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SEAB

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THE GREEN ISSUE

Sustainability in the
Built Environment

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On the Cover: CapitaSpring in Singapore. Photo Credit: CapitalLand

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Welcome to Sept/Oct issue!

Dear readers, welcome back to another issue of SEAB where we bring you the latest news from the world of architecture. Sustainability in the Built Environment is much more than greening buildings in a city. It looks at how buildings and building materials can leave an impact on the environment and takes a holistic approach on greening a city. In this issue, we showcase sustainable projects that contribute to a green built environment through design and building products.

For this issue, we also invited some architects to share with us the sustainability trends that they can foresee coming. Don't miss this section to learn more about where green building design is heading.

In the PDF version of the magazine, we have featured some green building products to go with the sustainable theme. Hope you find them interesting and useful for your projects.

We hope you find this issue informative and enjoyable to read. If you have any comments, you can email it to me at seab@tradelinkmedia.com.sg.

Amita Natverlal

NOVEMBER / DECEMBER 2022 ISSUE

The Tall Structures Issue: Skyscrapers and Tall Buildings
In the past century, we have seen a significant increase in skyscrapers and tall buildings with stunning design. This issue examines why they have been become so popular and how they improve city life. Includes projects, trends and experts' opinion.



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Singapore Interior Design Accreditation Council (SIDAC) launches new programmes to mentor interior designers in Singapore

Singapore – On 4 August 2022, the Singapore Interior Design Accreditation Council (SIDAC) was joined by Minister-of-State for Trade & Industry Ms. Low Yen Ling to officially launch its Mentorship Programme and present the first cohort of 22 mentors with their appointment certificates.

The event, held at the National Design Centre, also marked the beginning of the Continuing Professional Development (CPD) Programme, aimed at encouraging interior designers to continue honing their skills and knowledge.

"We're thrilled to officially launch these two programmes," said Prof. Keat Ong, Chairman of SIDAC. "They are the first steps to improving the standards of the interior design profession and industry in Singapore by nurturing and guiding the new generation of interior designers," he added.

The Mentorship Programme is directed at guiding the youth and future generations of the interior design industry. Through the programme, participating designers will be assigned to a mentor and given guidance on the tools and skills they will need to start mapping and planning out their careers, as well as opportunities to build connections in the industry. For mentors, the programme allows them to contribute to the interior design community and lets them form rapports with emerging designers in a way that provides access to up-and-coming talent and new ideas.

Mentees will be taken from the pool of Registered Accreditation Interior Design Candidates and assigned to mentors for guidance. The mentor will guide the Candidate, and report to the Accreditation Council periodically on the progress and assessment of their mentee.



Photo credit: Society of Interior Designers, Singapore (SIDS)

The CPD Programme is an important part in improving the standards of the interior design profession in Singapore. The programme ensure that all accredited interior designers strive to remain up to date on the best industry practices, regulatory developments as well as develop new skills that are important in this rapidly changing industry. Accredited interior designers are required to accumulate 20 CPD points through participation in related industry events, courses, seminars by the end of an annual CPD cycle to maintain their accreditation status.

About 70 guests attended the event.

Sino Group's new joint-venture project: LANDMARK SOUTH sets new trends for wellness workplaces in Island South

Hong Kong – LANDMARK SOUTH, jointly developed by Sino Group and Empire Group in Island South, was designed with sustainability and tenants' well-being in mind and has targeted to obtain the Gold rating under BEAM Plus. The project provides around 250,000 square feet of prime commercial space across 30 storeys and comprises Grade A office, retail, dining, art spaces; spaces have been reserved as permanent office of the Hong Kong Arts Development Council. Nature is central to the architectural design of LANDMARK SOUTH to deliver an environment that promotes healthy living and sustainability. With the 9,200-square-foot sky garden situated on the eighth floor, indoor greenery covering 4,100 square feet as well as vibrant motifs, nature can be felt everywhere. Tenants can enjoy farming on the 750-square-foot urban farm to achieve work-life balance. In support of green transport and the reduction of carbon emissions, 113 parking spaces in the property are fitted with EV charging facilities. To ensure indoor air quality and a hygienic environment in LANDMARK SOUTH, the indoor space will be cleansed using MERV 14 air purifier and UV sanitiser. In addition, the property is fitted with touchless, automatic door system in common areas including entrance lobby, lift lobby and washrooms; UV ioniser steriliser inside lift cars; and antibacterial sanitary fitments in all washrooms to create a cosy and safe workspace for users.



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SIA Architectural Design Awards 2022 announces winners and picks two outstanding projects as "Design of the Year"



MeyerHouse by WOHA Architects Pte Ltd (Design of the Year).
Photo credit: Patrick Bingham-Hall



A Brick & Mortar Shop – a multi-label kitchen appliances shop by L Architects (Design of the Year). Photo credit: Finbarr Fallon

Singapore – The Singapore Institute of Architects (SIA) recently announced the winners of the SIA Architectural Design Awards 2022, the industry's most prestigious awards programme honouring the best projects that exemplify excellence in architectural design.

The 21st cycle of the Awards shone the spotlight on projects that demonstrated responsiveness to new design sensibilities, environmental sustainability and well-being for its users and inhabitants during the Covid times.

This year, two projects were named "Design of the Year", the highest distinction in the Awards. A total of seven Design Awards and nine Merit Awards were selected from a shortlist of 23 projects by renowned firms and emerging practices alike, all of whom have presented outstanding design quality.

Ar. Melvin Tan, President of SIA and Awards Jury Chair commented: "This year, the jury felt strongly that it was deserving of a dual award for Design of the Year. MeyerHouse won the hearts of the jury with the skilful abstraction of complex residential development requirements to produce a deceptively simple form. We also want to commend A Brick & Mortar Shop for its sensitive and emotive design birthed with a controlled and simple palette."

The recipients of the SIA Architectural Design Awards 2022 are:

Design of The Year

– MeyerHouse by WOHA Architects Pte

Ltd (Residential Projects)

– A Brick & Mortar Shop – a multi-label kitchen appliances shop by L Architects (Interior Architecture)

Category: Residential Projects

Design Award

– Petit Jervois by RT+Q Architects Pte Ltd
– MeyerHouse by WOHA Architects Pte Ltd (Design of the Year)

Merit Award

– Raumplan House by Formwerkz Architects
– Outside In by Hyla Architects
– House of Trees by L Architects
– Alkaff CourtView & Alkaff LakeView by MKPL Architects Pte Ltd

Category: Institutional Projects

Merit Award

– The Hedberg by WOHA Architects Pte Ltd with LIMINAL Architecture

Category: Special Categories

Design Award

– "Stop all the Clocks" Sanctuary Pet Crematorium by Formwerkz Architects
– A Scintillating Tapestry At 61 Robinson by Forum Architects Pte Ltd
– Additions and Alterations to St James Power Station by W Architects Pte Ltd

Merit Award

– The Temasek Shophouse by Surbana Jurong Consultants Pte Ltd
– Singapore Pavilion, World Expo 2020, Dubai by WOHA Architects Pte Ltd
– The Unfolding House by YY Architects with SKEW Collaborative and Pian Jian

Category: Interior Architecture

Design Award

– GSK Asia House by Hassell
– A Brick & Mortar Shop – a multi-label kitchen appliances shop by L Architects (Design of the Year)

Merit Award

– Terrace Flat by Kaizen Architecture

The recipients of the Awards are reviewed by an independent jury of local and international industry professionals: Ar. Melvin Tan, President, Singapore Institute of Architects; Prof. Tai Lee Siang, Head of Pillar, Architecture and Sustainable Design, Singapore University of Technology and Design; Ar. Mok Wei Wei, Managing Director, W Architects Pte Ltd; Prof. Dr. Anupama Kundoo, Head, Anupama Kundoo Architects; and Ms. Kerstin Thompson, Principal, Kerstin Thompson Architects.

"As with the past years, we received a high standard of submissions, from small interior architecture to large scale complex buildings, for the 2022 edition of the SIA Architectural Design Awards," said Ar. Melvin Tan. "The jury has noted an encouraging uptrend of design sensitivity, responses to our tropical climate and a keenness to designing and building sustainably. With so many great designs, it was kudos to the jury members, who poured in their heart and soul to deliberate the decisions and uphold the value of the highly regarded SIA Architectural Design Awards."



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LG Singapore Air Solutions 2022 Maintenance Seminar a huge success

Singapore – On 24 June 2022, LG Electronics held the "LG Singapore Air Solutions 2022 Maintenance Seminar" at Shangri-La Rasa Sentosa.

The event was targeted at LG customers who use LG's air-con and maintenance services. In the past, the event was held at LG's showroom but this year, it took place in a ballroom and in a face-to-face setting.

