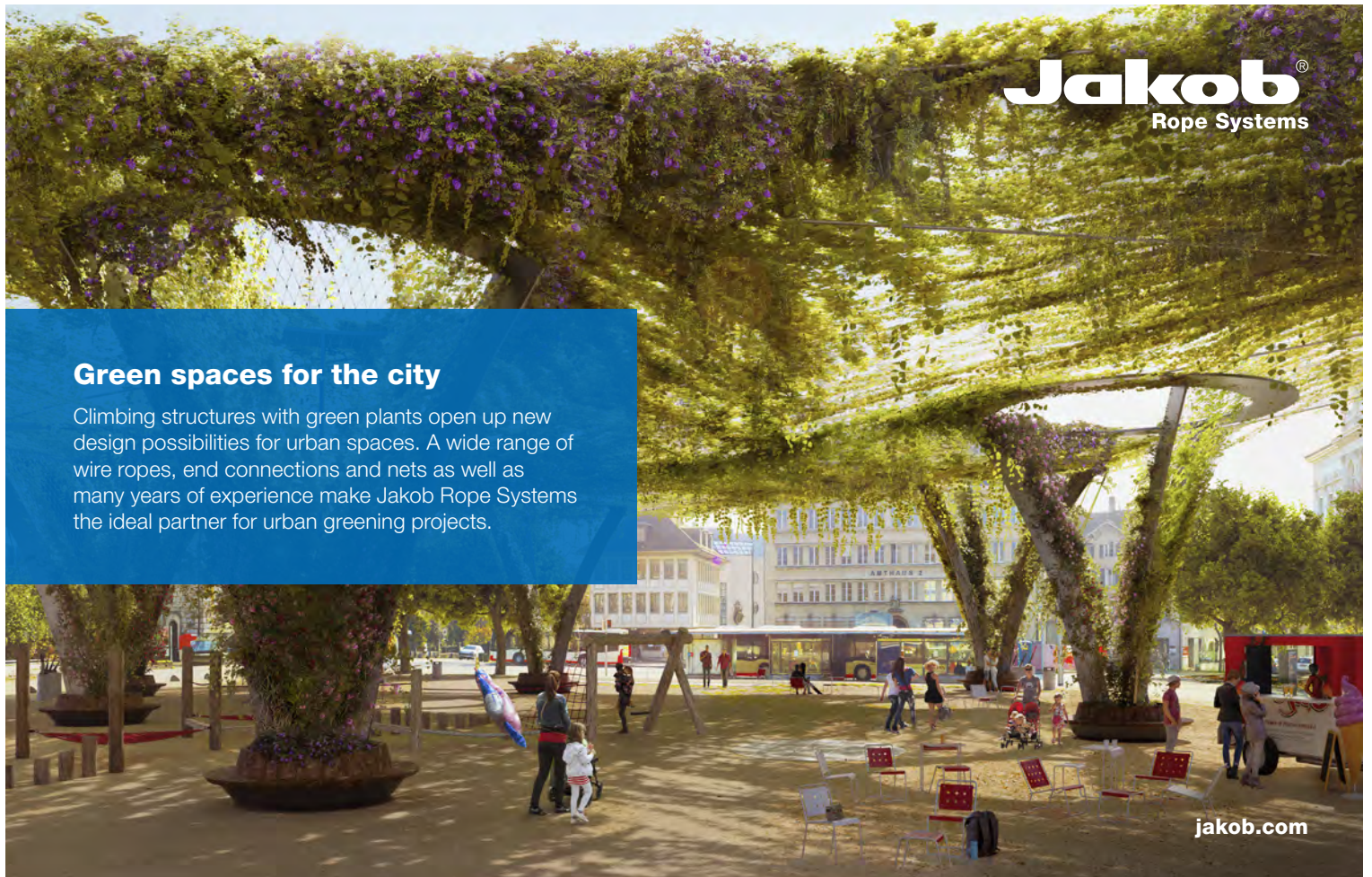
The distances between the spacers vary horizontally between 500 to 1500 mm and vertically between 500 to 2000 mm. This makes shaping possible and, at the same time, adaptation to specific structural conditions and customer requirements.

In the case of trellis structures for greening, it is common for the spacing between the spacers to be smaller at the

edges than at the other points. This variation in spacing is considered as an additional parameter that allows for a more diverse and visually appealing design.

For the structural implementation of the tendril structures, the Jakob solutions: Webnet, GreenGuide and GreenTrellis are used.

All photos courtesy of Jakob Rope Systems.



Green spaces for the city

Climbing structures with green plants open up new design possibilities for urban spaces. A wide range of wire ropes, end connections and nets as well as many years of experience make Jakob Rope Systems the ideal partner for urban greening projects.

jakob.com

dormakaba officially opens new Customer Experience Centre in Singapore

Singapore – On 20 July 2023, dormakaba Singapore officially unveiled their new Customer Experience Centre (CEC) to the public in a momentous occasion attended by over 80 guests.

The new CEC was months in the making, with planning stages starting back in 2022. Beginning from a blank slate proved a challenge, but it was an opportunity to address existing pain points and bring in the latest technology and products that dormakaba had to offer.

It was not a challenge that the local team could take on alone; dormakaba colleagues from not just Europe, but all over the world, pitched in to offer their expertise, input, and support to offer the most optimally curated experience for future guests.

As each piece of the new CEC came together on paper, time drew close to the demolition of the existing showroom. The showroom had welcomed hundreds of guests over the last 5 years, and it was time for a refresh.

On 14 April 2023, walls and cabinets came down from the old showroom, and after more than two months of hard work,



dormakaba Singapore CEC

the dust cleared to reveal the brand new Customer Experience Centre.

Singapore's CEC is focused on demonstrating their expertise on access design and solutions, industry

experience through the vertical approach, their complete portfolio through their offered solutions, and their sustainability goals and practices.

Full suite of solutions at CEC

With areas demarcated by clear vertical markers, dormakaba Singapore now has the ability to not only present a full suite of solutions to customers, but also to zoom in on industry solutions that their interests lie.

Intriguing star products lend a sense of consistent innovation and engagement to the Experience Centre, highlighting not only their sleek design, but also their usability. The energy-efficient ST PRO Green slides quietly open to welcome guests into the CEC, while the latest dormakaba solution for airports, the Argus Air gate, sits just within, ready to demonstrate its ability to facilitate a smooth and reliable process for handling people flow throughout the airport.

The Argus V60, with its housing depth of only 240mm, offers a compact, yet elegant solution for seamless integration even in facilities with limited space.



dormakaba Singapore CEC Snapshots



Argus Air Boarding Gates



Argus V60



ES Proline with integrated sensor cover .

Two single doors offer a fair comparison between a regular rack-and-pinion door closer and dormakaba's speciality - the cam-action door closer.

dormakaba has also incorporated a visual presentation of EntriWorX EcoSystem, which provides a solution for all stages of the building life cycle from planning to operation. By optimising the advantages of digital progress, customers are able to effortlessly improve efficiency and productivity.

For those interested in solutions for the healthcare industry, dormakaba's hermetically sealed doors meet the most stringent hermetic requirements,



Demonstration of dormakaba door closers with clear housing for illustrative purposes.



complying to international recognised standard of EN12207 - Class 4, offering good sound and thermal insulation as well as keeping air permeability to a minimum and preventing the spread of infectious particles between rooms.

Guests are also able to view dormakaba's touchless ICU doors, optionally equipped with Smart Glass, and witness a Temi robot accessing the health and status of the IoT-enabled door in real time, programmed to assess door health in real time, and deliver

medications and materials as needed.

With the above and much more to offer, dormakaba's new Customer Experience Centre definitely promises to be a fulfilling journey!

dormakaba's new Customer Experience Centre is located at:

12 Tukang Innovation Drive, Singapore 618303.

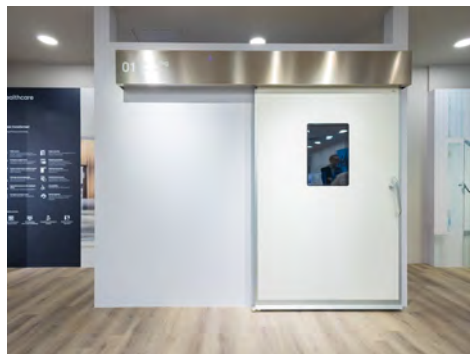
All photos courtesy of dormakaba Singapore.



Demonstration of EntriWorX.



Demonstration of SKYFOLD, a vertical folding retractable partition system.



dormakaba hermetic doors for operating theatres.



IoT-enabled door communicating with robot.

ARCHIDEX 2023 receives overwhelming response

Kuala Lumpur, Malaysia – The 22nd International Architecture, Interior Design and Building Exhibition (ARCHIDEX) 2023 returned larger than ever, at the Kuala Lumpur Convention Centre from the 26th to 29th July. The exhibition set to captivate industry players, professionals, and enthusiasts alike with its innovative future technology and an array of sustainable construction materials to propel the industry towards the nation's agenda of creating a greener built environment with lower carbon footprints.

This year's edition boasts an overwhelming response from both local and international exhibitors, showcasing the latest advancements in building materials, construction technologies, interior fittings, and sustainable solutions.

Occupying 10 halls housing 1,400 exhibition stands from 600 exhibitors representing 15 countries and regions, ARCHIDEX 2023 promised to be an unforgettable journey into the transformative power of architectural innovation. Industry players, professionals, and enthusiasts from around the world converged at ARCHIDEX 2023 to witness first-hand the cutting-edge technologies, revolutionary designs, and sustainable solutions that are shaping the future of architecture and design. Officiated by YB Tuan Nga Kor Ming, the Minister of Local Government Development, this future-focused architecture and built industry business event provided the industry a platform to work hand-in-hand with the government to grow the nation, exemplifying initiatives that benefit industries, extending beyond the architecture, interior design, and building industry.

ARCHIDEX 2023 intended to unite professionals from the architecture and built industry fraternity under a strong FUTURE theme, encompassing three key pillars of Sustainability, Future Architecture, and Wellbeing. Playing on the interconnections for present and future generations in the architectural and building community, ARCHIDEX 2023 aimed to engage, evoke, and evolve providing a stage for architects, designers, and industry leaders to keep pace with emerging trends and technological advancements. Here, exhibitors were able to display their innovative ideas, cutting-edge designs, and breakthrough solutions, thus providing the estimated 36,000 visitors an unparalleled opportunity to explore the latest trends, exchange knowledge, and forge collaborations with the best in the field.

This year, the 100th anniversary of the Malaysian Institute of Architects (PAM) added further excitement and significance to ARCHIDEX. In a momentous celebration of architectural achievements, the industry's steward hosted the inaugural "Gallery in an exhibition" featuring glass in all its glory, proudly exhibited in Hall 8. PAM is steadfast in propelling the industry forward, as it continues to provide a stage for the industry to drive the growth and advancement of the architectural industry, empowering professionals to push boundaries, explore new possibilities, and shape the future of architecture.

One of the highlights of ARCHIDEX 2023 was the concurrent DATUM Conferences, which took place over four days. These conferences – DATUM:KL, DATUM+PLUS, DATUM:PRO, DATUM:M, and DATUM:EDU – were themed under "We as 1"



The opening ceremony was officiated by the minister in the presence of Persatuan Akitek Malaysia's (PAM) President, Ar. Abu Zarim Abu Bakar, and KLAFF 2023 Director, Ar. Norzaini bin Mufti and C.I.S President, Dato' Vincent Lim. In the photo (from left to right): KLAFF 2023 Director, Ar. Norzaini bin Mufti, Minister of Local Government Development, Nga Kor Ming, Persatuan Akitek Malaysia's (PAM) President, Ar. Abu Zarim Abu Bakar and C.I.S President, Dato' Vincent Lim.

and featured over 30 local and international speakers.

Professionals had the opportunity to gain valuable knowledge, explore emerging trends, and learn from industry experts. DATUM also presented an avenue for networking, fostering collaborations, and driving the industry forward.

ARCHIDEX featured the prestigious ARCHIDEX Star Awards that recognise excellence in architectural products and materials nominated by exhibitors as well as ARCHITALENT, a programme designed to cultivate architecture students and help architectural firms discover the brightest talents in the field. Other noteworthy events included thought-provoking talks that aim to engage, evoke and evolve the visitors' perspective on architecture.

ARCHIDEX also played a role as one of Asia's biggest architecture and building materials' exposition. Building materials is a vital component influencing viability and quality of architecture. Besides being a major contributor to cost, it can also contribute positively to the aesthetics of the built environment. ARCHIDEX brought together a wide range of cutting-edge materials, that are sustainable, cost efficient and positioned to set the pace of the industry into the future.

Returning with the theme "Green Living" is Strategic Partner: Taiwan Excellence – the symbol of the highest of honour of Taiwan's premium products was back with more eco-friendly products and technologies. At the Taiwan Excellence Pavilion, visitors explored 10 award winning brands bringing a wide range of innovative solutions as well as be inspired by the top-5 finalists of the "Sustainable Innovation Challenge" – an architectural competition held in conjunction of Taiwan Excellence @ ARCHIDEX aimed to inspire the next generation of designers to prioritise sustainable design in their work.

CFP Green Buildings launches innovative data-driven tool for sustainable real estate industry

Singapore – Corporate Facility Partners (CFP) Green Buildings, a green real estate company from the Netherlands, has unveiled its innovative Green Buildings Tool (GBT) in Singapore.

This data-driven tool is set to simplify sustainable real estate decision-making for banks and financial institutions, offering a strategic advantage in navigating the complexities of the sustainable real estate space. With its user-friendly interface and comprehensive insights, the GBT empowers stakeholders to build portfolios with sustainable and environmentally responsible buildings, aligning with Singapore's vision for a greener future.

By harnessing the power of data-driven insights and a robust global building database, the tool provides actionable insights and facilitates well-informed decision-making, enabling banks and financial institutions to embrace sustainable investments with ease.

With its intuitive interface and advanced features, the GBT allows banks and financial institutions to assess the sustainability performance of buildings effortlessly. Key sustainability metrics such as CO2 emissions and energy efficiency are presented in a clear and concise manner, enabling stakeholders to evaluate the environmental impact of their assets efficiently.

"At CFP Green Buildings, we believe that sustainability should be accessible to all stakeholders, and that includes making the decision-making process more intuitive and streamlined," stated Bram Adema, founder and CEO at CFP Green Buildings.



Bram Adema, founder and CEO at CFP Green Buildings.

Shaw Tower: First building in Singapore to achieve SmartScore Platinum

Singapore – Shaw Tower has achieved SmartScore Platinum from WiredScore, making it the first building in Singapore to attain this accreditation. WiredScore, a global company behind the internationally-recognised digital connectivity rating platform for real estate, announced this on 18 July 2023.

Shaw Tower already has WiredScore Platinum rating. Both the accreditations will make the building one of the smartest assets in the world. Shaw Tower, which comprises 473,000-square-foot of net lettable area, has demonstrated cutting edge innovation with the use of market-leading technology, processes and automation to deliver world class outcomes to all users of the building by creating a highly sustainable, inspirational, cost efficient and future-proof space.

Specifically, Shaw Tower utilises several innovative strategies to benefit both the tenants and landlords including:

- Contactless building access control: Tenants can securely enter Shaw Tower and arrive at their workspace by leveraging facial recognition and destination control technology.
- Occupier health & wellbeing: The building has systems in place to monitor and ensure that air quality is maintained at the optimal standard across parameters including the levels of carbon dioxide and atmospheric particulate matter (PM), temperature, and relative humidity.
- Improved energy efficiency: Shaw Tower combines smart IoT sensors and data analytics to optimize energy usage by collecting and comparing real time operational data against predefined rules to identify anomalous behavior and drive more sustainable outcomes.
- Ease of tenant integration: Shaw Tower offers a Tenant Integration guide that enables tenants to seamlessly integrate the smart building systems.



Photo credit: Shaw Tower

The Lodsi Community Project for Forest Essentials







The Lodzi Community Project for Forest Essentials is a manufacturing facility for the skincare brand nestled in the Himalayas, along the banks of the Ganges. The design and development of the facility was highly specific to the topography and climate. Limited resources determined the budgetary constraints; the result is a building that is net-zero on energy, water, and waste constructed through an integrated design approach – resulting in a free-running and an off-grid facility.

The built form draws inspiration from the traditional Garwahli 'kholi' (house). A rectilinear volume-oriented along the East-West axis has been planned with a central entry that divides the facility into two parts. Functions that require a cooler environment (herb grinding, packaging, and storage) are located on the upper floor, whereas the preparatory functions with high internal heat gain are located on the lower floor. The North-South oriented butterfly roof form allows large openable windows

that allow the prevailing North-East and South-East winds for ventilation, with 80 percent naturally day-lit spaces and unobstructed views of the valley. The high-volume of space with operable clerestory windows enforces Bernoulli's principle and moderates indoor temperatures. A central light-well forms a multi-purpose communal space. This also doubles up as mother and child wellness camps and a recreational area for students post-school.

Passive design strategies and vernacular techniques by Morphogenesis

help achieve an EPI of 35kWh/m²/year. Further, the rainwater tank is optimised to suffice the two-day requirement of the facility. Waste materials on the site were repurposed: reclaimed wooden rafters as light fixtures, stone chisels as door handles, etc.

65 villagers built the project, and the building supports up to 45 percent of the village households. The project addresses sociocultural and economic sustainability and is an example of decentralised development in the post-pandemic world.

PROJECT DETAILS

PROJECT NAME: The Lodzi Community Project

PROJECT LOCATION: Himalayan Foothills, Rishikesh, India

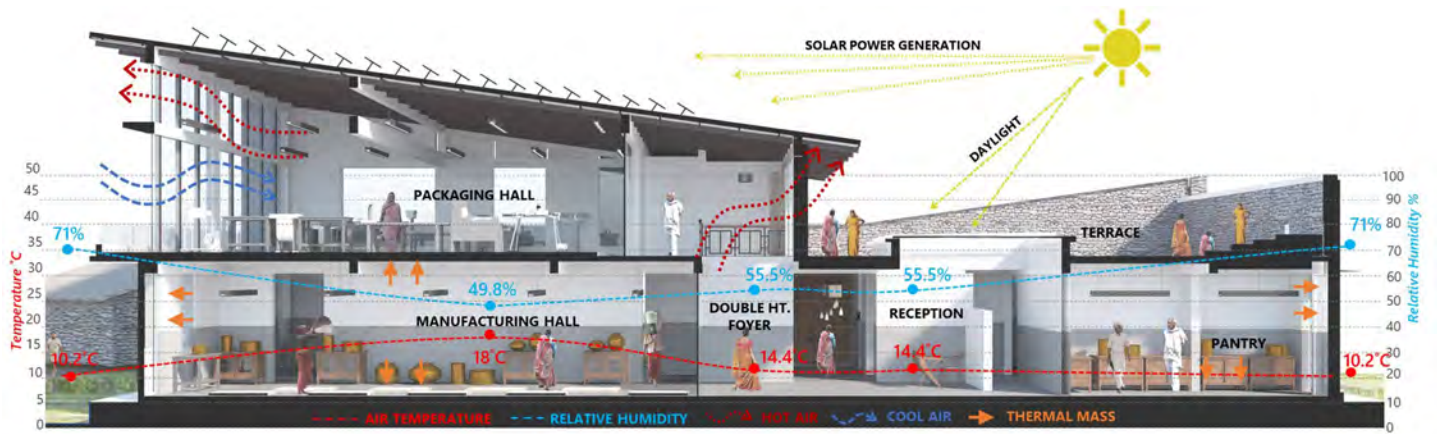
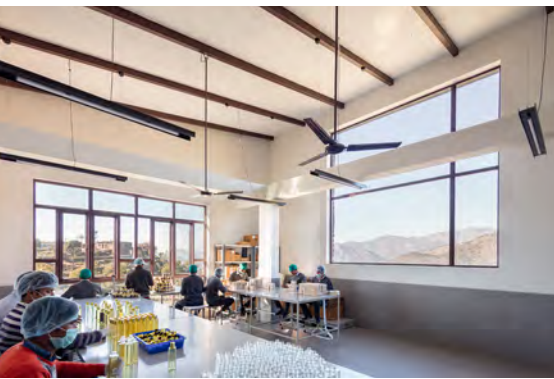
CLIENT: Forest Essentials

ARCHITECT: Morphogenesis

AREA: 10,000 square feet

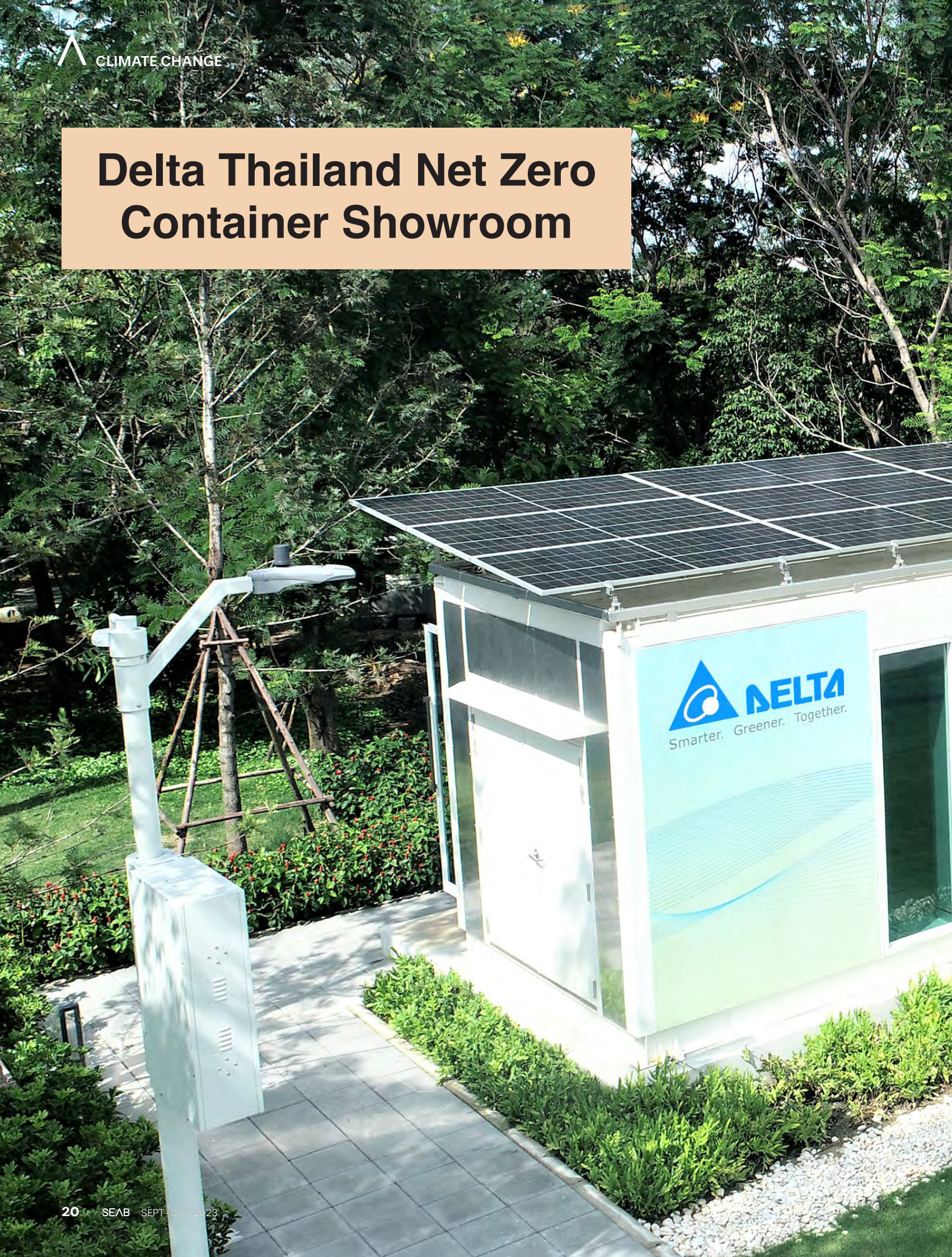
COMPLETION: 2019

PHOTO CREDIT: Noughts And Crosses



The Lodsi Community Project Environmental Section. Drawing: Morphogenesis

Delta Thailand Net Zero Container Showroom







The Delta Thailand Net Zero Container Showroom is Thailand's first showroom of its kind offering smart and green solutions. Built by Delta Electronics (Thailand) PCL, the theme of Delta's 100 percent renewable energy showcase is smart, green energy for the RE100 era.

Located at Amata City Chonburi, the showroom is net zero. It does not consume any power from the grid. It is powered purely from solar cells and releases only heat that escapes from the environment inside the show room. Therefore, there is no carbon release. In addition, the windows are designed to utilize natural light and save energy for lighting.

The containerized showroom is a unique concept. As the land does not belong to Delta, the company needed the solution to be mobile and to move as needed to other locations. This also avoids on-site construction, as there is no power or water available at this location. In addition, Delta was able to prepare the site while building the container. This is based on the concept of new datacenter deployment. Lastly, it is sustainable. The steel container showroom can be recycled

once it reaches its end of life.

The showroom's net-zero energy solution includes an 11-panel 9.6kWp solar rooftop array and can generate up to 38kWh a day to store in a 57.6kWh battery system for 24/7 usage.

A Battery Management System (BMS) enables optimal power consumption by monitoring available energy and controlling power consumption from lighting and the VRV (Variable Regulating Valve) air conditioner according to real usage.

The container showroom demonstrates Delta's concept of "Smart Wellbeing" for buildings with the Delta Smart Building Management Solution that leverages room controllers and a control panel to manage lighting, HVAC and temperature via BACnet protocol and monitor air quality with sensors via MODBUS protocol.

Delta wanted to remotely manage the showroom air-conditioning and other equipment. The showroom's Building Automation solution helps to prepare the air-con, lighting and displays even before customers arrive onsite. This enhances the comfort level and elevates the experience for visitors.



As no one stays on-site, the system must be automatically managed or have remotely managed equipment to maintain its condition.

Delta's scalable and modular Datacenter Solution serves as the brain of the smart building that handles all the data from security, lighting, environment and EV charging. The modular data center stores the CCTV security and display video data from the showroom and smart pole and features remote management capabilities.

In addition, the showroom features displays of Delta Industrial Automation Solutions for smart factories along with the NovoTouch Interactive Display Solution and Innergie Mobile Device Charging Solutions that enhance both work and life experiences. Outdoor solutions include Delta's Smart Pole and EV Charging Solutions.



PROJECT DETAILS

PROJECT NAME: Delta Thailand Net Zero Container Showroom

PROJECT LOCATION: Amata City Chonburi, Thailand

CLIENT: Delta Electronics (Thailand) PCL

ARCHITECT: Delta Electronics (Thailand) Public Company Limited

TOTAL AREA: 889.15 square metres

OPENING: April 2022

PHOTO CREDITS: Delta Electronics (Thailand) Public Company Limited



The Greenhouse





Aerial view



Facade and drop off.

The Greenhouse at Dulwich College (Singapore) is a net-zero energy, seven-storey state-of-the-art structure, which will be launched later in the year.

Recently, its owner, Education in Motion (EiM) was awarded the Green Mark Platinum Zero Energy certification under the latest Green Mark 2021 scheme by the Building and Construction Authority (BCA) for The Greenhouse.

With this award, The Greenhouse becomes the first new building and first international school in Singapore to receive the Green Mark Zero Energy certification under the latest Green Mark 2021 scheme. The building's net-zero energy achievement is in line with the Singapore Green Building Masterplan.

EiM's aspiration for The Greenhouse was realised through its partnership with award-winning architectural firm DP Architects and its specialist arm in sustainable design, DP Sustainable Design (DPSPD).



BIPV and solar panels.



Facade from Bukit Batok West Avenue 8.

Throughout The Greenhouse's architectural design, construction materials, and function, the building embodies EiM's "Live Worldwide" motto and EiM's vision to be the global leader in pioneering education for a sustainable future. Building a sustainable campus is also aligned with EiM's commitment to building a better future for all across its four ESG pillars – Learning, Planet, People, and Policy.

The Greenhouse features the following sustainable strategies: extensive renewable energy production; superior energy efficiency; outstanding resource optimization; remarkable enhancements to promote health and well-being.

In addition, The Greenhouse attained three badges in Health and Well-being (Hw), Intelligence (In), and Maintainability (Mt), which signifies exemplary performance in these subjects and showcases EiM's commitment towards driving the sustainability agenda for today and the future.