Commenting on the seminar, Gerald Chun, Managing Director, LG Electronics Singapore Pte Ltd, said: "Your continuous support has contributed to the growth of our service division. Product and maintenance quality has always been a critical aspect in the air solutions industry and at LG we will never stop in our mission to bring innovation, develop the best practices and solutions to meet your maintenance requirements and standards."



Gerald Chun

In his speech, Gerald shared that LG was awarded with a Performance Award for the fifth year in a row in April 2022 by the Air-Conditioning, Heating & Refrigeration Institute (AHRI).

Gerald also gave out a token of appreciation to three LG Electronics' VIP customers. They were Storhub Self Storage (Singapore), Galaxy Enterprise Pte Ltd and SunSeap Group.

Jaafar Abdul Karim, Senior Project Engineer at Sunseap, observed, "Not only the high service quality of LG's service team, but also the efforts to listen to customers' opinions and reflect them are impressive."

Saurabh Saxena, Director at Galaxy Enterprise, observed, "Undoubtedly, LG's greatest strength is its quick response. The quick response to the equipment is the number one priority among our expectations."

The first half of the seminar was conducted by Benny Chew, Service Manager / Air Conditioning & Energy Solution, LG Electronics Singapore Pte Ltd. He told *Southeast Asia Building*: "The purpose of the seminar is to meet our customers and share with them some project references as well as highlight the importance of our 'Preventive & Maintenance' approach."



Benny Chew

In his presentation, Benny showcased several LG Multi V – VRF project references of completed and ongoing developments in Singapore. Notable projects mentioned included Takeda Manufacturing Support Building – Takeda's first 'net zero carbon emissions' building in its global network and a first-of-its-kind investment within the biotechnology industry in Singapore. According to Benny, it was a huge achievement for LG to be involved in a net-zero carbon building.

Benny also shared valuable information on the importance of doing a preventive maintenance for air-cons. A poorly

maintained air-con causes a lot of problems such as high maintenance cost, poor indoor air quality, shortened life span of coils, and poor heat transfer. A preventive maintenance strategy ensures the air con's product efficiency and performance is maintained. He provided detailed explanation of the traditional perception of maintenance and the maintenance work scopes offered by LG and their benefits. He added that the customer's requirements for a maintenance provider has now changed to include faster response time, accountability, product efficiency, remote monitoring & controls, emergency contact points and extended warranty.

Customers were also introduced to the LG BECON cloud – an LG Air Solution Maintenance Product. Also called the TMS (Total Maintenance System), the BECON cloud provides real-time checking on the products. It greatly reduces the time needed for fault analysis and repair works.

Benny also took the opportunity to introduce LG's new component called the BECON Cloud (TMS) Energy Saving Solution. The Energy Saving Solution approach provides analysis results of air conditioner energy usage reduction and indoor unit usage through its cloud-based energy-saving logic without additional facilities. It will be available in September 2022 for pilot trial in Singapore.

The last portion of the seminar was presented by Zico Lim, Assistant Product Manager, Air-Conditioning & Energy Solutions, LG Electronics to introduce the LG PuriCare™ Air Purifier.



Zico Lim introduced the LG PuriCare™ Air Purifier to the participants on the stage.

The LG PuriCare has a unique combination of fan and air purifier and delivers clean air as far as 7.5 metres. The Clean Booster feature in the PuriCare rises and rotates 360 degrees to deliver clean air to every corner in a room. "The 360-degree rotation can absorb dust and air pollutants no matter where it is placed in a room," said Zico.

The LG PuriCare even has a Baby Care mode where the lower duct protects crawling babies from dust and dirt. Zico conducted a live demonstration of the PuriCare on the stage for participants to show how it works.

The LG PuriCare has received product certification from many organisations such as Korea Air Cleaning Association, Korea Asthma Allergy Foundation, British Allergy Foundation, Asthma & Allergy Foundation of America, Immunology Institute of Russian Federation, and etc.

The seminar was attended by about 50 participants comprising of LG executives from both Singapore and Korea and LG customers from a wide variety of industries. (Photos credit: LG Singapore)

Play @Heights Park.



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Trends In Sustainability



Keith Griffiths, Founder & Global Principal Designer, **Aedas**. (Photo credit: Aedas)

“ High-rise high-density developments should be porous and multifunctional, accommodating multi-level biophilic public spaces to create vibrant, humane and sustainable city hubs that integrates with the surrounding communities we are serving. ”



Elora Hardy, Founder & Creative Director of **IBUKU**. (Photo credit: IBUKU)

“ People need nature, or rather to feel and remember that they are part of it. If we can design a building to feel like a beautiful forest or a bedroom to feel like a cocoon, then we feel that we have succeeded in reconnecting something vital. ”



Gavin Erasmus, Director, **Farrells**

“ As per Sir Terry Farrell's book 'The City as a Tangled Bank on Urban Design vs Urban Evolution', his third theme covers "urbanisation, involves examining how humanity moved from being hunter-gatherers to agriculturists to the various phases of urban revolution – from when we first put down roots and created habitat in specific locations over 5,000 years ago through the upheavals of the Industrial Revolution and on to the third phase of true urban revolution, with now well over 50% of the world's population living in cities. And with this phenomenon constantly accelerating, by the end of the 21st Century city planning and city making and the stewardship of the urbicultural revolution are going to constitute our preeminent endeavour. The die is cast and the field is set: we must master our urban nature to survive. Management and cultivation in every sense – from the ecological and sustainability point of view to the cultural, covering resource provision such as food and water supply, responding to and if possible managing weather as well as all the repercussions of a much more polluted urban life – is what the future will be made of. In that context urban planning, urban management and indeed urban design itself will be highly important skill bases". At Farrells, we engage with these ideas and are advocates for the people for whom we help shape urban spaces. ”

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Ong Junlin, Senior Associate, **Singapore Studio, RSP Architects Planners & Engineers (Pte) Ltd**

“ Biophilic design is on the rise post-Covid, as more people stay indoors but long to connect with nature. ”



Ng Cheng Ngai, Senior Associate, **SAA Architects Pte Ltd** (Photo credit: SAA)

“ The real challenge of achieving social, political and economic sustainability, lies not just in the hands of large corporations, but also with the individual being highly conscious of how much energy we consume, waste and pollute. ”



Sanjay Bhardwaj, Partner, **team3**

“ Over the past few years, it has become quite clear that sustainability in the built environment has to go beyond the formulaic approaches of green building certification programs and instead needs to tackle resource issues, while drastically reducing cooling and heating demands. This requires a careful re-evaluation of both planning and building technologies that we as designers use. ”



Ar. Melvin Tan, President, **Singapore Institute of Architects**. (Photo credit: Wesley Loh)

“ Sustainability today, means liveability tomorrow. More than grand plans and extensive greening, sustainability, like surgery, is about ensuring that buildings can be as minimally invasive in the energy and carbon sense, and also in its environmental impact. The Singapore Institute of Architects continues to lead the charge amongst our members, to make this positive change for our liveable future! ”



Varsha Jain, Principal Architect & Co-founder, **Creative Architects & Interiors (CAI), Chennai**

“ Creating bio-diverse built environments through landscaping, natural materials and innovative passive cooling technologies, net-zero buildings that recycle their own waste and generate green energy. Additionally, social sustainability with public participation and community-led activities, and blue-green landscape systems that mitigate the climate change consequences of flooding and drought, are a few trends in sustainability. ”



Tamar Warburg, Director of Sustainability and Resilience, **Sasaki**. (Photo credit: Sasaki. Photographer: Matthew Arielly)

“ Sustainable landscape design is the next frontier in addressing climate change, by balancing our carbon emissions with storage and sequestration of carbon in soils, trees and plants. ”



Farizan d'Avezac de Moran, **GreenA Consultants**, Senior Partner, GMAAP, LFA, WELL AP, LEED AP, EDGE Expert

“ We need our sustainability agenda to be clear. The clarity will underpin the choices of our trends for it to be meaningful. Only then, impactful trends can be sustained. ”



Ar. Tang Kok Thye
President, **Singapore Green Building Council (SGBC)** (Photo credit: ADDP Architects LLP)

“ The emphasis on sustainability in the built environment has never been stronger, and architecture that meaningfully integrates the well-known principles of reduce, reuse, and recycle will become more prevalent in our fight against the increasingly dire effects of climate change. While we work towards our climate goals, architecture design must also adapt to a post-pandemic society. New designs will favour larger, more decentralised community spaces to reduce overcrowding while also introducing more white spaces, which can be readily converted and repurposed to suit a variety of situations. ”

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International School of Debrecen



Products by Polyglass (Mapei Group) such as POLYVAP RADONSHIELD P-AL, POLYDREN PP, MAPEPLAN M B_{ROOF} t1 ensured a proper waterproofing of the roofs.



1

Mapei waterproofs roofs and installs resilient floors and ceramic tiles in a top-level education facility in Debrecen.