PROJECT DETAILS

PROJECT NAME: The Greenhouse

PROJECT LOCATION: Dulwich College, Singapore

CLIENT: Education in Motion (EiM)

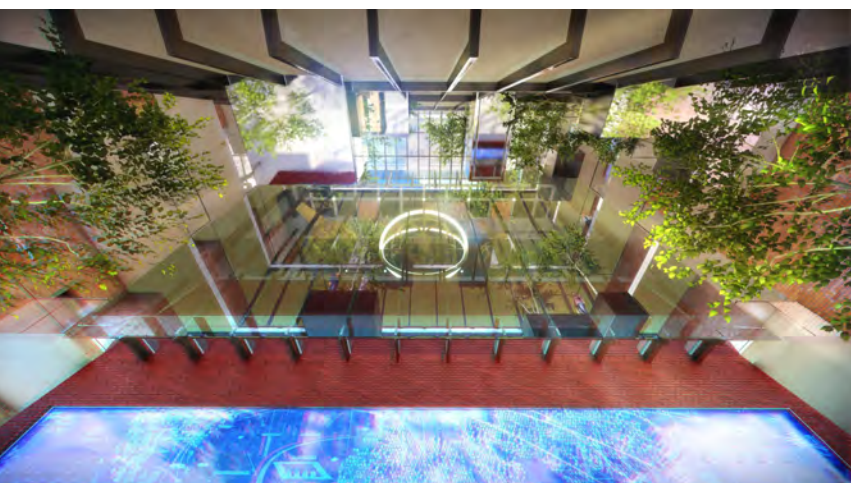
ARCHITECT: DP Architects & DP Sustainable Design

TOTAL GROSS FLOOR AREA: 6598.91 square metres
(Educational Institution – Phase 3)

NON-GROSS FLOOR AREA: 664.74 square metres

EXPECTED COMPLETION DATE: Later part of 2023

RENDERINGS: EiM



Light shaft and central atrium.



Gaia







In May this year, NTU Singapore launched 'Gaia' – its eighth zero energy building, and the largest wooden building in Asia, as part of its sustainability efforts.

Named after the Greek goddess of Earth, Gaia is a six-storey development for NTU students, faculty and staff to learn, research, innovate and explore new opportunities for collaboration and discovery.

Gaia represents a bold marriage between Toyo Ito & Associates Architects and RSP Architect Planners & Engineers (Pte) Ltd's (RSP Architects) excellence in design of education environments and sustainable architectural expertise.

Gaia was constructed with Mass Engineered Timber (MET), making the building an effective carbon sink. MET is also a sustainable construction material, where young trees are planted to replace harvested ones. Spread out along the North-South axis, Gaia can capture prevailing winds to enhance cross-ventilation within.



For most of its air-conditioned spaces, Gaia uses the Passive Displacement Ventilation (PDV) system equipped with occupancy sensors that turn off air-conditioning when not in use. Contributing to the building's emission reduction are also photovoltaic cells, built on available roof spaces for generations of green energy and contributions back to the power grid.

Gaia is the eighth building project on the NTU campus that has received the Green Mark Platinum (Zero Energy) – the highest award issued by the Building and Construction Authority of Singapore to recognise buildings that consume as much energy as they produce.

PROJECT DETAILS

PROJECT NAME: Gaia

PROJECT LOCATION: Nanyang Technological University, Singapore

CLIENT: Nanyang Technological University (Office of Development & Facilities Management)

ARCHITECT: Toyo Ito & Associates Architects, RSP Architects Planners & Engineers (Pte) Ltd

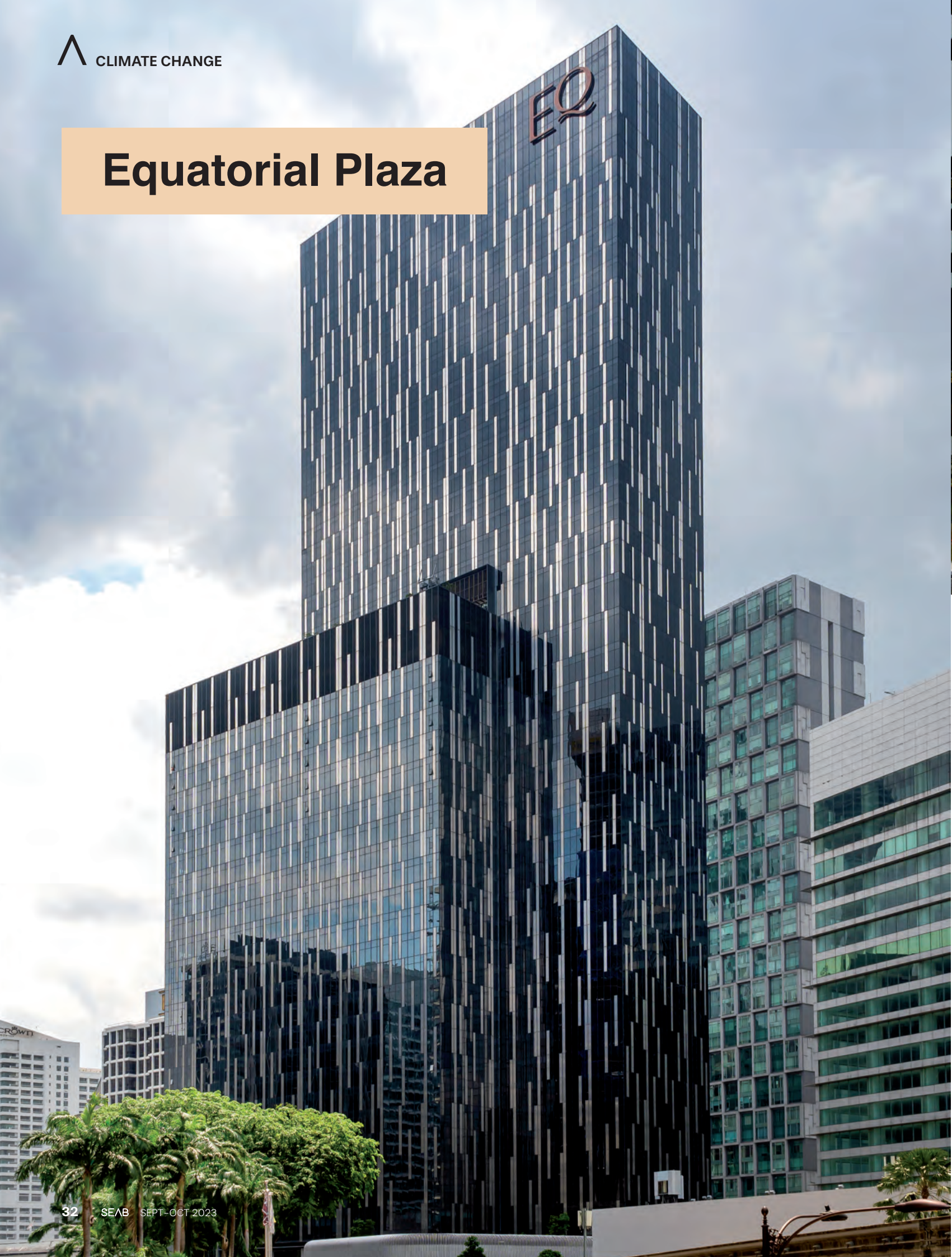
GROSS FLOOR AREA: 41,649 square metres

COMPLETION: 2023

PHOTO CREDIT: NTU Singapore



Equatorial Plaza





The original Equatorial Plaza Hotel, built in the 1970's, had been an iconic feature in the skyline of Kuala Lumpur over the decades and was renowned for its restaurants.

The architects from the GDP design studio had intended renovating the hotel but they ended up giving it a completely new look, creating two distinctive, interlacing, high-rise towers that house both the hotel and offices.

Mapei products were chosen to install the high quality floor and wall coverings and ensured compliance with the requirements of GBI (Green Building Index) Malaysia Gold Standard. KERAFLEX, KERAFLEX MAXI S1, KERABOND T + ISOLASTIC 50*, ADESILEX PG2 TG* and KERASET + PLANICRETE SP1* adhesive systems were used to bond granite, marble and ceramic floor and wall coverings in the lobby, bathrooms and swimming pools.

The joints inside the complex were grouted with KERACOLOR SF, while the KERACOLOR FF + FUGOLASTIC grouting system was used for the joints in the swimming pools.

Mapei Products:

Keraflex, Keraflex Maxi S1, Kerabond T + Isolastic 50*, Adesilex PG2 TG*, Keraset+Planicrete SP1*, Keracolor SF, Keracolor FF+Fugolastic

Article Source: RM International 77/2019

**Denotes products not sold in Singapore*



PROJECT DETAILS

PROJECT NAME: Equatorial Plaza

PROJECT LOCATION: Kuala Lumpur, Malaysia

PERIOD OF CONSTRUCTION: 2015 - 2018

PERIOD OF THE INTERVENTION: 2016 - 2018

YEAR OF THE MAPEI INTERVENTION: 2018

DESIGN: GDP Architects

CLIENT: Hotel Equatorial Kuala Lumpur

MAIN CONTRACTOR: IJM Construction Sdn Bhd

INSTALLATION COMPANIES: GLN Marble Sdn Bhd, Regionwell

Marketing Sdn Bhd and TCB Construction Sdn Bhd

MAPEI COORDINATOR: Alisonn Bong, Mapei Malaysia

PHOTOS: Provided by Mapei



The grand atrium lobby of the Singapore Marriott Tang Plaza Hotel.

Project Name:
Singapore Marriott Tang Plaza Hotel

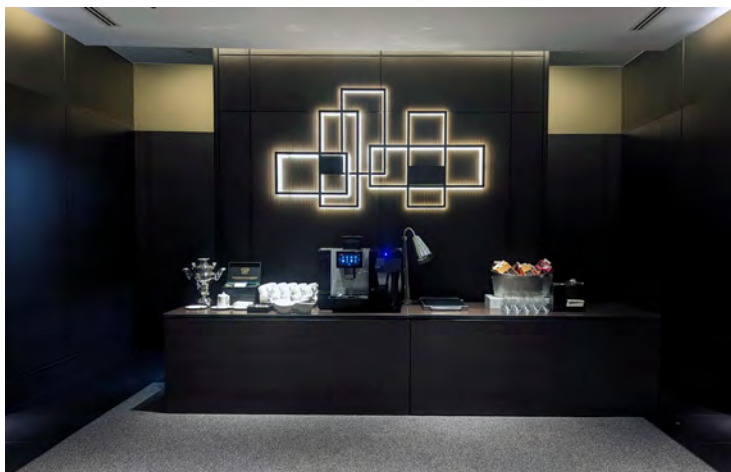
Project Location: Singapore

Interior Design:
VIA+ Design Studio (Interior Design Studio of CPG Consultants)

Situated in a prime location along Orchard Road, Singapore Marriott Tang Plaza Hotel, with its iconic octagonal, green-tiled pagoda roof, has been an architectural icon since the property started as Dynasty Hotel in 1982. With a rich history and legacy, the well-appointed property has enjoyed a significant following among Marriott's guests. It is considered by many to be one of the grand dames of five-star hotels in the country.

When the property owners approached VIA+ Design Studio (CPG Consultants' interior design studio) for an interior design upgrade, the studio was honoured and excited to take on the challenge – to craft a refreshed interior identity for Singapore Marriott Tang Plaza Hotel which is befitting of a luxurious five-star hotel today, while retaining the hotel's classic and unique identity.

The areas of involvement covered almost all the hotel facilities, namely the public spaces; the all-day dining area;



Custom-designed light sculptures inspired by the oriental screen motif adorn the public areas in the hotel.



Artworks in prominent locations provide a greater connection to their context.



The Ballroom carpet is inspired by Chinese brush painting and calligraphy.

the hugely popular Crossroad Cafe; function rooms; breakout areas; Grand Ballroom; M Club and the hotel's Executive Premier Rooms.

VIA+'s design approach was focused on upgrading the interiors with a refreshed contemporary design that can stay relevant and withstand the test of time. The team retained the hotel's former character while enhancing the luxury quotient of its furnishings and lighting by creating new lighting schemes that will increase the "glitz" factor and dramatically boost the

interiors' luxurious image, while addressing energy savings. The team also incorporated many furnishings that echo the hotel's historical legacy by repurposing existing materials or using new stylistic elements that complement them.

In the grand atrium lobby, VIA+ reupholstered existing lobby furniture that are still appropriate and sturdy, so that they can have an extended "shelf life". Colours were chosen to complement the new single piece of carpet rug that runs the entire lobby atrium. Purposefully chosen for its plushness



and texture, the carpet acts as a unifying element of the various individual seating arrangements. Its rich maroon shades and pattern is in symbiotic relation to the oriental patterned screen behind the reception, presenting an impactful and regal five-star impression for arriving guests. A modification of the atrium's centerpiece (the original centerpiece was not conducive for carrying and lighting a huge orchid arrangement), accommodates the lobby's signature bouquet of phalaenopsis orchids, displaying a look of refined elegance.

The interior design for all upper-level public areas was wholly transformed through a new lighting approach providing dramatic and stater energy. The VIA+ team designed and customed light fittings that could double as lighting sculptures on the walls, adding elements of uniqueness, class, and ornamentation to spaces. The design is one of a kind, inspired by the oriental screen in the Grand Atrium and abstracted into light fittings through an expression of right angles, finally merging into a point of East meets West.

The lighting fixtures are also in polished bronze colours that complement the new interiors, and which will enhance the warm and luxurious feel of the hotel environment. Special care also went into the treatment of lighting, with anti-glare applications that help glare control and allow the lighting fixtures to emanate a sense of warmth.

Several original artworks acquired by the owner adorned the former interior of Singapore Marriott Tang Plaza Hotel. The VIA+ team wanted to create an environment where these pieces could be better appreciated. These pieces are integrated with the new interior design by placing these artworks in prominent locations with a greater connection to their context. Hotel guests



The unique brass chandelier with sparkle-like gem lights in the M Club.



The Crossroads Cafe



will admire the beauty of the artworks as they are in clear view and perhaps have a higher degree of appreciation for not just the art itself but the owner's aesthetic considerations.

While sprucing up the Ballroom's original ceiling, the new wall treatment accentuates verticality to further bring loftiness to the interior. The captivating feature of the Ballroom is its customised-design, plush wall-to-wall carpeting inspired by Chinese brush painting and calligraphy.

The M Club is housed in a newly built premise adjacent to the tranquil and lushly landscaped poolside podium level.

The dining pavilion with a dramatic high timber ceiling is a unique feature of the executive lounge. Instead of an old-fashioned chandelier, the VIA+ team gave a new interpretation to the chandelier by customising a unique brass chandelier with sparkle-like gem lights. Together with the columns in the executive lounge that spot a sophisticated bronze finish, the effect is a harmonious warmth. The artwork at the M Club features sepia prints of yesteryear Orchard Road with purposeful references to the precinct where the hotel is situated. Another signature motif of the old hotel is an oriental-inspired screen pattern that forms the backdrop of the hotel reception. The new interiors capitalise on this motif with other permutations differing in size and material

to resonate a sense of place.

The immensely popular Crossroads Cafe was also given a brand-new ambience through an updated lighting scheme, new soft furnishing, and selective wall paneling design. The wall panel and screen are given a glitzy finish to enhance the luxury and posh ambience of this alfresco cafe.