Debrecen is Hungary's second biggest city and an important cultural centre located in one of the most dynamically developing areas of the country. It hosts the offices of many Hungarian and foreign corporations, as well as a large green space called the "Great Forest" in its northern area.

One important goal of the city management is to set a globally competitive standard in the field of public education. To meet this objective, in 2019 the City Council opened a new facility, the International School of Debrecen (ISD), providing education in English language to children from kindergarten to high school. The building was built in the immediate surroundings of the Great Forest and symbolizes the aim for sustainable architecture in harmony with nature.

Mapei Kft, the Group's Hungarian subsidiary, supplied products for waterproofing roofs, preparing substrates and installing ceramic tiles and resilient materials.

Polyglass solutions for waterproofing the roofs

The company in charge of roof waterproofing chose to employ products by Polyglass, a subsidiary of the Mapei Group. The



2

Photo 1 & 2: In the corridors, stairs and study rooms wood-effect vinyl floors were installed with ULTRABOND ECO 571 2K polyurethane adhesive.

numerous details, angular shapes, sides and corners of the semicircular building posed enormous challenges to the staff entrusted to install the waterproofing membranes. However, the skilled team of the waterproofing contractor and the innovative Polyglass products ensured that the works were completed flawlessly. First of all, the concrete roof slabs were treated with POLYPRIMER bituminous primer to promote the adhesion of following layers. POLYVAP RADONSHIELD P-AL bituminous membrane was then applied over the entire surface, to form a vapour barrier over the straight-layer flat roof from below. Thermal insulation panels were then installed on top of this layer, with slopes formed using a second layer of thermal insulation panels. POLYDREN PP polypropylene woven non-woven geotextile was then installed to make sure that the emissions of plasticizers from the PVC products would not damage the thermal insulation panels. MAPEPLAN M B_{ROOF} t1 single ply waterproofing membranes with a white top layer were mechanically fixed onto wooden structural supports.



In several study rooms PVC floors were bonded with ULTRABOND ECO V4 SP.

Installing ceramic tiles in service areas

Prior to the installation of ceramic tiles in the kitchens and service areas, it was necessary to form fast-drying, normal setting screeds with the aid of a special hydraulic binder, TOPCEM. The substrates were then levelled off with ULTRAPLAN ECO 20, a self-levelling compound manufactured and distributed on the Hungarian market by Mapei Kft.

The 30 x 60 cm ceramic tiles were installed thereupon with KERAFLEX EASY S1 deformable cementitious adhesive with extended open time, high wetting capacity and very low emission level of volatile organic compounds (VOC), which is particularly recommended for bonding large-size ceramic tiles over large areas of flooring. Joints were then grouted with ULTRACOLOR PLUS high-performance, quick-setting and drying polymer-modified mortar available in numerous colour shades.

Vinyl floorings for the corridors, stairs and study rooms

In the rooms designed for group study, as well as in the corridors and stairs, vinyl floorings were installed on screeds built using TOPCEM and smoothed over with ULTRAPLAN ECO 20. The adhesives chosen to bond the vinyl flooring were ULTRABOND ECO V4 SP, universal adhesive in water dispersion, suitable for all kind of resilient floor coverings, and ULTRABOND ECO 571 2K two-component polyurethane adhesive, which is used for installing PVC and rubber floorings both internally and externally on absorbent and non-absorbent surfaces. Skirtings were installed with ADESILEX LP, a contact polychloroprene adhesive providing a strong bond immediately upon application.

Mapei Products

Waterproofing roofs: Polyprimer, Polyvap Radonshield P-AL, Polydren PP, Mapeplan M B_{ROOF} t1, Mapeplan Metal Sheets

Preparing substrates: Topcem, Ultraplan Eco 20*

Installing ceramic tiles: Keraflex Easy S1, Ultracolor Plus

Installing resilient floors: Ultrabond Eco 571 2K, Ultrabond Eco V4 SP, Adesilex LP

* This product is distributed on the Hungarian market by Mapei Kft.

PROJECT DETAILS

Project Name: International School of Debrecen

Project Location: Debrecen–Pallag, Hungary

Period of Construction: 2018–2019

Period of the Mapei Intervention: 2018–2019

Intervention by Mapei: Waterproofing roofs, installing ceramic tiles and resilient floorings

Owner: Municipality of Debrecen

Design: BORD Architectural Studio

Main Contractor: Hunép Universal Zrt.

Contractor for Waterproofing Works: Deszig Kft.

Ceramic Installation Contractor: Hunép Universal Zrt.

Resilient Flooring Contractor: Sándor Tóháti

Mapei Distributor: GSV Kft.

Mapei Coordinator: Krisztián Szénás, Mapei Kft. (Hungary)

Photos: Provided by Mapei

CapitaSpring





CapitaSpring, the 51-storey integrated development at 88 Market Street, is the only Grade A office development in Singapore's prime Raffles Place Central Business District (CBD) completed in 2021.

CapitaSpring is a 51-storey integrated development at 88 Market Street in Singapore. The 280-metre-tall skyscraper is the only Grade A office development in Singapore's prime Raffles Place Central Business District (CBD) completed in 2021. As of 31 March 2022, about 98.5 percent of CapitaSpring's 673,000 square feet of workspace and retail net lettable area (NLA) has been committed, reflecting a robust demand for premium core-flex workspaces within a quality integrated development in Singapore.

CapitaSpring is jointly owned by CapitaLand Development (CLD), CapitaLand Integrated Commercial Trust (CICT) and Mitsubishi Estate Co., Ltd (MEC). Designed by Bjarke Ingels

Group in collaboration with Carlo Ratti Associati, CapitaSpring is a recipient of the Building and Construction Authority (BCA) Green Mark Platinum Award, one of the highest green building accolades in Singapore, and the BCA Universal Design Mark Gold^{PLUS} Award.

CapitaSpring has a total landscape area of more than 90,000 square feet, equivalent to 140 percent of its site area or larger than six Olympic-size swimming pools. The development's rich biodiversity comprises more than 80,000 plants from over 130 different species, with more than 60 percent being native plants. These plants have been carefully selected for their ability to flourish in Singapore's tropical weather and humidity conditions, and

thrive at high levels. CapitaSpring's abundant greenery helps to mitigate the urban heat island effect, while also enhancing workplace wellness for building occupants.

Nestled between the office floors and the serviced residence Citadines Raffles Place Singapore within CapitaSpring, at 100 metres above ground, is the Green Oasis. The expansive spiralling botanical promenade from levels 17 to 20 spans a total height of 35 metres, equivalent to 10 storeys of a typical apartment tower. Besides being home to over 38,000 plants, the Green Oasis offers a variety of work-live-play amenities such as an amphitheatre, a yoga alcove, jungle gyms, ideation nests, work pods and a café.



The Green Oasis, occupying levels 17 to 20 of CapitaSpring, is an expansive spiralling botanical promenade spanning a total height of 35 metres, equivalent to 10 storeys of a typical apartment tower.



At 280 metres above ground, the Sky Garden at level 51 features Singapore's tallest publicly accessible observatory deck offering 360-degree scenic views of Marina Bay and CBD.

CapitaSpring has a total landscape area of more than 90,000 square feet, equivalent to 140 percent of its site area or larger than six Olympic-size swimming pools.

Executives can take in fresh air outdoors while enjoying panoramic views of Marina Bay and CBD in the mid-air gardens at Green Oasis, then work-from-anywhere within CapitaSpring by tapping on the latest WiFi 6 technology. Special attention has been paid to the thermal comfort throughout the building's naturally ventilated spaces.

Singapore's tallest sky observatory deck and urban farm

At 280 metres above ground, the Sky Garden at level 51 of CapitaSpring features Singapore's tallest publicly accessible observatory deck offering 360-degree scenic views of Marina Bay and CBD. Another highlight is Singapore's highest urban farm conceptualised and operated by 1-Group, which has five different themed gardens, namely the Singapore Food Heritage Garden, The Wellness Garden, The Mediterranean Potager Garden, The Australian Native Garden and The Japanese Potager Garden. These urban gardens, spanning almost 5,000 square feet, evoke a sense of exploration and curiosity for the

public to appreciate nature in the city. CapitaSpring is the third CapitaLand integrated development in Singapore's downtown area to boast an urban farm, the other two being Raffles City Singapore and Funan.

CapitaSpring is the first integrated development in Singapore to adopt prefabricated mechanical, electrical and plumbing systems for its common corridors, plant rooms and risers. This resulted in estimated productivity savings ranging from 43 percent to 54 percent for each of these construction modules. The use of Building Information Modelling and Virtual Design and Construction, as part of digital construction technology, also achieved more than 50 percent improvement in productivity during the construction process.