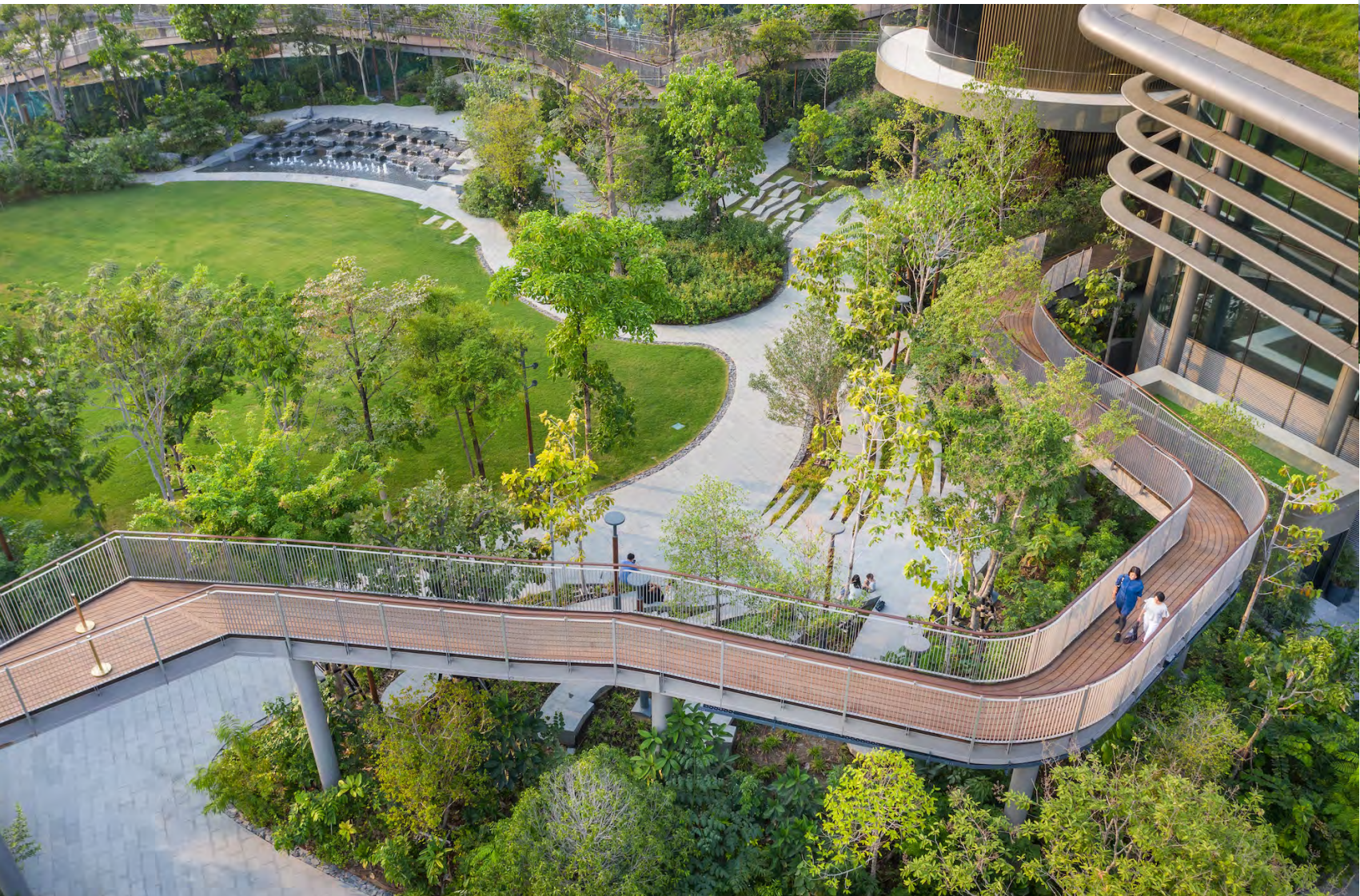
The Executive Premier Rooms were embellished with a new look and feel, even as existing furniture are reused, reupholstered and refinished.

With champagne gold as the signature colour theme expressed through the veins of gold in the carpets, the bed mast and the surrounding screens, the luxury quotient of the guest rooms is elevated. Together with the newly minted ensuite, the 5-star Executive Premier Rooms look more refreshed than ever.

The fondly remembered Singapore Marriott Tang Plaza Hotel is given a new modern interpretation through refreshed interiors. Through the collaborative efforts of the property owner and operator, VIA+ studio realised the design proposal, creating a modern, renewed version of the hotel's classic self yet retaining its quintessential identity as a testament to its legacy.

All photos courtesy of Singapore Marriott Tang Plaza Hotel.

The Forestias



Bird's eye view of the canopy walk. Photo credit: Rungkit Charoenwat

Landscape architecture practice Grant Associates has been proud to be part of the multidisciplinary design team behind one of the largest property development projects in Thailand.

The Forestias, highlighted by a 48,000 square metre urban forest at the centre which connects all developments within the site, aims to create a healthier and happier living environment for all residents.

Grant Associates first collaborated with architects Foster + Partners, TK Studio Co, and a wide team of

consultants in 2017 to develop this unique and distinctive landscape concept. Grant Associates led the landscape masterplan through concept and scheme design with TK Studio taking it forward to detailed stages.

The key vision for the landscape design has been to create a beautiful forest setting that embraces the philosophy of creating an exemplar 21st century development – one that is based on sustainable and intergenerational living, where people and nature live in harmony.

"Forest landscapes are crucially

important for the future vitality of our planet. The Forestias project concept of creating new forest habitats for both people and nature has underscored the multigenerational benefits of physical and mental wellbeing that is derived from close contact with nature. The project values also support the urgent need for focused and intentional conservation to be taking place worldwide to protect the planet's existing, incredible nature-rich rainforests and their indigenous communities," said Peter Chmiel, Director at Grant Associates.



Grand entrance and drop off. Photo credit: Rungkit Charoenwat

PROJECT DETAILS
PROJECT NAME: The Forestias
PROJECT LOCATION: On the outskirts of Bangkok, Thailand
DEVELOPER: Magnolia Quality Development Corporation
ARCHITECT: Foster + Partnere
LANDSCAPE ARCHITECT: Grant Associates
DELIVERY LANDSCAPE ARCHITECT: TK Studio
SITE AREA: 48,000 square metres



15.5 metre tall waterfall. Photo credit: Rungkit Charoenwat



Nature walk. Photo credit: Rungkit Charoenwat



The forest pavilion. Photo credit: Weerapol Singnoi

Decarbonisation in the Built Environment

- A Regional Report

Green Building Councils around the region provide some insights on why decarbonisation of the built environment is necessary to create a sustainable world. Each country in the region is faced with different opportunities and challenges. The councils cover 1) their approach to decarbonisation in the built environment 2) what they anticipate can be achieved through this approach 3) the biggest decarbonisation challenges in the built environment industry 4) the role that manufacturers and solution providers have to play in decarbonising buildings.

Energy Efficiency In The Built Environment



Prof. Dr. Swe Swe Aye,
Chair of Myanmar Green Building Society.

The first step of building decarbonization is to make the building as energy efficient as possible. Moreover, the transportation sector in urban area generates the largest share of greenhouse gas emissions in the built environment.

Our Green Building Committee (GBC) of Building Engineering Institute (BEI), which was founded in 2014, is now on the trend of forming a more wide independent professional organization.

We have expanded our Green Building Committee (GBC) to Myanmar Green Building Society (MGBS) to include wider range of services, such as preparatory stage of Green Building standards for nation wide application. It will be led by passionate professionals with related technical backgrounds.

Thus, MGBS was founded in 2019 under the umbrella of Federation of Myanmar Engineering Societies (Fed. MES). The Society will be continuing with the vision and mission of GBC while we broaden up into other local and international green building networks for technical transfer, exchange of

“The biggest decarbonization challenges in the built environment is the energy efficiency.”

experiences by means of collaborative efforts.

The biggest decarbonization challenges in the built environment industry is the energy efficiency. We are now initiating the green building standards in Myanmar which will primarily focus on energy efficiency; it is one of the most critical environmental factors to be tackled over recent years. We will then expand the criteria of green building standards phase by phase based on the urgency of environmental degradation due to the built-environment and interest of public in the implementation.

New Framework To Chart a Path for Decarbonisation



Dr. Cheung Tin-Cheung,
Chairman of the
Hong Kong Green
Building Council.

The built environment is a significant source of greenhouse gas emissions that contribute to global warming. As such, the building industry plays a critical role in mitigating climate change and reducing carbon emissions. Hong Kong Green Building Council (HKGBC) has launched Hong Kong's first "Climate Change Framework for Built Environment" in June 2023 that brought together industry leaders and experts to chart a path towards decarbonisation. The Framework provides definitions, calculation tools, and benchmarks, updated with new findings and standards, to promote consistency and best practices. As of 19 Jul 2023, over 4,000 downloads in which 40 percent from outside Hong Kong is recorded.

HKGBC's approach is holistic, encompassing policy advocacy, capacity building, innovation, and collaboration among stakeholders to develop sustainable solutions throughout the building lifecycle. We promote the adoption of green building design, construction and management practices, encourage the use of low-carbon materials and energy-efficient technologies, and foster collaboration among stakeholders to develop and implement sustainable solutions. We promote the setting of realistic targets, implementation of actions and tracking

of progress during the process.

As a major green building certification scheme in Hong Kong, BEAM Plus – the locally developed building environmental assessment method – is also a crucial tool for evaluating buildings' environmental performance and promoting energy-efficient measures, low-carbon materials, and sustainable practices to reduce the carbon footprint of the built environment.

Hong Kong Confident Of Achieving Net Zero Emissions

The HKGBC anticipates that the building industry in Hong Kong can achieve net zero emissions and climate resilience by 2050 through the Climate Change Framework. The Framework provides tools for stakeholders to set carbon reduction targets, benchmark performance, and transition to low-carbon solutions. Also, it is anticipated that more new building projects in Hong Kong would be designed green and achieve higher ratings in BEAM Plus, while more cases of transformation of existing buildings to meet carbon neutrality goal would emerge. The HKGBC aims to lead market transformation and establish Hong Kong as a sustainable development leader, with a goal of achieving carbon neutrality by 2050.

HKGBC Makes Great Progress Through New Initiatives

The HKGBC has made progress in launching Climate Change Framework for Built Environment and Zero-Carbon-Ready Building Certification Scheme, with over 50 supporting organisations and more than ten major developers participating.

The development of Zero-Carbon-Ready Building (ZCRB) Certification Scheme is in final stage and our Energy Assessor-ZCRB are working on the pilot cases submitted by developers. The Scheme is targeted to be launched in September 2023.

In addition, the HKGBC's efforts have led to the widespread adoption of the BEAM Plus green building certification. As of 2022, 3,779 buildings had been certified by BEAM Plus. The total estimated carbon emissions saved by assessed

projects in the New Buildings category alone reached 1,182,700 tons per year, equivalent to planting 51.4 million trees.

To equip industry professionals and advocate for green policies and regulations to the government, the HKGBC has organised training courses for local engineers under the Retro-commissioning Training and Registration Scheme. This encourages the adoption of retro-commissioning as a primary energy conservation solution for existing buildings, resulting in more BEAM Plus certified green buildings, increased energy efficiency, and a more environmentally conscious construction industry. Additionally, the "HKGBC Retrofitting Guidebook" was launched in January 2023 and received over 2,000 downloads during its initial release. As of 19 July, the guidebook has been downloaded over 5,700 times, with 25 percent of downloads coming from outside of Hong Kong.

“Stakeholders demand for clear definitions of “net zero” and mechanisms for setting net zero targets for the building sector.”

Key Challenges And Solutions

The issues of climate change are evolving at a rapid pace with new scientific findings coming out and standards being published virtually every day. Stakeholders demand for clear definitions of "net zero" and mechanisms for setting net zero targets for the building sector. There is a need to provide clarity about the net zero commitments.

Other challenges include the high energy consumption in air-conditioning associated with buildings in Hong Kong, which are subject to a hot and humid climate. These buildings account for about 90 percent of the city's electricity consumption and 60 percent of carbon

emissions. The prevailing high-rise building form (with limited proportion of roof area) adds to the difficulty of utilising renewable energy. Retrofitting of building services equipment in existing buildings is also necessary, but this faces challenges such as multi-ownership state of many of the buildings especially residential ones (which leads to difficulty in arriving at decisions) and lack of funding to kick-start the retrofit process. Overcoming these challenges requires government's/utility companies' financial subsidies, innovations in both technology and funding methods, as well as collaboration among stakeholders. Policies, incentives, and disclosure requirements are also needed to motivate stakeholders.

Manufacturers Need To Make Low-Carbon Products

Manufacturers and solution providers have a crucial role to play in decarbonising buildings by developing and promoting low-carbon products, and services. They can also support the industry's transition to net zero by providing performance data, conducting life-cycle assessments, and enhancing their environmental product declarations. For example, they can arrange their products to be certified by the CIC Green Product Certification Scheme, which is owned by the Construction Industry Council and operated by the HKGBC, to

The Dos and Don'ts For Decarbonising The Built Environment

Dos:

- Adopt a holistic approach, considering the entire building lifecycle.
- Implement solutions on both the supply side (e.g. fuel mix) and the demand side (e.g. energy efficiency).
- Prioritise energy efficiency and renewable energy solutions.
- Utilise low-carbon materials and construction methods.
- Utilise technologies such as AI, IoT, Cloud computing, etc.
- Engage stakeholders to foster collaboration, including designers, installers, operators, users and even the general public.
- Continuously monitor and evaluate performance after implementation, and adjust actions as necessary.

Don'ts:

- Rely solely on offsetting measures, such as carbon credits, without addressing the root cause of emissions within the buildings.
- Rely solely on the supply side solutions, because rising cost of energy would also be an important consideration.
- Focus solely on short-term cost considerations, ignoring long-term environmental impacts.
- Overlook the importance of occupant health and well-being.
- Implement green features without proper understanding and training especially that for the operators.
- Neglect the need for regular maintenance, future upgrades / replacement.

reduce the carbon and environmental footprints of the construction materials. Additionally, they can collaborate with stakeholders to develop new methods for decarbonising the built environment, such as advanced retrofit solutions for existing building stocks and alternative

funding methods like build-operate-transfer, or performance contracting. Finally, active participation in industry forums and initiatives can foster a culture of continuous improvement and collaboration for the decarbonisation of the built environment.

A Paradigm Shift In The Way We Build



Mr Lee Ang Seng,
President of Singapore
Green Building Council.

As the enabler of built environment sustainability, the Singapore Green Building Council (SGBC) has been working on decarbonisation initiatives, programmes and pathways for the better part of the past decade.