Mr Tan Yew Chin, CEO of CLD (Singapore), said: "CLD and our partners are delighted to mark the completion of CapitaSpring, a biophilic skyscraper that represents CapitaLand's vision to build a greener and sustainable future as laid out in our 2030 Sustainability Master Plan. From Funan in the Civic District to Canning Hill Piers along Singapore River, CapitaLand has been playing a key role in injecting holistic work-live-play elements to activate precincts and rejuvenate Singapore's city centre to keep up with evolving lifestyle trends. With CapitaSpring, we are setting a new benchmark for the office of the future by bringing a premium, multi-faceted workplace experience to building occupants, complemented by our core-flex solutions that cater to the increasing adoption of hybrid work strategies. We are confident that CapitaSpring's expansive lush green spaces and the

specially curated community spaces and programmes will enhance human connections amidst safe distancing, and further enliven Singapore's CBD."

PROJECT DETAILS

Project Name: CapitaSpring

Project Location: 88 Market Street, Singapore

Developer / Owner: CapitaLand Development (45 percent), CapitaLand Integrated Commercial Trust (45 percent) and Mitsubishi Estate Co., Ltd (10 percent)

Concept Architect: Bjarke Ingels Group in collaboration with Carlo Ratti Associati

Project Architect: RSP Architects Planners & Engineers (Pte) Ltd

Integrated Development Comprising:

- 29 levels of premium Grade A offices (L21 to L49)
- a 4-storey botanical promenade Green Oasis (L17 to L20)
- an 8-storey 299-unit serviced residence, Citadines Raffles Place Singapore (L9 to L16)
- 5 levels of car park (L4 to L8)
- 2 levels of hawker centre (L2 to L3)
- 6 retail units and 2 retail kiosks (L1)

Site Area: 65,700 square feet

Gross Floor Area:

Office: 804,000 square feet

Retail: 15,000 square feet

Serviced residence: 143,000 square feet

Food centre: 43,000 square feet

Total: 1,005,000 square feet

Completion: November 2021

Photo Credit: CapitaLand

INSEAD Asia Campus



INSEAD is one of the world's leading and largest graduate business schools offering participants a truly global educational experience. In Asia, the INSEAD campus is located in Singapore. It is situated at the corner of the Ayer Rajah Avenue and North Buona Vista Road in the Knowledge Hub district of Singapore and it is designed with several sustainable features.

In February this year, the INSEAD Asia Campus in Singapore received the Green Mark Platinum award from the Building and Construction Authority (BCA), the top award for green buildings given out by the industry regulator.

In 2014, the school received the same award for its Leadership Development Centre that integrates green features such as naturally ventilated lift lobbies, solar panels, energy efficient lighting and building management systems, use of sustainable materials and rainwater harvesting for landscape maintenance.

This year, the award was conferred for the entire INSEAD Asia Campus (gross floor area of approximately 29,917 square metres) for outstanding efforts and sustainable approaches towards energy efficiency, water efficiency, waste management, indoor comfort and many other environmental benefits.

The school's latest achievements are highlighted in these categories:

• Building Energy Performance

INSEAD Asia campus is served by a centralised water-cooled chiller plant system that is consistently performing at an optimal level, 25 percent better than the minimum standard of the BCA Green Mark criteria. This translates to a 4.8 percent savings in total building energy consumption.

The campus is undergoing lighting upgrading work to install energy efficient LEDs in replacement of the existing fluorescent lightings that are more energy intensive. With this retrofit work, the lighting system will be 53 percent more energy efficient than the minimum standard and is estimated to contribute 9.7 percent savings in the total building energy consumption.

• Sustainable Management

The campus has installed more than 350 solar photovoltaic (PV) panels that provide DC capacity of 93kWp. and

The campus features extensive landscaping including gardens and rooftop greenery within the campus to reduce the Urban Heat Island Effect – by removing heat from the air and reduce temperatures of the roof surface and surrounding air.

provides 2.76 percent of the total building energy consumption.

In addition to the current PV system, plans are in place to expand the PV solar farm to more roof areas and increase the solar energy generation capacity to 488 kWp by December 2022. By doing so, this will allow the school to generate five times more solar energy annually.

INSEAD has also entered into an agreement to purchase Renewable Energy Certificates (REC). Through these efforts and initiatives, its Asia Campus operations will be 100 percent supported by renewable energy.

• Resource Stewardship

INSEAD Asia Campus is also using green products & materials as part of a sustainable sourcing policy. These includes the cooling system equipment, ceiling boards, carpet tiles, printing paper, hand paper towels, hand sanitiser and surface cleaners certified by Singapore Green Labelling Scheme (SGLS), Singapore Green Building Council (SGBC), and other international accreditation bodies.

• Smart and Healthy Buildings

The campus features extensive landscaping including gardens and rooftop greenery within the campus to reduce the Urban Heat Island Effect by removing heat from the air and reduce temperatures of the roof surface and surrounding air.

The vertical greenery incorporates with the building facade and acts as an effective solar radiation barrier to insulate the building from external heat, improve air quality on campus, while providing shade and reducing solar load and hence energy consumption.

The gardens and greenery allow access to natural biophilic features, such as daylighting, plants, wind and water, creating a natural atmosphere for the health and well-being of students and staff.

• Advanced Green Effort

Another unique initiative championed by the school is to use compostable foodware in all its food and beverage services on campus. INSEAD aims to reduce its carbon footprint by offering biodegradable food packaging and disposable ware.

According to James Middleditch, Director of INSEAD Operations & Campus Services, International, "True to the INSEAD vision of 'business as a force for good', we aim to operate sustainably while driving a positive impact on business and the environment." He added, "This achievement is in line with the Singapore government's Green Plan 2030. Looking forward, our team will continue to advance the agenda on sustainable development through design and investment in innovative green technologies."

This achievement and milestone also contributes towards the school's commitment to a 67 percent reduction of its Scope 1 and Scope 2 greenhouse gas emissions by 2035, from 2019 levels, with the goal of reaching net-zero emissions by 2050.

PROJECT DETAILS

Project Name: INSEAD Asia Campus

Project Location: Singapore

Client: INSEAD

Architect: RSP Architects Planners & Engineers (Pte) Ltd [Phase 1 & 3]

Gross Floor Area: Approximately 29,917 square metres

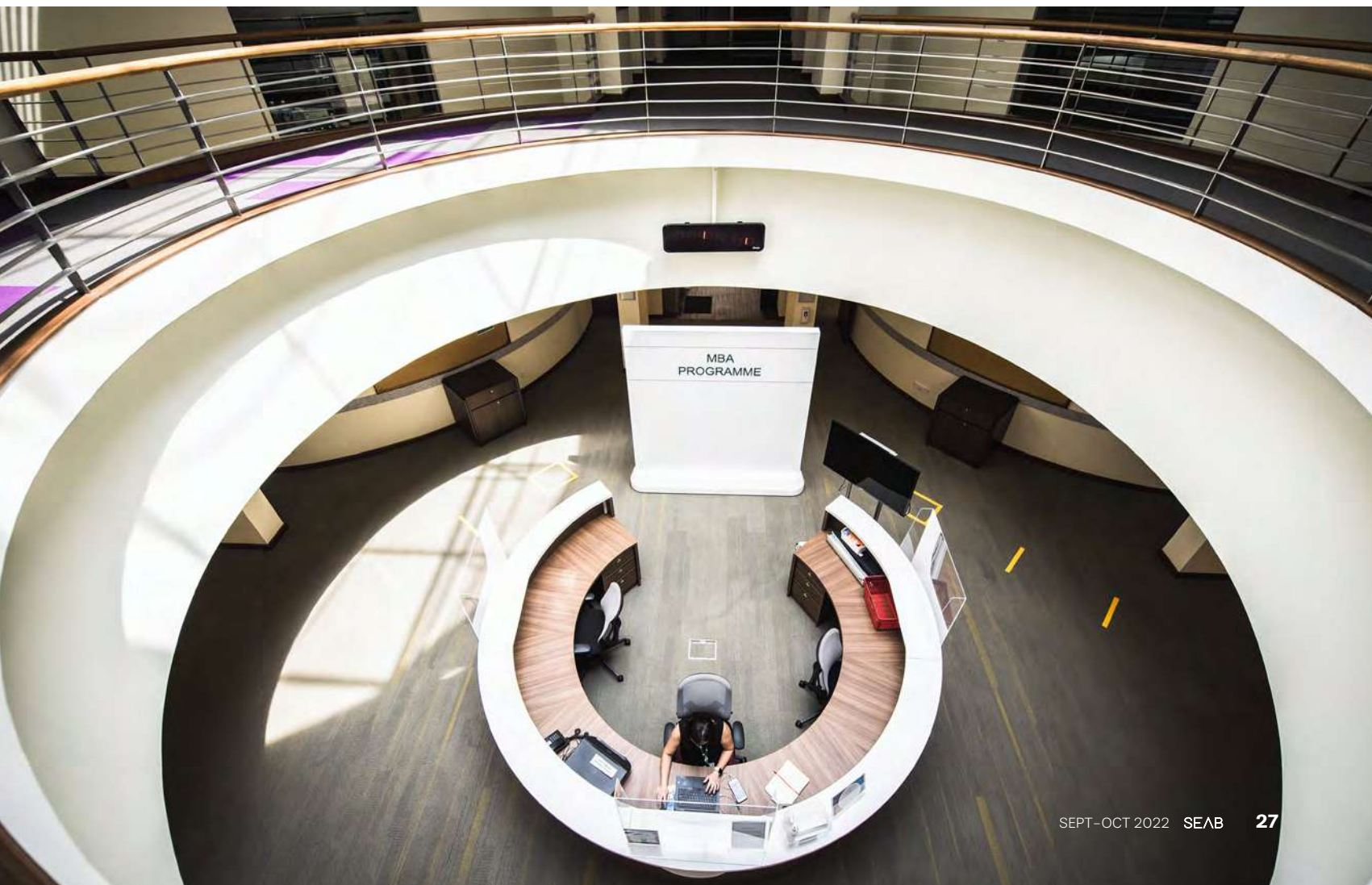
Completion:

Phase 1: 2000

Phase 2: 2005

Phase 3: 2014

Photo Credit: INSEAD



The ERA @ Duta North



Podium facade design

The ERA @ Duta North mixed development project in Kuala Lumpur is designed with a mission to create a revolutionary new city life with nature-inspired living in an urban oasis. The residents may experience the beauty of nature within an urban setting.

Central Park & serviced apartment towers

One of the project objectives is to create a green oasis within the development. Central Park is 9.4 acres of lush central sanctuary planted with tropical wetland trees, furnished with recreational facilities and outdoor lounges, located on an elevated plateau for the enjoyment of residents.

Central Park provides a communal social area for the residents. Additional nature-inspired greenery areas are also provided to the development alongside Sungai Keroh, creating a River Oasis echoing the crossing of the city fabrics and Sungai Keroh.

The serviced apartment towers are located near the riverside for privacy and a quiet entrance from the bustling Jalan Segambut. The serviced apartment towers are arranged in a curvilinear crescent pattern on a landscaped podium abutting Sungai Keroh. The rows of towers, each one being taller than the other, complement one another to establish a sweeping and yet unifying identity of the overall development. It is also placed in a non-obtrusion position with one another, hence maximising the surrounding view for each tower block and capturing interesting vistas from nearby areas.

The elevated podium is designed to amplify the oasis concept by simulating the landscape in the podium deck cascading down from Central Park to the Retail Boulevard at street level. The architectural expression of the interlace of 'tree trunks' is translated into organic feature frames, with the natural vertical planting foliage of the landscaped podium deck.

Retail components

A lush green pedestrianised shopping street, the Retail Boulevard, is introduced as a buffer between the development and the main street, Jalan Segambut. It is the integral component of The ERA, whereas the commercial boulevard is the main appeal to the residents and patrons alike. The area is furnished with a lush landscape and vibrant streetscape to welcome the retailers and visitors, whether for their gastronomic experience or retail therapy in a nature-themed setting.

Full-fledged amenities

The key features of The ERA are the provision of diversified and myriad active and passive recreational facilities to cater for all age groups of residents. The facilities are provided to meet the active and urban lifestyle of the residents, from the start of the day to the day ends.

Wind harvesting turbines

In an effort to conserve energy and inculcate sustainability elements in the development, a novelty invention has been implemented to generate self-reliant electricity for the water feature pumping system in the wetland area of River Oasis. The wind harvesting turbines are used for the wind harvesting process to produce electricity located at the back of the towers. The winds are sourced and accumulated from the basement carpark via carpark mechanical ventilation system on top of the natural wind from the surrounding area.



Central Park



Sky Deck



Linkbridge



Amenities zoning

Linkbridge

Linkbridge is another innovative feature that connects the development with the nearby exciting neighbourhoods, particularly the Putramas and Jalan Dutamas areas across the river. This will create a seamless connection between The ERA and vice versa, enticing more shoppers to the Retail Boulevard. The linkbridge will also enable faster and smooth connections for the residents to commute to the other neighbouring townships, including Mont Kiara, Sri Hartamas and Bangsar.

Optimum cross-ventilation

The natural cross-ventilation concept is also applied and realised in this development through the podium and tower design. The wind flows through the elevated tower and podium deck where the amenities are located. The podium car park has also been designed with open side perimeters to achieve optimum cross-ventilation.

PROJECT DETAILS

Project Name: The ERA @ Duta North

Project Location: Kuala Lumpur, Malaysia

Client: JKG Central Park Sdn. Bhd.

Architect: NRY Architects Sdn. Bhd.

Gross Floor Area: 594,580 square metres

Completion: 2021 (Phase 1)

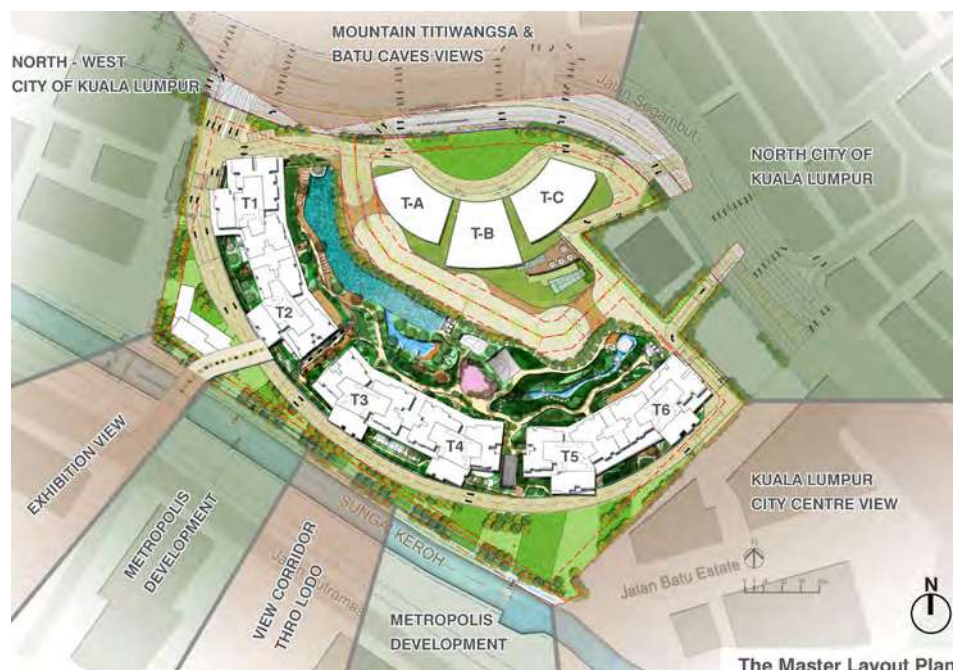
Information: Provided by NRY Architects Sdn. Bhd.

Photo Credit: NRY Architects Sdn. Bhd.



Central Park diagram

The architectural expression of the interlace of 'tree trunks' is translated into organic feature frames, with the natural vertical planting foliage of the landscaped podium deck.



Site planning diagram

South Beach



Photo Copyright: Nigel Young / Foster + Partners

Strategically located along Beach Road, South Beach is a highly sustainable integrated development designed by Foster + Partners. An iconic landmark in Singapore's cityscape, South Beach's environmentally friendly architecture incorporates sustainable design and green technology to create a distinctive, high-quality development that marries environmental sustainability, heritage and modernity.

The integrated development seamlessly blends four historic buildings on site with two new 45- and 34-storey towers. It comprises of approximately 510,000 square feet of Grade A office space, 190 luxury residences, a 634-room hotel operated by JW Marriott Hotel Singapore South Beach and around 30,000 square feet of retail space with a direct link to Esplanade MRT station.

As a green development, there is approximately 10,000 square metres of greenery throughout South Beach and its sky gardens. Providing a living lung for the development, these fresh green spaces not only absorb carbon dioxide and produce oxygen but also act as tranquil, refreshing escapes from the hustle and bustle of busy city life. Moreover, the spaces also act as natural cooling agents and help to reduce temperatures.

South Beach's most striking sustainable feature is its signature undulating microclimatic canopy that extends throughout the development. Engineered to provide a naturally-ventilated shelter, the microclimatic canopy draws in natural light and acts as an environmental shield, providing shade against the sun and rain. Its dynamic form and structure also filters out heat and converts solar glare into electricity through photovoltaic cells while encouraging airflow within the spaces beneath.

The unique shape of the canopy also serves as a channel for rainwater harvesting and irrigation purposes. Rainwater is harvested from the canopy roof via the 'gutters' in the valleys of the canopy and are transferred to an underground irrigation tank before being used for the irrigation needs. This helps to save approximately 26,971 cubic metres of water, which is equivalent to 10 Olympic-sized swimming pools.

South Beach has achieved two "Green Mark Platinum" recertification for both its residential and commercial components in 2021 for its sustainability efforts to being one of Singapore's most environmentally-conscious developments.

An integral aspect of South Beach's development plans was the conservation and integration of four heritage buildings on the site – the former Beach Road military camp and the Singapore Armed Forces Non-Commissioned Officers' Club.

Through careful restoration, the four heritage buildings were preserved and turned into usable spaces, with much of the old Beach Road camp's original façade retained to form part of the South Beach. The heritage buildings now house a mix of F&B options, a grand ballroom and several meeting rooms, blending in with the contemporary office, hotel and residential components built around.



Photo Copyright: Nigel Young / Foster + Partners



Photo Copyright: Nigel Young / Foster + Partners

South Beach's most striking sustainable feature is its signature undulating microclimatic canopy that extends throughout the development.

PROJECT DETAILS

Project Name: South Beach

Project Location: Beach Road, Singapore

Client: South Beach Consortium Pte Ltd

Architect: Foster + Partners

Site Area: 34,959 square metres

Gross Area: 146,827 square metres

Office: 510,000 square feet of Grade A Office Space

5 Star Hotel: 634 rooms operated by JW Marriott Hotel Singapore South Beach

Residential: 190 luxurious apartments

Retail: 30,000 square feet of retail spaces

Number of Floors: 34 floors (North Tower) 45 floors (South Tower)

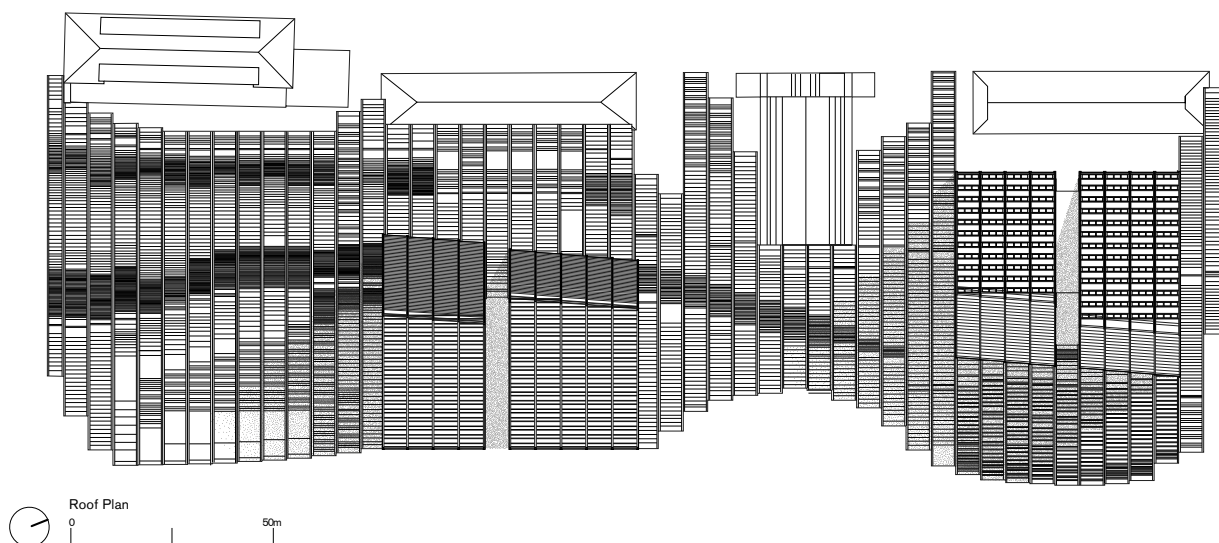
Building Height: 222 metres

Awards & Accolades:

- Urban Renewal Award at the SGBC-BCA Leadership in Sustainability Awards, 2022
- Two BCA Green Mark Platinum recertification for both Commercial and Residential components for 2021-2024
- 5-stars in Best Mixed-Use Development (Singapore) category at the Asia Pacific Property Awards, 2020-2021
- Only Singapore winner of the Energy Efficient Buildings Awards (New and Existing Building category) at the ASEAN Energy, 2019
- Singapore Property Awards, Winner for Sustainable Development category 2017, by Fiabci Singapore International Real Estate Federation
- Singapore Landscape Architecture Awards 2017, Gold Award (Commercial Buildings) by Singapore Institute of Landscape Architects
- Singapore Good Design Mark (SG Mark) Platinum Award, 2016



Photo Copyright: Nigel Young / Foster + Partners



Copyright Holder: Foster + Partners



lyf one-north Singapore



Street view of south elevation. The building massing frames the view toward a conserved bungalow behind. Photographer: Darren Soh



Street view of the west elevation and the staircases with terracing greenery. Photographer: Patrick Bingham-Hall

lyf one-north Singapore is a new co-living development located at the intersection of the commercial, educational, and residential clusters of the one-north district of Singapore. Designed by WOHA, the technology quarter's masterplan contrasts low-rise heritage bungalows with new medium and high-rise residential developments, offices, R&D clusters, as well as generous public spaces for leisure activities. The undulating roofscape of the masterplan was inspired by the ebb and flow of the district's natural landscape with its hills and valleys and is designed to attract global talent and technology companies.

lyf one-north Singapore adds a current, vibrant, and lively co-living development to the neighbourhood, catering to young people that work at the nearby creative and technology companies. More than just an apartment building serving its own residents, the development is designed as a community hub for the neighbourhood. It offers unique public and communal spaces for comfortable living, socialising and recreation for the co-living residents and the one-north community. The project houses 324 units and amenities across two 7-storey blocks linked by an inhabited bridge.

Taking reference from the bent grid of the district's masterplan, the building design adopts an angular geometry in plan, shaping a key visual corridor from the Fusionopolis office buildings towards the heritage bungalows at Nepal Hill. The verdant hill forms the backdrop for the outdoor public spaces in the development. A split ground plane responds to the site's undulating topography and provides both public and

private recreational environments.

The development is well-connected to the public transport system, with MRT access right on its doorstep. Upon exiting the MRT station one is greeted by the vibrant ground level of the development with its cascading greenery, dynamic red



Aerial view of lyf one-north capturing the surrounding context. Photographer: Patrick Bingham-Hall

The building uses a palette of precast concrete and landscaping which extends the existing greenery up into the development.



A covered walkway with a folded roof is located along the street frontage to welcome visitors to the development. Photographer: Patrick Bingham-Hall

roof canopy and lively public spaces. The central public space is an amphitheatre located along the view axis between the two blocks with the heritage bungalows and forested hill forming the backdrop. The amphitheatre can be used as a public living room for visitors to commune amidst the lush greenery, or for performances, pop-up activities and exhibitions. It is well-shaded by the two blocks to the East and West and covered by the link-bridge above it, remaining cool and comfortable throughout the day.

lyf one-north Singapore offers a series of public to semi-public social spaces. On the ground level the amphitheatre and multi-functional driveway plaza can be transformed into a public events and activity space. These spaces can be accessed by anyone passing by the development and can serve the broader community. The residents have access to a social kitchen as well as indoor and outdoor dining areas where they can meet up and share meals. The swimming pool is a central meeting point where residents can exercise and socialise.

Green communal terraces at different levels give residents easy access to fresh air and greenery, and the open rooftop lawn area can be used for events, gatherings or just relaxing at the end of a long day. The richness and diversity of the community spaces balances out the smaller private spaces and encourages residents to socialise, spend time outside and build connections.

The building uses a palette of precast concrete and landscaping which extends the existing greenery up into the development. The precast concrete façade uses variations in textures – smooth, ribbed and rough exposed aggregates – and geometry with its integrated sun-shading fins and hoods to express the playful and lighthearted character of the lyf concept. This playful character is further underlined by large-scale colourful, dynamic murals indoors and outdoors. Terraced green planters along the external stairs bookend the building with a cascade of greenery.

The angular geometric language of the building plan also translates three-dimensionally with origami-like folded walkway and roof canopies that evoke paper fans and provide sun and rain protection to these areas. A series of sloped columns support the link-bridge building while maximizing the usable public space at the base of the columns. All these 3D

angular elements are highlighted in red-coloured finishing as a vibrant contrast to the precast concrete façade.

Generous bicycle parking with accompanying public end-of-trip facilities, such as changing rooms with showers, lockers and bicycle maintenance equipment implement the car-lite vision for one-north. The development's proximity to the one-north MRT station will ensure it is used as a base for last-mile connections for the wider one-north neighbourhood.