One of the earliest, carbon-centric programmes established by SGBC is the Singapore Green Building Product (SGBP) certification scheme, which evaluates green building products for their environmental performance. To achieve the highest-possible Leader (4-ticks) rating, SGBP certification requires a product's carbon footprint data (amongst other criteria) across the whole product lifecycle: from raw material extraction all the way to its end of life.

In the drive towards low-carbon construction, the SGBP certification scheme will now assess concrete and steel products based on their carbon footprint and Global Warming Potential (GWP) instead of clinker/recycled content, which necessitates the provision of environmental product declarations (EPDs) for each product undergoing certification.

An EPD is a standardised quantification of environmental information on the life cycle of a product, similar to ingredient labels found on the packaging of food products. EPDs provide comprehensive and standardised information about the environmental impact of a product throughout its lifecycle, offering data on energy consumption, greenhouse

gas emissions, water usage, and waste generation.

To ensure that Singapore manufacturers have the ability to develop internal capabilities to report on the carbon emissions of their products in accordance to international standards, SGBC is collaborating with One Click LCA, a global building lifecycle assessment platform, to pilot a Concrete EPD Generator in the Singapore market. This digital tool will provide another avenue for local concrete manufacturers to obtain consistent carbon data, identify decarbonisation opportunities and generate accurate, verifiable EPDs.

With the advancement of built environment sustainability over the years, many Singapore green building services firms have developed deep and specialised capabilities, and have a strong track record in delivering excellent Green Mark projects. To better reflect the deepening and maturing of firms' capabilities, SGBC has revised the certification criteria and categorisation of both the Environmental Sustainability (ES) and Energy Performance Contracting (EPC) categories for the Singapore Green Building Services (SGBS) certification scheme.

ES Consultants will now receive tiered certification ratings to better profile their capabilities and expertise, especially if the ES consultants have proficiency in specific areas such as energy modelling or decarbonisation strategies. This will make it easier for building and facility owners to identify the best consultant with the appropriate expertise for their project needs.

To raise greater awareness of the importance of embodied carbon, SGBC launched the Singapore Built Environment Embodied Carbon Pledge in 2021 to help unify and amplify industry action. Organisations with ambitions, intentions and solutions to address built environment embodied carbon emissions can pledge their commitment and then take broad-based actions anchored on the Pledge's key principles. Nearly 100 organisations from across the built environment sector have pledged their support, including ministries, government agencies, real estate developers, institutes of higher learning, consultants as well as builders. SGBC has also collaborated with JTC and

“The industry has to go through a paradigm shift and think in terms of carbon, considering carbon emissions at every stage of the building's lifecycle from design to construction and operation.”

BCA on an industry-specific embodied carbon calculator. The Singapore Building Carbon Calculator (SBCC) is a web-based embodied carbon calculator designed for Singapore's built environment. It accounts for the upfront carbon of materials used. Carbon emission factors in the SBCC are adapted to reflect the carbon footprint of projects in Singapore's context. The Calculator takes into account EPDs from various Program Operators, as well as the latest green assessment methodologies. In addition, it applies Life Cycle Assessments (LCAs) to fill in the gaps. As the first of its kind, the emission factors aggregated and calculated are localised to the Singapore context.

The SBCC allows sustainability consultants and Green Mark Accredited Professionals (GMAP) to account for the embodied carbon footprint of projects for use under the BCA's Code for Environmental Sustainability of Buildings (Edition 4.0) and the Green Mark 2021 Whole Life Carbon section. It also provides the Singapore built environment industry with a unified tool to make informed decisions on material and product selections.

Paradigm Shift in Decarbonisation Efforts

Carbon is fast becoming the de facto metric to report greenhouse gas emissions from buildings. Individuals, organisations and governments worldwide are scrambling to make sense of carbon, develop targets,

implementation plans as well as pathways to reduce carbon emissions. The industry has to go through a paradigm shift and think in terms of carbon, considering carbon emissions at every stage of the building's lifecycle from design to construction and operation. SGBC's role is to ensure that there are sufficient low-carbon alternatives for key building materials, maintain updated registries for certified building services and accredited professionals as well as develop localised tools and instruments to help the Singapore built environment address decarbonisation.

When the sector is adequately educated on carbon and decently cognizant of the importance of decarbonisation, organisations will be better equipped to develop their own unique carbon reduction pathways as different types of organisations have varying needs, challenges and ambitions.

The Way Ahead

Retrofitting existing buildings to improve energy efficiency and reduce carbon emissions is a major challenge. Many older buildings were constructed without energy-efficient designs, and retrofitting them can be complex, expensive, and disruptive. Finding cost-effective solutions and overcoming technical and logistical barriers is a significant challenge.

Decarbonising the built environment requires upgrading infrastructure such as heating, ventilation, and air conditioning (HVAC) systems, electrical grids, and water systems. This involves significant investment, coordination with various stakeholders, and addressing aging infrastructure.

Encouraging behavioural change and engaging building occupants and users is crucial for reducing energy consumption and adopting sustainable practices. However, motivating people to change their habits and embrace energy-efficient practices can be challenging. Effective education, awareness campaigns, incentives, and user-friendly technologies are needed. Decarbonising the built environment often involves upfront costs that can deter investment, especially for smaller businesses or property owners. Access to affordable financing, incentives, and financial mechanisms that recognise

long-term energy and cost savings is essential to overcome these barriers.

Manufacturing Low-Carbon Materials For Sustainability

Construction materials, such as cement and steel, are carbon-intensive to produce. Finding and implementing low-carbon alternatives without compromising safety, durability, and cost-effectiveness is a challenge. Scaling up the production and availability of sustainable materials is necessary.

As the makers of the literal building blocks of green buildings, manufacturers and solutions providers have vital roles to play in the decarbonisation of the

sector by offering innovative and environmentally friendly solutions.

Manufacturers should move towards developing and producing low-carbon building materials, such as eco-friendly insulation, sustainable flooring, energy-efficient windows, and recycled/recyclable construction products. By offering these materials, manufacturers contribute to reducing the carbon footprint of buildings throughout their lifecycle. The environmental performance of these products can be backed up by industry certification programmes, such as the SGBP certification scheme.

Manufacturers contribute to built

environment decarbonisation by investing in research and development (R&D) to innovate and improve the performance of building products and technologies. This includes exploring new materials, enhancing energy efficiency, and advancing sustainable manufacturing processes.

Manufacturers should establish collaborations with other stakeholders in the building industry, such as architects, engineers, contractors, and building owners, to develop integrated and sustainable solutions. Such partnerships foster innovation, knowledge sharing, and the implementation of holistic decarbonisation strategies.

Developing A Net Zero Roadmap For Mauritius



Tony Lee Luen Len,
Founding Chairperson of
Green Building Council
Mauritius.

There are a few things that we are doing to tackle decarbonisation in the built environment at Green Building Council Mauritius (GBCM). The main one is to spearhead the development of the net zero roadmap for Mauritius. The other initiatives are the advocacy for the promulgation of Energy Efficiency and Energy Conservation Building Codes, the promotion of the application of circularity principles in the built environment and a push for carbon footprint calculation from building products to building projects.

A Holistic Approach To Decarbonisation

The approach can be seen as dispersed, but at the same time, it is holistic. We have identified various levers. Firstly, it is collaboration. It is crucial to have all the stakeholders engaged with aligned objectives. For the transition, we need all the actors. Regulation is another critical factor. The other lever is building awareness and knowledge around carbon emissions. Through this holistic approach, we think we have a better chance of succeeding in the needed systemic change.

Stakeholders Working Together on Net Zero Roadmap

We have made good progress in regrouping the different multi-sector stakeholders to work on the net zero roadmap. We have a final working session at the end of August, where we will identify some solutions to the already identified challenges. We will be defining a strategy and action plan. The built environment's stakeholders have also been called to work on the circularity roadmap for Mauritius, led by our Ministry of Environment. This has helped pull the stakeholders together. On the regulatory side, we are not faring as well. We think the issue might be a political one. As for awareness and knowledge,

we are satisfied with the small progress thus far. Several companies have issued Environmental Product Declarations, and a few leading developers are doing whole building life cycle assessment and energy modelling on their projects. However, we have a long road for these practices to be ubiquitous and generalised to the industry.

Challenges: Working Towards Common Goals

One of the decarbonisation challenges is getting all the actors to work together towards common goals. The building and construction sector is fragmented and not operating as a unit. Then, there is the issue between sectors. Decarbonisation requires a multi-sector collaborative approach. All the actors have different agendas and objectives, and they are also in different contexts. The public sector has its own pace. We have experienced that regulations that put constraints are difficult to emerge and enact. The private sector is generally focused on profit rather than environmental impact. However, this is changing with the whole thrust in ESG reporting, with investors and financiers seeking more from their portfolios and the customer market asking for everything green and eco-friendly. On the other hand, civil

society is pushing for environmental and social goals, which are sometimes unrealistic and unpractical. The other challenge lies within the knowledge and awareness of the various actors, starting from believing in the need for decarbonisation or even knowing what decarbonisation is about.

The Dos And Don'ts For Decarbonising The Built Environment

I shall start with the don'ts. The wrong approach is to think that any one organisation, or even one sector, can pull it off without deeply involving other stakeholders. The other don't is to cut and paste strategies from elsewhere without properly understanding the context, implications, risks and opportunities. It is why we value so much the process of consultation and stakeholders' engagement, and we are

taking our time to co-create the net zero roadmap. We should also be agile, and as new information emerges, we can regularly tweak the roadmap or even pivot from the same. We should also start developing and collecting various data points.

Manufacturers And Solution Providers Need To Innovate

The manufacturers and solution providers have a significant role to play in decarbonising buildings. They are critical in the value chain. Firstly, the manufacturers should all start understanding their environmental impact, communicate on the same, and start improving the embodied carbon in their products. In some cases, a re-think is necessary – or they can turn the risk of being out of business. Solution providers are at the forefront of the transition, as it is only through

“We have made good progress in regrouping the different multi-sector stakeholders to work on the net zero roadmap.”

innovation that we can get where we want to be in a shorter time. So, solution providers must keep pushing, as we know well that the building sector is the least innovative regarding new construction technology uptake. I do think that support is needed for these solutions to become mainstream. It is something we are considering in our roadmap.

Achieving Energy Efficiency Performance



Douglas Snyder,
Executive Director
of Vietnam Green
Building Council .

The Vietnam Green Building Council (VGBC)'s voluntary LOTUS green building rating system applies to most building typologies in Vietnam, such as commercial offices, high rise residential towers, homes, schools, light industry, retail, hospitality, and others. LOTUS currently promotes decarbonization through guidance for

projects to achieve energy efficiency performance above Vietnam's Energy Efficiency Building Code. Projects are reviewed at both the design and construction project phases to validate improved performance. Projects also must report energy use data for five years following LOTUS certification.

The VGBC also aligns its activities and goals with those of the World Green Building Council. In 2021, the WGBC added embodied carbon of construction materials to the top of its priorities. As a result, decarbonization advanced from Net Zero Energy Buildings to Net Zero Carbon Buildings (NZCBs) which covers both operations and materials related GHG emissions. The VGBC is now upgrading the LOTUS system to include NZCB criteria. This also aligns with the Vietnam government's NDCs and commitment to a net zero carbon economy by 2050.

The VGBC is also developing a Netzero Carbon Pathway guiding document for the property market of Vietnam.

Our hope and aim is that both existing and new buildings across all typologies will have a clear path to achieve both

NZCB design and performance. For Vietnam to achieve its net zero carbon goals, the vast majority of buildings will need to become NZCBs.

LOTUS Buildings Perform Better On Average

LOTUS buildings already perform on average 36 percent more efficiently than the Vietnam Energy Efficiency Building Code (QCVN 09:2017/BXD) baseline, and some achieve up to 60 percent energy and related GHG reductions. We currently have 1 million square metres LOTUS green building certified, but this needs to grow rapidly as soon as possible.

Decarbonisation Challenges

The biggest decarbonization challenges include older existing buildings, large residential projects where buyers complete the fitout of their properties but may not understand optimal efficiency design, and factories with significant process loads. Embodied carbon of construction materials is also a significant challenge with a still young and developing embodied carbon disclosure process.

“The VGBC is also developing a Netzero Carbon Pathway guiding document for the property market of Vietnam.”

Manufacturers Need To Work Towards Net Zero Carbon Manufacturing

Much of this means renewable energy is used to power resource extraction, materials processing, and assembly. Before that, it means taking advantage of every process equipment energy efficiency gain possible. Manufacturers should also take a lifecycle perspective for their products – a cradle to grave approach.

Service providers should consider life cycle impacts of systems as well as well as both direct and indirect benefits of different strategies. Direct benefits bring immediate financial benefits. Indirect benefits could be occupant satisfaction, increased worker and student performance, reduced sick days for building users, faster lease up rates, higher occupancy rates, and others. Service providers should also be aware of the global trend of customers preferring to spend their money where sustainability is valued. This is further reflected in the robust transition of the investment market to ESG (Environment, Social, and Governance) criteria.

The dos and don'ts for decarbonising the built environment

Do's

1. Do integrated design. This means getting your whole design team, and if possible also the general contractor and building operator, in the same room during the concept phase to discuss the design and possible synergies and conflicts between different systems (architecture, MEP, site design, controls, building management, etc.).
2. Design in this order for efficiencies that build from step to step
 - a. 1) Architectural design to passively keep buildings cool in the summer and warm in the winter.
 - b. 2) Search for and select materials with lower carbon footprints.
 - c. 3) After good architectural design, use good MEP design, including right sizing of equipment, for active components and then choose high efficiency equipment and integrated intelligent controls.
 - d. 4) Lastly, use onsite and offsite renewable energy to match operational loads to achieve net zero energy performance.
3. Do consider third party verification and certification so you can easily communicate your increased performance to your users, stakeholders, investors, and the community.
4. Do design for durability and resilience. Buildings that don't last or that cannot protect people during severe weather or emergencies won't be valued and will become a waste of use of materials.

Don'ts

5. Don't wait until the building is already designed to consider efficiency. Redesign is an avoidable cost if you think of efficiency and green during the concept phase.
6. Don't start with renewable energy. You'll probably need 4x as much if you don't take care of your efficient architectural and engineering designs first. The cheapest energy is that which is saved through efficient design.
7. Don't think small or late. The buildings we build today will be around for 30 to 50 years, so inefficient design will have a long-lasting and difficult to reverse impact. Cost savings will also be lost. More aggressive designs have stronger ROI.
8. Don't forget to commission (test) your active systems using a third party. 15 percent of HVAC equipment is installed incorrectly by contractors. This becomes a huge waste of energy and money over time.