As a community hub, universal design is a key consideration for the development's broad user base. Barrier-free paths, accessible washrooms and strong visual cues are provided throughout all the development to cater to all building users, including persons with disabilities. High-traffic spaces are further provided with automated doors with contactless sensors for hygiene and improved convenience.

The development features energy-efficient and water-saving equipment, as well as integrated building management systems to automate building maintenance tracking and electrical and water resource monitoring. It has been awarded Singapore's BCA Green Mark Gold^{Plus} for sustainable design and BCA Universal Design Mark Gold award.

PROJECT DETAILS

Project Name: lyf one-north Singapore

Project Location: 80 Nepal Park, Singapore

Client: Ascott Residence Trust

Architect: WOHA

Plot Area: 4,548.8 square metres

Gross Floor Area: 6,823.2 square metres

Completion: 2022



Close-up of amphitheatre seats with accent lighting. Photographer: Patrick Bingham-Hall



Ha Long Villa





Vietnam has an abundance of nature and townscapes that are registered as World Heritage Sites. Economic growth due to the increase in tourism has raised the standard of living but has also given way to reckless development by clearing away nature. To tackle this situation, VTN Architects wanted to create a house that will connect people and nature. Ha Long, home to Ha Long Villa, is a beautiful coastal city in northern Vietnam, 160 kilometres northeast of Hanoi. It is also home to the UNESCO World Heritage Site of Ha Long Bay. In particular, it is a city abundant with local industries such as fisheries and coal mining, and it is a region that is rapidly developing alongside its tourism industry. The site is near the coast and overlooks Ha Long Bay with a landscape made of thousands of large and small rocks.

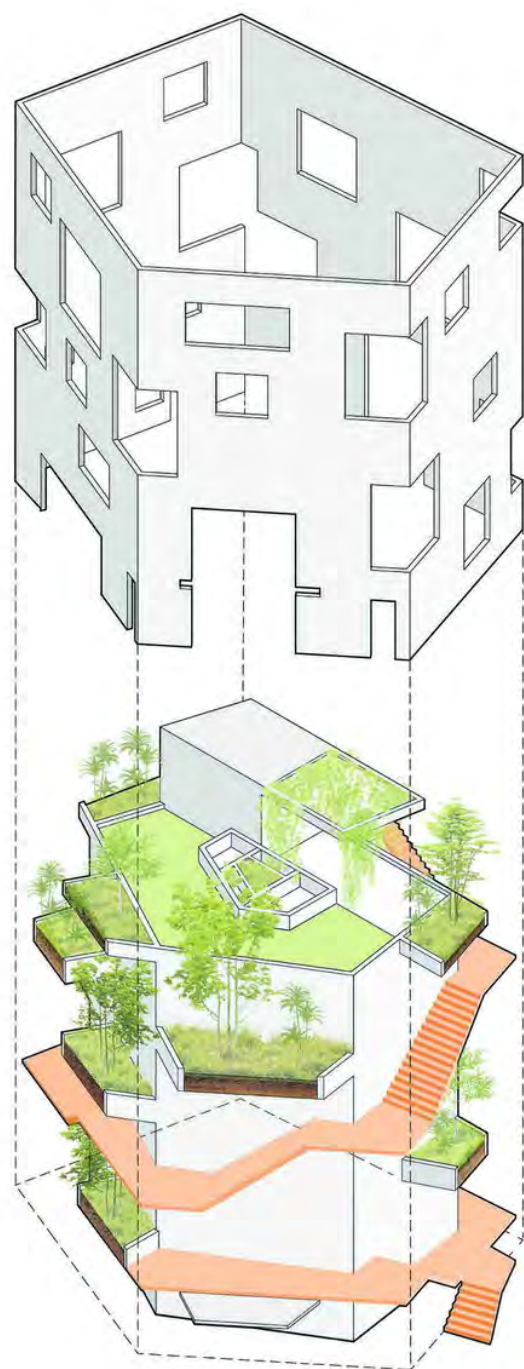
In such a rich setting, VTN Architects has designed a sustainable home that exists in harmony with the surrounding environment and seeks to become part its landscape. The main concept of the house is to create space where people can live in a forest.

In creating a surrounding forest, the house is comprised of a pentagon within a pentagon that establishes spatial layers of interior and semi-exterior spaces filled with greenery. This composition creates deep shadows as part of the double skin green façade against the hot tropical climate. This buffer space between the interior and exterior spaces protect the house against the hot climate and noise. Every semi-exterior space is connected by the main spiral staircase. There is a spatial sequence from the outside to the inside, from ground to roof, and through the semi-exterior space with a large window and plenty of greenery to feel the rich natural landscape and city view from different angles.

The semi-exterior space connects the interior and the terrace part of the garden, and is a place to promote various living activities. It is a multi-purpose space which serves as a connection between each space. It is a place for gardening, sightseeing, sitting, walking and it also connects to the living space. These distinctive space offers residents options in their daily lives, like whether to dine inside or outside on a particular day. The various movements in the resident's lives are also conveyed to the neighborhood through exterior of window façade.

Exterior walls are made by rough exposed concrete which creates an impression of stone found in Ha Long Bay. The greenery in the semi-exterior spaces casts shadows on this strong facade, creating an ever-changing appearance over time. The contrast between the rough concrete and soft trees expresses a unique impression to the outside. Additionally, with dozens of plants planted on the roof, we create an area several times larger than the original green area.

Ha Long Villa is one of the prototypes of "House for Trees", which is a series of residential projects. The aim of the series is to bring green



The main concept of the house is to create space where people can live in a forest.

spaces back into the city, and to design as much greenery as was present in the original landscape to provide a healthier life to people living in the city. Due to the simplicity in the concept, the idea of "House for Trees" can be multiplied almost anywhere in tropical climate regions.

As part of the vast landscape, Ha Long Villa harmonizes with the natural environment. And Ha Long Villa aims to be a space where people return to living surrounded by nature.

PROJECT DETAILS

Project Name: Ha Long Villa

Project Location: Ha Long, Quang Ninh, Vietnam

Client: Private Owner

Architect: VTN Architects (Vo Trong Nghia Architects)

Site Area: 514.0 square metres

Footprint: 231.5 square metres

Gross Floor Area: 1190.0 square metres

Completion: 2020

Photos: Hiroyuki Oki





Mr. Jim-Heng Lee, CEO of dormakaba – one of the top companies worldwide in the access solutions market – explains dormakaba's sustainability efforts and vision in the following interview.

Jim-Heng Lee, CEO of dormakaba

Sustainability is an integral part of dormakaba's strategy

SEAB: Congratulations on becoming the CEO of dormakaba. Can you tell us briefly about your role and tasks in the company?

Jim-Heng: As the CEO of dormakaba, I am responsible for the overall management of our global company. My current focus is on the systematic implementation and execution of our new Shape4Growth strategy. It will enable our company to accelerate profitable growth through focus on its core businesses in commercial access solutions, on its core markets and on customer-centricity. With this strategy, we will achieve our vision to become the trusted partner worldwide for safe, secure and sustainable places where people can move seamlessly.

An important element of our strategy is the shift from "product" to "solution" clusters. It enables us to meet customer needs even more easily and quickly. Based on our products, we offer specific solutions for selected market segments such as hospitals, hotels, airports, offices, industrial buildings or multihousing. This verticalisation is an integral part of our Shape4Growth strategy. A good example of our strategy towards an integrated solution that is not operated on site but in the cloud is our innovative EntriWorX Door Ecosystem. It ensures smart planning processes, simple installation procedures and the safe, smooth operation of all access-related matters in a building. Thinking in business solutions is part of the customer centricity that we want to embed in everything we do. Additional measures include strengthening our specification capacity and

the harmonisation of our IT platforms to increase performance of cloud-based solutions.

Sustainability is also an integral part of our strategy, and it is at the core of our vision.

We are committed to fostering a sustainable development along our entire value chain in line with our economic, environmental and social responsibilities toward current and future generations. This helps us to differentiate from competition.

SEAB: Why is sustainability becoming an important component of dormakaba's business strategy?



Operation centre of dormakaba Group in Senai, Malaysia, with solar panels.



The ST PRO Green RC2 automatic sliding door is a thermally-separated energy-saving door with burglary resistance.

Jim-Heng: It has been a foundation of our business strategy from the prior strategic cycle. However, we are placing a greater focus on it now as we see increasing customer requests during tender processes, increasing focus of investors on ESG ratings, increasing regulations, and an increasing demand also from our own employees. We also note that the Green Buildings Industry is growing with around 15 percent CAGR, which will open many business opportunities and grow market segments for leaders in sustainability management.

SEAB: How do dormakaba's products promote sustainability?