Quote

"The era of global warming has ended; the era of global boiling has arrived."

António Guterres – United Nations Secretary-General

Malaysia's Journey Towards a Zero Carbon Built Environment



 **Mitch Gelber, CEO of Malaysia Green Building Council.**

The Malaysia Green Building Council (malaysiaGBC) is a volunteer-driven, non-profit organisation comprised of members from across the construction sector striving to enhance the sustainability of our built environments. We operate a wide range of initiatives including professional training programmes, green building education & awareness, ESG workshops for building-industry SMEs, the GreenPagesMalaysia product directory, green networking events, awards and collaborations with industry & professional associations, government bodies, universities and other non-governmental organisations. malaysiaGBC is an established member of the World Green Building Council

(WorldGBC), a global action network leading the transformation to more sustainable buildings for everyone, everywhere.

malaysiaGBC's CarbonScore is an annualised assessment of building-related CO2 emissions aimed at accelerating the national transition to a sustainable and decarbonised built environment for all Malaysians. The programme is affiliated with the WorldGBC's Advancing Net Zero program and is designed to engage with the widest possible range of stakeholders, from large corporates and local authorities to individual building owners, tenants and residents. Launched in October 2022 with the presentation of five initial pilot projects, CarbonScore is scheduled for a full public roll-out by Q3 2023. *For more information please visit: carbonscore.org.my.*

With over 90 percent of Malaysia's electricity still being produced by burning fossil fuels, the urgency of lowering the country's emissions at source is paramount. The ecological and economic viability of our constructed environments is contingent on a rapid transition to renewable energy sources, complemented by continuing improvements to the energy efficiency of both our new and existing structures. The recent unveiling of the Malaysian Government's National Energy Transition Roadmap (NETR) and enactment of a long-anticipated Energy Efficiency and Conservation Act (EECA), underscore the

“A decarbonised future is the sole viable path forward for Malaysia.”

growing recognition across both public and private sectors that a decarbonised future is the sole viable path forward for Malaysia.

The Dos And Don'ts of Decarbonising the Building & Construction Sector

Simply put, avoid conflating business-as-usual practices with effective business practices. A stubborn misconception persists that prioritising environmental performance is expensive and can be at odds with underlying financial imperatives. But this paradigm shifted some time ago. Collectively, we've already reached the point where transitioning to sustainable, low-emissions pathways is more cost-effective for businesses, manufacturers and individuals as compared to environmentally destructive legacy products and energy sources. Essential strategies for curbing operational emissions in buildings – including improving energy efficiency and transitioning to renewable energy – yield immediate and substantial financial gains. Organisations that are proactive in pursuing these opportunities stand to reap the rewards.

Interviewees:



Tackling Carbon Emissions With Smart City Technologies



Dr Gonzalo Castro de la Mata, Executive Director of Earthna Center for a Sustainable Future.



Earthna is a non-profit policy research and advocacy centre, established by Qatar Foundation (QF) to develop a holistic view of environmental, social, and economic prosperity. Our roots are anchored in supporting Qatar’s ambition to enhance sustainability by informing and influencing national and global sustainability policy development and action.

Earthna’s roots go back to the Qatar Green Building Council, which developed and implemented a series of tools for better urban and building planning based on sustainable methods and low-carbon approaches, including through certification. In addition, Earthna uses Qatar Foundation’s Education City as a testbed for low-carbon development, including monitoring emissions and actions through tactical urbanism to reduce carbon.

We also convene global, regional, and local policymakers, thinkers, business and industry leaders, and academia to advance conversations around sustainability. We have a particular focus on energy efficiency, green infrastructure and smart city technologies all of which have a role to play in decreasing or eliminating carbon emissions.

Earthna is actively contributing to Qatar’s development and leading local and international dialogue on the importance of achieving sustainability, particularly in hot and arid environments.

Conversations Improve Standards

By helping to stimulate conversations on issues such as decarbonisation and bringing together stakeholders to discuss best practices in terms of sustainable development, we can help governments, policymakers and the construction industry to improve standards and adopt responsible, sustainable ways of working.

Progress Made In Community-Specific Solutions

Since being founded back in 2022, Earthna has supported the development of methods to create baselines for smart cities and the built environment through several projects, most notably its work in Education City and Mshereib.

In the case of Mshereib – a newly developed residential and commercial district in the heart of Doha – Earthna is supporting research to understand the breakthrough methods that have been used to develop this sustainable precinct. Msheireb has one of the highest concentrations of gold or Platinum LEED (Leadership in Energy and Environmental Design) for Building Design and Construction certified sustainable buildings in the World, so has generated lessons that can be applied elsewhere to improve sustainability efforts in the built environment internationally.

Earthna has also made significant progress when it comes to developing community-specific solutions that will reduce carbon emissions and improve liveability in cities. We use Education City in Qatar – a 12-square-kilometre campus housing multiple educational and research institutes – as a testbed for placemaking pilots and developing solutions. We see Education City as a microcosm for piloting sustainability policies that could potentially be implemented across the country. Some of the measures introduced to help enhance the sustainability and liveability of Education City include producing

“Qatar has established itself as a front-runner in sustainability and is committed to lowering emissions and decarbonising across all sectors.”

an annual greenhouse gas accounting report, implementing an ultra-low-emissions zone, undertaking a green roofs feasibility study, and installing solar panels on community housing.

We have also hosted several events which facilitate ongoing thinking and discussion around decarbonisation and sustainability in the built environment. Earlier this year, we hosted the first Earthna Summit, a carbon-neutral event which brought together 1300 global, regional, and local policymakers, thinkers, business and industry leaders, and academia. The summit focussed on building new sustainability pathways for hot and arid environments and featured a specific session on including Green Technology and Decarbonization, as well as a number of talks and roundtable discussions on sustainability in cities. And in November, we will hold the third edition of the Qatar National Dialogue for Climate Change which, this year will have a dedication session on industrial and sectoral decarbonization through engineering solutions and technologies.

Rapid Urbanisation: A Decarbonisation Challenge

Qatar is a small territory located in a harsh desert. As a result, its economy cannot rely on its natural environment or “biocapacity.” Instead, the economy is built on non-renewable resources, primarily natural gas exports. These resources have, in turn, been used to develop significant human and infrastructure capital, as well as savings, leading to great prosperity for the population. To understand sustainability

in Qatar, it's essential to consider this transformation of capital.

Qatar has invested heavily in its infrastructure and the built environment in recent years. However, rapid urbanisation and wide-scale construction activities pose challenges in terms of managing the environmental impact of construction materials, waste management, and the energy consumption and carbon output of creating new buildings. As a result of its extreme climate, Qatar also faces water scarcity, which affects the availability and sustainability of water resources for buildings.

Despite these challenges, in recent years, Qatar has established itself as a front-runner in sustainability and is committed to lowering emissions and decarbonising across all sectors. In particular, the country is reducing emissions from the liquified natural gas chain by reducing flaring and making significant investments in renewable energy to support its energy transition, as well as in new technologies for carbon capture and storage, and hydrogen, all of which will benefit the construction industry and humankind at large. While the country still has a way to go on its sustainability journey, in recent years it has taken vigorous steps in the right direction.

Manufacturers/Solution Providers Have Leading Role To Play

Manufacturers and other solution providers are vital in transitioning the built environment to a more sustainable and low-carbon future. Whether designing products for retrofit or new installation, they can play a leading role in decarbonising buildings by developing new and innovative products as well as implementing best practices within their own supply chain and production lines.

When it comes to finding more sustainable solutions, manufacturers can design and produce more energy-efficient building materials, equipment, and systems. This includes products such as insulation, windows, HVAC (heating, ventilation, and air conditioning) systems, lighting, and appliances that will help reduce energy consumption and lower carbon emissions associated with building operations. They can also

The Dos and Don'ts For Decarbonising The Built Environment

When it comes to decarbonising the built environment, there are several dos and don'ts to consider.

Smart urban planning and building design can have a hugely positive impact. While urban planning or expansion approaches are not one size fits all, development in cities must be centred around building resilience and sustainability – and additional consideration should be paid to the unique challenges that cities in hot and arid climates face.

To give an example from Qatar, the streets within Msheireb – the world's most sustainable downtown regeneration project – are oriented to capture cool breezes from the Gulf and shade most pedestrian routes from the hot sun. Buildings are also massed to shade one another and light-coloured to reduce cooling requirements and promote energy efficiency.

It is also extremely important for developers and construction companies to prioritise decarbonising their supply chains and construction methods, for example, by selecting sustainable materials with lower embodied carbon, integrating renewable energy systems, optimising supply chains, and promoting green transport and machinery. The implementation of energy efficiency measures in buildings, for example, through improved insulation, efficient HVAC systems, LED lighting, and energy-efficient appliances, as well as increasing the use of renewable energy sources such as solar panels and geothermal energy systems can also help to reduce the overall carbon footprint of buildings.

When it comes to things we need to avoid, unnecessary construction or overbuilding and oversized or underutilised structures are big "don'ts" within the built environment as they can lead to increased energy consumption, resource use, and higher carbon emissions. While new construction can incorporate sustainable design from the outset, it's equally important to address the energy efficiency and carbon footprint of existing buildings. Retrofitting and upgrading existing structures can have a significant impact on reducing emissions.

We also need to consider the entire lifecycle of buildings, including material extraction, construction, operation, and end-of-life. Addressing the carbon footprint across the entire lifecycle of a building is important when considering our approaches to decarbonisation in the built environment.

play a key role in the development and supply of renewable energy solutions and smart building technologies that optimise energy consumption and enhance building performance. Smart technologies such as thermostats, building automation systems, occupancy sensors, and energy management software, enable efficient control, monitoring, and optimisation of energy use, reducing overall carbon emissions.

It is also important that they embrace the principles of the circular economy, an economic model that aims to minimise waste and maximise resource efficiency by promoting the reuse, recycling, and regeneration of products and materials throughout their life cycles. This can

be achieved by designing products with recycled or recyclable materials, implementing take-back programs, and facilitating product reuse or repurposing. By promoting circularity, they can reduce resource consumption, minimise waste generation, and contribute to a more sustainable building sector.

As well as providing and creating new solutions, it is also important that they implement sustainable practices throughout their own business and supply chain. Taking these steps can help reduce their overall carbon footprint as a business while also helping to develop products and solutions that help us in our objective to reduce the overall carbon footprint of the built environment.

Environmentally Sustainable Design

Environmentally Sustainable Design or ESD is a growing priority for the building and construction industry. It involves the adoption of green building technologies and sustainable design to shape the built environment development. As the environmental impact of buildings become more apparent, building and asset owners, developers and architects seek to improve energy and water efficiency and reduce their carbon footprint.

In this article, we present **a case study from Beca – The Woodleigh Residences and The Woodleigh Mall in Singapore.** Beca is one of Asia Pacific's largest independent design, engineering, and professional services consultancies. The company integrates and delivers innovative and sustainable solutions to shape a built environment focused on comfort, wellness and environmental outcomes.

According to Beca, inefficient building designs can create a big environmental impact when the building starts operating after it is completed. Besides mitigating this impact, ESD can help developers to enjoy operational cost savings, better yields on leasing and resale value, increased workplace productivity and ultimately, outcomes aligned with the values of stakeholders and the wider community.

This case study shows how The Woodleigh Residences and The Woodleigh Mall were able to meet their sustainability goals by incorporating ESD features.

The Woodleigh Residences and The Woodleigh Mall

CLIENT: The Woodleigh Residences Pte. Ltd. and The Woodleigh Mall Pte. Ltd

DATE: 2016 – 2022

LOCATION: Singapore

SERVICES: M&E and ESD Consultancy

Beca was the Mechanical & Electrical and Environmentally Sustainable Design (ESD) Consultant for The Woodleigh Residences and The Woodleigh Mall, both of which successfully attained the BCA Green Mark Platinum for New Residential Buildings and New Non-Residential Buildings in 2019 and 2020 respectively.

As a mixed-use development, the two separate components of commercial and residential are distributed in a vertical stack arrangement, with 11 blocks of 11-storey residential towers positioned above a two-storey commercial podium. Both the residential and commercial component of the development showcase exceptional energy and water savings, good indoor environment quality and good practices in environment protection throughout the project life cycle.

The development is the confluence point within the future Bidadari Estate. It is well connected via underground and sheltered linkways to the existing Woodleigh MRT Station and the upcoming Bidadari Bus Interchange, and extensive cycling routes around the Bidadari Estate.

Nestled between a 700-metre Heritage Walk adorned with lush foliage, and a sprawling 10-hectare Bidadari Park featuring the picturesque Alkaff Lake as its centrepiece, the development was carefully designed to blend harmoniously with the surrounding nature, while showcasing the rich natural heritage of the Bidadari Estate.

"Working on the development was a rejuvenating challenge. The Woodleigh Residences and The Woodleigh Mall go beyond being just another mixed-use development; they aim to create a connection that brings residents and visitors closer to the area's natural heritage." – Irene Yong, Director – Building Services, Beca.

The development is integrated with social programmes; The Woodleigh Mall houses a community club and neighbourhood police centre. The community club has a slew of public facilities which can cater to the needs of the residents, both living at The Woodleigh Residences as well as those residing in the surrounding HDB estates in upcoming Bidadari New Town.

Key features:

- Use of water-efficient fittings and energy-efficient equipment aimed at reducing the water and energy consumption of the development.
- Corridors, lift lobbies and communal areas at the residential blocks designed to be naturally ventilated.
- Implementation of ABC Waters design features to treat stormwater runoff.
- Use of high-performance glazing with low emissivity for the facade to minimize solar heat gain.
- In addition, all residential units were provided with ceiling fan (with the option for homeowners to opt out) to encourage residents to use fan instead of aircon, to achieve thermal comfort yet reducing energy use.



Photo credit: Cuscaden Peak Investments (Formerly SPH)

Decarbonisation: What It Means To MEP Specialists

MEP plays a major role in tackling carbon emissions in the built environment. In this interview, experts from Cundall, a global multidisciplinary design and engineering firm, tells us how the MEP industry can play its part and the type of skills that professionals need to develop for future challenges. **Singapore Managing Director, Building Services of Cundall Marcus Kan, and Hong Kong Director of Cundall, Joe Tang, share their thoughts.**

SEAB: What does decarbonisation mean to MEP specialists?

MARCUS: There are two contributors (which we can directly influence) to the carbon footprint of a building – embodied carbon and operational emissions.

“When MEP specialists undertake design, we need to consider both these aspects of decarbonisation, and reduce them to the greatest extent current technology allows. Then we need to look at offsetting the balance through renewable energy systems with the aim to generate more than what is consumed.

Energy efficiency has been at the forefront of mind for many years, as it has been the best way to rapidly reduce emissions in any location where grid energy is generated by fossil fuels. We have seen the industry rapidly evolve new solutions in response to this, such as variable speed drives for pumps and fans, and smart control systems so air conditioning and ventilation can be responsive to actual conditions rather than relying on standard set points. As engineers, we do our best within the scope we can influence, which is the design. Power generation is becoming greener, but that is beyond our control, and it will take time for the grid to fully decarbonise. Therefore, we focus on doing as much as we can with design to make a positive impact.

The emerging focus now is embodied carbon, and the emissions associated with the entire lifecycle of a material or product. So as MEP engineers that means carefully considering design, specifications, procurement and installation and making decisions that reduce emissions at each point where we have an influence.

The engagement of engineers in the early stages of project design is crucial for overall success in decarbonisation, as the work of each discipline including architect and structural engineering has a direct influence on the design for building services including mechanical and electrical services.

SEAB: What role do MEP specialists have in decarbonising the built environment?

JOE: Building services, particularly mechanical, electrical and plumbing, sit at the nexus of the climate adaptation and mitigation challenge. On the one hand, MEP is absolutely critical to protect people’s health and the function of the economy during extreme heat events and severe humidity, while on the other, the energy required to operate mechanical



Joe Tang

“To achieve solutions that support decarbonisation, MEP specialists need to consider design and equipment specification in the context of the whole building, the infrastructure that supports it and the needs of human occupants.”

– Joe Tang

plant and the refrigerants in the systems can contribute to global warming unless we apply inventive thinking.

To achieve solutions that support decarbonisation, MEP specialists need to consider design and equipment specification in the context of the whole building, the infrastructure that supports it and the needs of human occupants. Rather than designing based on standard assumptions that mechanical plant and grid electricity will supply all of a building's needs, collaborating with other design disciplines including environmentally sustainable design expertise, façade engineers and architects, structural engineers and smart building engineers leads to integrated solutions that can minimise energy demand.

Increasingly, MEP engineers are factoring in optimised passive performance for heating, cooling and ventilation, so mechanical plant becomes supplementary, rather than primary. Refrigerants are another area where our work has major impact. By demonstrating low-GWP refrigerants are feasible and specifying for smart systems that can give real-time alerts to leaks, the impact of cooling both from fugitive refrigerant gases and spikes in energy use can be mitigated. As an industry we are also rethinking where cooling needs to be applied, with leading-edge approaches such as point-source cooling rather than volume conditioning for energy-intensive facilities such as data centres.

We also need to consider the end-of-life element of both the building and the plant and equipment lifecycle and the potential carbon impacts of decommissioning. Design, construction and installation processes that suit deconstruction and repair, re-use, refurbishment or recycling of valuable materials is now becoming something we consider in our engineering design work.

All of these new approaches to design challenge us in positive ways and show how our work can be of even greater benefit to society. Every time we achieve optimal energy efficiency, and work to integrate on-site renewable energy capacity and on-site water harvesting and reuse, there are benefits for the demand profile for grid electricity and mains potable water. In nations including Hong Kong and Singapore where there are land area limitations to installing solar at scale, and weather conditions do not support mass wind power deployment, reducing demand at source is key to a successful transition away from fossil fuels. MEP specialists are at the forefront of helping ensure this efficiency-led approach is achievable.

SEAB: What kind of skills do MEP specialists need to move to a net-zero future?

MARCUS: The exciting thing about the net zero trajectory is the tools and thinking we need to use to get there.

Our MEP engineers use digital engineering design in conjunction with modelling of climate, energy and indoor conditions to fine-tune design for energy-efficiency. We have transitioned to digital-first design, which means we can leverage the power of parametric modelling and building information modelling combined with embodied



Marcus Kan

"The skills with digital technology, design thinking, experimentation, holistic thinking and working with data and analytics are becoming very important for MEP professionals."

– Marcus Kan

carbon calculators to really nail the detail of decarbonising building services. We can apply game theory in how we invent solutions, understanding that there are no 'wrong' answers in a simulation, and one of the powers of digital engineering is it allows us to 'fail' multiple times until we find the most optimised solution to a design challenge. This also enables engineers to be less risk-averse and frees us to challenge the norms to find the breakthroughs.

So, the skills with digital technology, design thinking, experimentation, holistic thinking and working with data and analytics are becoming very important for MEP professionals. I think this will also make the profession more attractive to young people, which is important, to bring the next generation of talent into the sector.

Also, because the net zero approach requires a holistic understanding of the performance of the building not only in terms of all the building systems and how they interact, but also how it will perform through time and in a changing climate, collaboration skills and communication skills are key.

Cundall sets out net zero carbon targets by 2030

Hong Kong – Multi-disciplinary engineering consultancy Cundall has committed to achieving net zero carbon on all global projects by 2030. The pledge recognises the critical need for practical, science-led action to transition all buildings, infrastructure, and human settlements to net zero carbon as rapidly as possible.

“We know that buildings are one of the fastest and most effective levers available for reducing greenhouse gas emissions. As the latest IPCC report stressed, there is no time to waste, and we must start now. That includes addressing our existing building stock as well as new buildings,” said Julian Bott, Cundall Asia-Pacific Managing Director.

Cundall, which has 25 offices worldwide, will collaborate with its clients and industry to deliver energy and carbon solutions necessary to minimise the impact of global temperature rises. After 2030, Cundall will only work on design projects that are net zero carbon.



Treehouse. Rendering credit: Ronald Lu & Partners

Zero Carbon Design 2030

The Zero Carbon Design 2030 (ZCD2030) commitment is a line in the sand that has been two years in the making. It is both an internal cultural shift and a standpoint that will enable Cundall's engineers and designers to make zero carbon thinking 'business as usual' for all Cundall's people and its clients.

“When we began our Zero Carbon Design 2030 journey in 2021, we had to start from the ground up to understand exactly what it would entail,” says Julian Sutherland, Partner at Cundall and part of the core team dedicated to the initiative's success.

New Net Zero Treehouse by Cundall

Cundall's Asian business (Hong Kong, Shanghai, Manila and Singapore) is building on its ground-breaking multi-disciplinary design for the award-winning Net Zero Carbon climate-adapted, biophilic workplace concept – Treehouse, to assist clients in achieving future-ready property assets.

“One of the most important lessons learned from developing the Treehouse concept was the crucial importance of every discipline working collaboratively,” explains Cundall Hong Kong Director, Joe Tang.

Marcus Kan, Cundall Singapore Managing Director stresses that this is not only applicable to new buildings. “Many asset owners and portfolio managers recognise that their existing properties require assistance to improve energy efficiency, safety, occupant amenity and market relevance. We bring the same advanced thinking we applied to Treehouse to our Building Performance Services offering, which helps clients with transforming the buildings they currently have into the kind of high-performing buildings our global net zero future needs,” said Marcus.

New elevator plant now fully operational in India

Tokyo, Japan – Fujitec India Private Ltd., a group subsidiary of FUJITEC CO., LTD., completed a second elevator plant in the suburbs of Chennai, which became fully operational in February of this year.

The second plant was built to grow sales in India, where demand is increasing, and to expand exports throughout South Asia. Upon completion, the plant provided more than double the previous production space for Fujitec in the country. In addition, construction was completed for a new 78.9-metre elevator research tower. Fujitec India is strengthening its development structure, including the development of high-speed elevator models, to meet the demand for elevators in India, where high-rise building construction is becoming more common.

Fujitec India plans to increase production capacity to 3,000 units per year by the end of 2023, 1.5 times the current 2,000 units. This increase in capacity is the company's response to strong sales of standard elevator models for the Indian



Photo: © FUJITEC

domestic market. Fujitec pursues the further expansion of its global business under Fujitec's medium-term management plan Vision24, expanding geographic business reach and building up production capacity steadily.

Danfoss: Deep decarbonization of cities essential for key climate targets

New whitepaper from Danfoss lays out new roadmap for decarbonizing cities. Implementation of existing technology for buildings, transport, and sector integration can bridge half the gap in the urban GHG emissions reductions needed for a 1.5°C pathway.

Cities account for 70 percent of global carbon emissions. Ultimately, the battle against climate change will be won – or lost – in cities.

Action is needed urgently to make the changes necessary to enable large-scale decarbonization. To address this challenge directly, Danfoss has released a new whitepaper which sets out a clear, achievable pathway forward to enabling a green transition on a large scale. The paper shows how existing energy efficiency and electrification measures across sectors can immediately reduce emissions and accelerate a green transition in cities.

Commenting on the launch of the whitepaper, Kim Fausing, President and CEO, Danfoss, said: "We will not reach the goals of the Paris Agreement without a deep decarbonization of cities. The good news is that cities offer some of the best possibilities to optimize urban planning and accelerate a green transition, and there are already accessible, cost-efficient technologies out there capable of cutting emissions sufficiently to meet global climate goals. These technologies are already in use every day – for instance in the city of Sønderborg in Southern Denmark (Project Zero), but they must be adopted more widely on a global scale now."

As the world's population continues its surge towards 10 billion people by 2050¹, it is now expected that almost 70 percent of the world's inhabitants will be city dwellers by this date. In their current form, with energy demand continuing to grow, cities would produce a wholly unsustainable level of emissions that would be completely incompatible with key climate targets, such as the 1.5°C target set out by the 2015 Paris Agreement.

The whitepaper, 'Roadmap for decarbonizing cities', draws upon a diverse range of verified sources, including the latest data from the International Energy Agency (IEA), to demonstrate why action is needed. The whitepaper also shows how that action can be taken, and highlights how the solutions that will enable this are already available.

Key takeaways:

- Energy efficiency in cities is essential for global decarbonization. If all urban areas and cities in Europe, the US, and China invested in energy-efficient heating and cooling of buildings, this would contribute 20 percent to the 1.5°C target of the Paris Agreement.
- Electrification of vehicles will play a large role. Electrification of urban transport, both private (light) and public (heavy), is crucial for successful climate targets. 28 percent of the decarbonization necessary to stay within the 1.5°C target of the Paris Agreement would be achieved if all urban areas in Europe, the US, and China electrified



Image courtesy of Danfoss

- private and public transport.
- Improved efficiency can accelerate the electrification of transport. Both in passenger cars, heavy duty vehicles, and in marine transport, efficiency measures can reduce the size of the batteries needed thus limiting the raw material requirements. Increasing efficiency can also bring down the demand for charging infrastructure and increase the productivity and range of the vehicle.
- Implementation of existing technology for buildings, transport, and sector integration can bridge half the gap in the urban GHG emissions reductions needed for a 1.5°C pathway.

The whitepaper analysis provides a concrete roadmap for mayors, local decisionmakers, and urban planners on how to eliminate all major drivers of the carbon footprint of cities. The paper also explores how available technologies can improve the livelihoods of citizens while at the same time making our economies more resilient and creating jobs. Ultimately, it offers a holistic and concrete view of the major opportunities for decarbonizing cities.

¹Net Zero by 2050 – Analysis – IEA (www.iea.org/reports/net-zero-by-2050)

Full whitepaper available here: www.whyenergyefficiency.com/solutions/allsolutions/roadmap-for-decarbonizing-cities

Johnson Controls forms JV with Primer Group to expand portfolio in the Philippines

Manila, Philippines – Johnson Controls (JCI), together in its joint venture with Primer Group of Companies is expanding and strengthening its product and solutions portfolio in the Philippines. This will give it access to bigger markets and potentials in large scale city development, infrastructure, mid-commercial building, data centres and healthcare projects.

The joint venture reaffirms Johnson Controls' long-term commitment to the Philippines as it gives customers access to full-cycle capabilities in Heating, Ventilation and Air-Conditioning (HVAC) equipment, controls, industrial refrigeration, digital services and total solutions to address the fast-growing market demand for sustainable buildings and facilities. It further taps into the growth in industrial manufacturing, data centers and cold-chain verticals and strengthens Johnson Controls' presence in the region and beyond.

"We are witnessing strong demand beyond more sustainable and healthier buildings across Southeast Asia, and this joint venture expands into the verticals of industrial infrastructure, logistics, industrial refrigeration and commercial buildings with full Johnson Controls product portfolio. The Philippines is important to us as we see huge opportunities for collaboration and growth," said Peter Ferguson, General Manager of Southeast Asia, Johnson Controls. "As part of our commitment to the market, we're pleased to appoint Glenn Lemoncito as the General Manager for Johnson Controls Philippines. In his role,



Peter Ferguson, General Manager of Southeast Asia, Johnson Controls (left) and Glenn Lemoncito, General Manager for Johnson Controls Philippines (right). Photo credit: JCI

he will drive the business operations and strategy, oversee the joint ventures with Primer Group, and drive meaningful growth and partnerships locally and across the region," added Peter.

This joint venture enables Johnson Controls Philippines to operate more effectively and be closer to the customers directly through its sales & service capabilities with a broader customer base. Johnson Controls' products and solutions coupled with Primer Group's deep understanding of the Philippines market, will provide customers in the Philippines with best-in-class service, in-market expertise, and access to a full suite of solutions across industrial, infrastructure, industrial refrigeration and commercial buildings.

KONE to equip two new buildings in SGH Campus

Singapore – KONE Corporation has won an order to supply a suite of People Flow® solutions for Singapore General Hospital's (SGH) Elective Care Centre (ECC) and National Dental Centre Singapore (NDCS) buildings located at SGH Campus.

The buildings will comprise operating theatres, specialist outpatient clinics and inpatient wards, as well as digital dentistry capabilities, research and education facilities. The new buildings have been designed with various features that



Photo credit: SGH / NDCS

will enable them to achieve sustainability targets in carbon abatement and resource efficiency.

KONE's delivery includes 49 elevators and 11 escalators from the DX product range. The KONE DX products have high-energy efficiency performance and come with built-in connectivity. The solution supplied to ECC and NDCS also include Autonomous Mobile Robot Interface, Blue Code Activation Interface, Application Platform Interface, KONE E-Link and KONE Health & Well-Being Solution, which includes Lift Air Purifier and Escalator Handrail Sanitizer.

"SGH is a key customer of KONE, and we are honoured to be a part of its rejuvenation and transformation," said Samer Halabi, KONE Executive Vice President of Asia Pacific, Middle East and Africa. "The People Flow® solutions that will be installed have innovative technologies befitting SingHealth's vision of 'One Campus, One System'."

The owner's agent is MOH Holdings Pte Ltd, the main contractor is Penta-Ocean Construction Co. Ltd, the architect is DP Architects Pte Ltd and the consultant is WSP Consultancy Pte Ltd. KONE booked the order in the fourth quarter of 2022.

Schneider Electric sets up Sustainability Competency Centre for Asia in Singapore



Singapore – Schneider Electric has established a Sustainability Competency Centre (SCC) for Asia in Singapore, in partnership with the Singapore Economic Development Board (EDB).

Housed within Kallang Pulse, in Singapore, Schneider Electric's East Asia headquarters, the first phase of the S\$7 million SCC opened in June 2023. The SCC marks a key milestone as Schneider Electric commemorates its 50th anniversary in Singapore this year.

The SCC aims to meet the growing demand for sustainability solutions and talent by equipping them with deep industry knowledge and technical expertise to develop and execute effective strategies. It will also serve to anchor Singapore as a global hub for sustainability leadership and innovation by driving R&D in sustainability services. This includes conceptualising ways to help Small and Medium Enterprises (SMEs) commit to their emission reduction goals.

"Companies everywhere are increasingly viewing sustainability as a competitive lever and as they work to embed these considerations into the core of their business strategies, many are faced with challenges. These include

globally operating clients needing greater localised support; local companies seeking more globalised expertise; and mid-market SMEs simply looking for innovative solutions to address their emissions reduction goals," said Olivier Blum, Executive Vice President, Energy Management Business, Schneider Electric. "Schneider Electric's Sustainability Competency Centre in Singapore will bring the expertise that companies need to strategise, digitise, decarbonise and accelerate their journey to net zero."

"The transition to net zero requires ambitious collective action. Schneider Electric's Sustainability Competency Centre is an example of how EDB is partnering with industry leaders to develop and deliver sustainability solutions for the region, from Singapore. The Centre's focus on capability building and leadership training will also equip Singaporeans with expertise in decarbonisation strategies and drive innovation in sustainability services. We look forward to helping businesses meet their sustainability commitments and capture green growth opportunities in Singapore," said Jacqueline Poh, Managing Director, Singapore Economic Development Board.

Green Airports in Asia-Pacific and Middle East Get Recognised by ACI Asia-Pacific



Photo credit: ACI Asia-Pacific

Airports Council International (ACI) Asia-Pacific recently announced the results of the Green Airports Recognition (GAR) Programme 2023, recognising 12 airports in Asia-Pacific and the Middle East for demonstrating outstanding accomplishments in their sustainability projects.

The theme for the Green Airports Recognition 2023 was Single-Use Plastic Elimination. The outstanding airports are awarded into three categories: "Platinum", "Gold" or "Silver" recognition according to various airport size categories and set criteria.

The recognised airports are:

Over 35 million passengers per annum:

Category	Airport	Project
Platinum	Chhatrapati Shivaji Maharaj International Airport	Single Use Plastic Free Airport – Mumbai
Gold	Hong Kong International Airport	Accelerating the reduction of single-use plastics at Hong Kong International Airport
Silver	Indira Gandhi International Airport	Single Use Plastic Free Delhi Airport

Between 15–35 million passengers per annum:

Category	Airport	Project
Platinum	Kempegowda International Airport	Plastics Circularity at KIAB
Gold	Rajiv Gandhi International Airport	Single-use Plastic free RGI Airport
Silver	Jeju International Airport	The introduction of reusable cups to airport

Between 8–15 million passengers per annum:

Category	Airport	Project
Platinum	Central Japan International Airport	'Bottle to Bottle' sustainable use of PET bottle
Gold	Adelaide Airport	Single-use plastics free precinct
Silver	Bahrain International Airport	Combating single use plastics at Bahrain International Airport (BIA)

Less than 8 million passengers per annum:

Category	Airport	Project
Platinum	Mangaluru International Airport	SUP Free Airport
Gold	Christchurch International Airport	Waste Strategy to Circular Solutions
Silver	Kaohsiung International Airport	Plastic-Free Life at the Airport

The recognised Airports were honoured at the 18th ACI Asia-Pacific Regional Assembly, Conference and Exhibition in Kobe, Japan.

Mr. Stefano Baronci, Director General, ACI Asia-Pacific said, "Congratulations to all the recognised airports for demonstrating their leadership and commitment in implementing innovative sustainability projects at airports. These are critical steps as part of our industry's efforts towards protecting our environment as well decarbonisation. We are impressed with the innovative practices deployed by airport operators to mitigate the plastic contamination. We hope these unique concepts will inspire other airports to implement such practices as we all works towards the common vision of achieving net zero carbon emission by 2050."

Dow DIAMONDLOCK™: An eco-friendly flooring adhesive technology



Photo credit: Dow Thailand Group

Dow Thailand Group has launched the new polyurethane flooring adhesive technology DIAMONDLOCK™ to the Thailand market. The product is versatile for use with various flooring substrates, easy to cure and handle, flexible, non-flammable, user-friendly, and with non-detectable Volatile Organic Compounds (VOCs). It can be used with less volume, covering a larger surface area while perfectly answering the architecture requirements of today's green buildings by being LEED certified. It won a 2020 bronze Edison Award and is now ready to be commercialized in Thailand.

The multipurpose polyurethane adhesive DIAMONDLOCK™ is the newest choice for construction and renovation, with unique features such as being one component and with the ability to adhere to rubber, concrete, artificial turf, luxury vinyl tile, and various types of woods including engineered wood. The curing time relates to humidity level and temperature during

installation. During laboratory tests, the floor was proven to be ready for light traffic within 8–10 hours after installation. After 24 hours, the floor was ready for full traffic. The adhesive has low viscosity, making it easy to trowel with less force. With a similar amount of product, the coverage is 30 percent higher than other traditional polyurethane adhesives available in the market, resulting in savings. It also has non-detectable VOCs; therefore, it has no impact on the health and wellness of the applicators, homeowners, and residents.

The multipurpose polyurethane adhesive DIAMONDLOCK™ was certified by the green building rating system LEED (Leadership in Energy and Environmental Design), by the U.S. Green Building Council. Furthermore, it won a bronze award under the Materials Science and Engineering category and Adhesives subcategory at the 2020 Edison Awards in the United States.

Laminated VicPET Wool is free of wood

VicStrip is a new innovative approach to slat panels by introducing Laminated VicPET Wool free of wood, making it more sustainable, flexible and lightweight. VicStrip was drawn with the lines of contemporary styling decorative wall panels, for anyone that wishes to provide offices, restaurants, hotels, and homes with a design embellished solution amid the added value of removing sound reverberation.

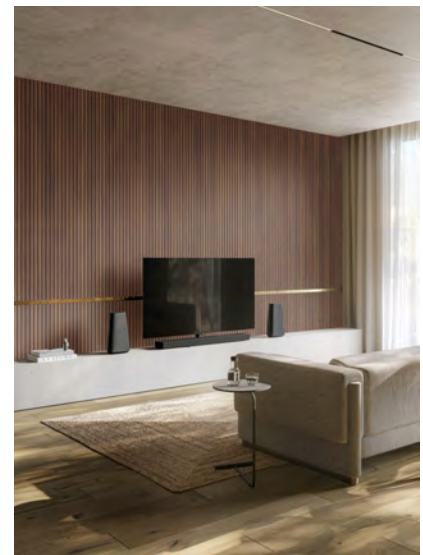


Photo credit: Vicoustic

Atmos UAV introduces the Sony a6100 Oblique to provide accurate and affordable 3D mapping

Atmos UAV, a leading innovator in the VTOL mapping drone industry, is excited to announce the integration of the new Sony a6100 Oblique camera into its flagship surveying drone, the Marlyn Cobalt. This strategic partnership with Sony further solidifies Atmos UAV's commitment to providing state-of-the-art solutions to professionals in the geospatial mapping and surveying sectors.

The Sony a6100 Oblique camera is a revolutionary addition to the Marlyn Cobalt, which combines Sony's 24MP a6100 with a Meike 12mm lens, providing an excellent solution for cost-effective, lower-resolution surveying and produces fantastic 3D models for urban surveys.

Competitive Pricing

One of the primary advantages of the Sony a6100 Oblique integration is its competitive pricing. As the entry-level cousin to the workhorse a7RIV 61MP camera, the a6100 comes in at a 20 percent lower price point, whilst still managing a respectable 4cm [1.5in] GSD at 400 feet. This allows professionals to access high-quality imagery without breaking the bank.

Unmatched Oblique Information for



Photo credit: Atmos

Urban 3D Mapping <sub header, bold> The 12mm wide angle lens, and fixed angled mounting empowers the a6100 Oblique to capture a high quality of data on vertical surfaces, allowing for a comprehensive view of urban environments during 3D mapping missions. This feature significantly enhances data collection efficiency and improves the accuracy of 3D models,

giving surveyors and urban planners unparalleled insights for their projects.

Expanded Coverage with Exceptional Resolution

With the integration of the 'Sony a6100 Oblique' camera, the 'Marlyn Cobalt' now boasts an impressive 350-hectare coverage at 400 feet. This means that surveyors can efficiently cover vast areas in a single flight, reducing operational time and costs. The resulting ground sampling distance (GSD) of 4cm at that altitude ensures high-resolution data acquisition, delivering sharp and detailed images for precise analysis.

"We are thrilled to collaborate with Sony and introduce the Sony a6100 camera to our Marlyn Cobalt drone," said Ruud Knoop, CEO at Atmos UAV. "This integration reflects our ongoing commitment to meeting the evolving needs of professionals in the geospatial industry. The Marlyn Cobalt has always been designed to deliver unparalleled performance, and with the a6100 on board, our customers can achieve even greater success in their surveying and mapping endeavours."



Photo credit: Atmos

Bjelin launches small-sized panels

Bjelin is launching a dynamic and versatile smaller size for its hardened wood flooring after the summer. Visually appealing, easy to handle and ideal for both residential and commercial environments, the new size Small is packed with ground-breaking technologies.

Earlier this year, the company released an updated 3.0 range with improved colours and technologies alongside Medium-sized floor panels. The new half-size panels, Small, measuring 1,170 x 151 x 9.2 mm easily fit into cars and elevators. They also allow for creative designs and are a perfect complement to the larger and wider floor planks.

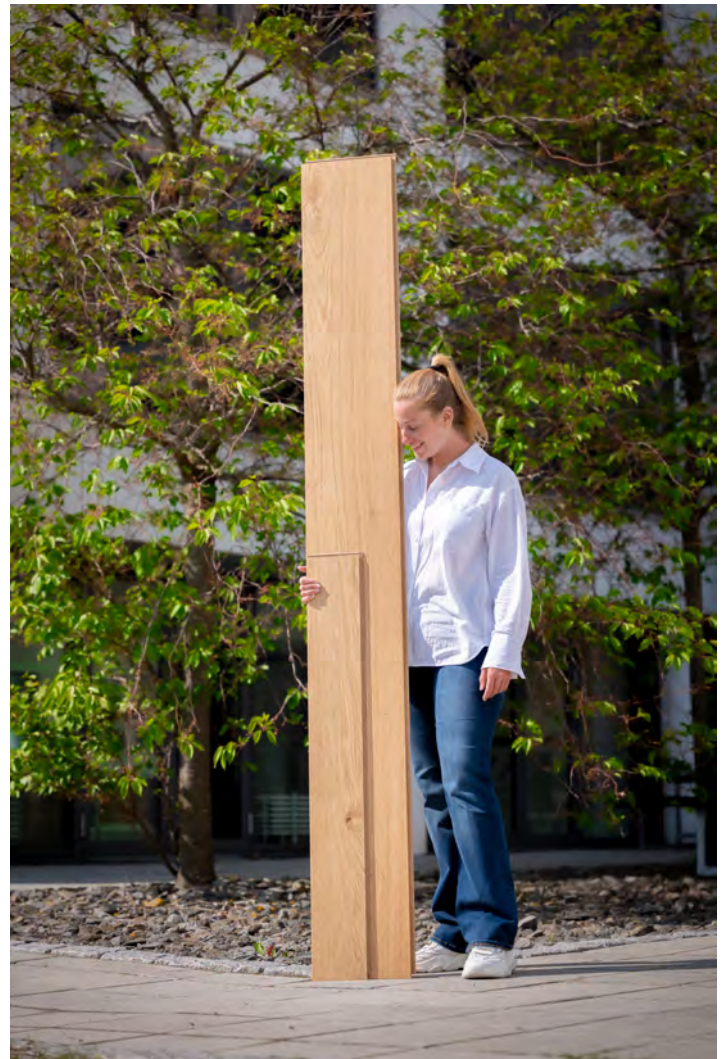
"The new size maximises the use of wood and limits waste," said Hannes Lindblom, Sales & Marketing Director at Bjelin. "And aesthetically, we believe in the ability to adapt and optimise space. These smaller size panels reflect our commitment to efficiency, flexibility and sustainability."

Size Small is available in the pro matt lacquer, which is Bjelin's best lacquer to date. The extremely durable surface makes the floor easy to maintain while protecting it from stains, making it ideal for heavy traffic areas like hotels, restaurants, offices and shops – or the entrance of a home.

Equipped with the leakproof 5G®

Dry™ floor-locking system, these floors are quick and easy to install while eliminating the need for glue, nails and sealants. Watertight joins also prevent water from seeping through the seams and damaging the subfloor.

Bjelin's popular hardened wood floors are empowered by the patented Woodura® technology, which is a high-quality way to produce 100 percent real wood floors that are three times stronger and dent resistant. The technology also allows for ten times more product to be produced from each log. The technologies incorporated into Bjelin's floors are developed in-house by sister company Välinge Innovation.



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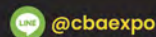
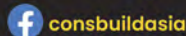


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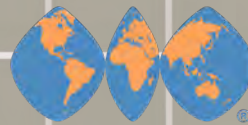
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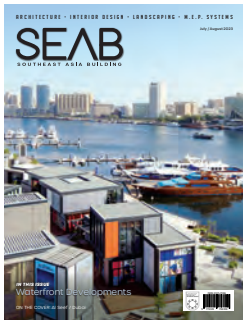
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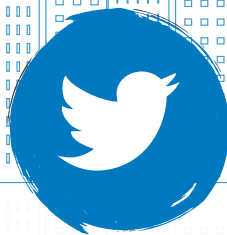
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Event	Date	City	Country	Website	Page
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Consbuild Asia 2023	13-15 Sept 2023	Bangkok	Thailand	www.consbuildasia.com	65
Building Construction Technology Expo (BCT) 2023	20-22 Sept 2023	Bangkok	Thailand	www.bct-construction.com	66
FIND – Design Fair Asia 2023	21-23 Sept 2023	Singapore	Singapore	www.designfairasia.com	3
World of Concrete	23-25 Jan 2024	Las Vegas	USA	www.worldofconcrete.com	IBC
WORLDBEX 2024	14-17 Mar 2024	Manila	Philippines	www.worldbex.com	67
ARCHIDEX 2024	3-6 July 2024	Kuala Lumpur	Malaysia	www.archidex.com.my	63

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