Jim-Heng: We are incorporating the latest product life cycle approaches and environmental technologies to continuously advance our product development and improve our own as well as our customers' sustainability performance. As an example, dormakaba's sustainability commitment and life cycle approach are an integral part of our Product Design Manual, which is binding for all new dormakaba products. We develop durable products with a long lifespan and focus on reducing energy consumption and carbon emissions during both the production and the use phase of our products. An example of our energy efficiency initiatives is the development of our ES Proline swing door operator, which requires 64 percent less carbon emissions and less power consumption than previous platforms thanks to new drives without gears.

Furthermore, we have recently partnered with Schüco – one of Europe's market leaders for innovative building envelopes and a pioneer in the implementation of the Cradle to Cradle (C2C) principle in the building sector – to accelerate strategic development projects in digitalization and access control.

Lastly, I find it important to highlight our efforts on prioritising the health & safety of both our employees during the production phase and of our customers and partners when using dormakaba products.

SEAB: What response do you receive from your customers in relation to your sustainability efforts?

Jim-Heng: Having regular contact and ongoing dialogue with our stakeholders is of key to create a mutual understanding and trust. Our customers are more frequently asking for Environmental Product Declarations or EPDs to attain green building certifications, such as LEED, for example. And because we listen to our customers, we have invested in a life-cycle assessment tool to speed up the development of such EPDs. By the end of the financial year 2021/22, we had over 180

sustainability-related product declarations (over 100 of them third-party verified). Our aim is to publish an additional 250 declarations and certifications until 2027.

In general, we receive very positive feedback on our sustainability commitments. Customers are especially interested on how our Entrance Systems solutions can help them reduce energy costs by minimising heat transfers in buildings. Furthermore, at a most recent panel discussion with architects, our efforts regarding product sustainability were positively acknowledged.

SEAB: What are some of the new sustainability targets that you have set?

Jim-Heng: In 2021, we developed a new sustainability framework with ambitious ESG targets along three Pillars: People, Planet and Partnerships. Currently, we have more than 210 initiatives in place globally, to meet the defined targets. For example, we have been working on reducing our operational emissions by 42 percent (baseline 74,770 tCO₂e in the financial year 2019/20) and value chain emissions from purchased goods and services and the use of sold products by 25 percent (baseline 1,124,936 tCO₂e in the financial year 2019/20) until 2030. These targets had been validated by the Science Based Targets initiative, a first in the access solutions industry. We also aim to create a fair, inclusive and safe culture and provide equal opportunities for all of our 15,000 employees worldwide. As part of this ambition, we set a target to increase the ratio of women in leadership positions from 19 percent (in the financial year 2020/21) to 33 percent until 2027. Furthermore, we actively work on sustainability beyond our own doors because collaboration with our business partners and suppliers is paramount to drive more eco-friendly practices and support the protection of human rights along the whole value chain. In this sense, until 2027, we aim to assess the sustainability management of all our high-risk suppliers by a third-party or off-board them for lack of participation. We all have a long road ahead in meeting the needs of a sustainable build environment, but we will get there together. And it is important to do so.



The ST FLEX Green sliding door illustrates dormakaba's commitment to increasing energy efficiency of buildings.

More information on dormakaba's sustainability efforts and results: www.dormakabagroup.com/en/sustainability

More **green** brings shade and quality

Text from Oliver Hergt, Marketing & Communication, Jakob Rope Systems.



Rudolf Lehmann. Photo credit: Jakob Rope Systems

Newly designed spaces with green and shaded areas can make an important contribution. Rudolf Lehmann is convinced of this. As an engineer at Jakob Rope Systems, he has been involved in projects for the greening of cities and buildings in Switzerland and abroad for 20 years. In this interview, Rudolf Lehmann describes the current situation in cities and how knowledge gained from research projects can be used to develop new tendril structures.

Oliver: Mr. Lehmann, Jakob Rope Systems has submitted a highly acclaimed design in 2021. A green rope structure that shades an inner-city square. Is this a way forward for our cities?

Rudolf: In many cities we see places without trees, where great heat arises. In the summer temperatures here can be up to 60-70 degrees. This is unbearable for humans and animals. Another problem is added. In these cities the subsoil is occupied by pipes, sewers or by underground garages. Planting trees, whose roots need space, is impossible. A free-standing greenery with rope structures offers an alternative to this. The climbing plants growing on them provide shade.



The MFO Park in Zurich is a free-standing, cuboid architecture with green walls and roof. Photo credit: Jakob Rope Systems

Oliver: Plants as protection against the sun. Where does this approach come from?

Rudolf: Jakob Rope Systems already started installing such solutions 20 years ago. The MFO Park in Zurich is an example of this. Together with architects, landscape designers and the city of Zurich, we developed a pattern here that is still valid today. A free-standing, cuboid architecture with green walls and roof. Another design was created for a zoo enclosure in Basel. Here we developed a double-walled mesh enclosure for apes. The outer walls of the enclosure serve as a climbing structure for climbing plants. The vegetation is now magnificent and offers the animals a large-scale shade canopy on hot summer days with a pleasant microclimate underneath.

Oliver: All this goes back to the idea of pergolas.

Rudolf: Exactly. Pergolas have been built in southern countries since ancient times as green shade roofs. The roof, raised from the ground, creates a space for shade and cooling. The green leaves, through their evaporation, cause a temperature drop of 3-4 degrees. This creates a natural cooling with a natural atmosphere.

Oliver: What do we know today about the effect of green spaces?

Rudolf: We see that the greening of facades takes on an important design function. This is thanks to the climbing plants that thrive in many latitudes in a great variety. With the passing of the seasons, beautiful changes of colours, inflorescences and fragrances take place. Green facades are alive – if you want to put it that way. The most important function, however, is cooling through green surfaces on roofs, facades and under pergolas.

Oliver: Has the urgency for green increased in recent years?

Rudolf: We feel an increase in requests for greening. The inquiries come from Switzerland, Europe, the USA, Australia and also from Southeast Asia. Many of them relate to retrofitting greening for existing buildings. The buildings are often made of brick, concrete, wood or have exterior insulation. Here, it is

important to develop solutions that meet the building physics requirements.

Oliver: What challenges will cities face in the future?

Rudolf: Let's take the example of Geneva. Here, there are around 40,000 trees in the urban area. In recent years, between 300 and 500 of these trees have had to be felled each year. Heat, exhaust fumes, road salt and compacted soil had taken their toll on these trees. In strong winds, weakened trees become a danger. Planting new trees, in turn, is difficult in many places because the soil is occupied or polluted. And depending on the tree species, decades pass before a tree develops its full splendor and impact. So cities need to find other solutions to counter rising temperatures, air pollution and noise.

Oliver: Where in cities is the potential for greening greatest?

Rudolf: I see great potential on roofs in urban areas. Then on the facades of buildings. Also on walls and walls running along railroad tracks or streets. In many cities, above-ground parking zones have been created in recent years. These zones get very hot in the summer. Here I also see opportunities for more greenery and shade.

Oliver: Do you know of any cities that are pioneers in greening?

Rudolf: The surroundings of Zurich provide interesting examples. Several greening projects have been realized here. The MFO Park in Zurich, the parking garage in Sihlcity or a commercial building in Glattbrugg. In Zurich, the "Grün Stadt Zürich" department, together with the city's horticultural department, has developed various options for greening buildings. Other cities and also private planners can now take their cue from these projects.

Oliver: How are these spaces used by people today?

Rudolf: In the green MFO Park, people gather at any time of the day on hot summer days. In the morning to play boules, over lunch for a break or in the evening for meetings and events. Almost all needs of city people can be served here. Even when it rains, the canopy provides shelter. Thanks to the green facade, the operators of the commercial building in Glattbrugg today achieve reduced cooling requirements of up to 35 percent.

Oliver: Have the technical solutions for greening changed recently?

Rudolf: We can green buildings today with flat tendril structures. And we can green squares with free-standing structures and thus shade them. Both on a large scale or on a small, selective scale. The technical possibilities have grown overall. At Jakob Rope Systems we have expanded and improved the range for building climbing structures. Today we offer system solutions, as well as the implementation of unique solutions and even modular greenery for home and garden. As material we use high-strength rope and net structures made of stainless steel. With this we realize filigree lightweight structures that are maintenance-free for 30–50 years. The only thing that remains indispensable is the care of the plants, which should take place once or twice a year.



The design for a green space in the Swiss city Solothurn. The green roof, raised from the ground, creates a space for shade and cooling. Photo credit: Jakob Rope Systems

Oliver: In which areas is there still a need for more research?

Rudolf: Something that has been little studied is the effect of wind forces on a vegetated tendril structure. It would be interesting to know how different plants at different growing heights behave in the wind. For example, what wind forces act on the edges of buildings, where air vortices are created? How do plants deal with this? A project at the Lucerne University of Applied Sciences and Arts is currently researching precisely these questions.

Oliver: Plants like the pipevine show amazing behaviour in the wind.

Rudolf: We see intelligent adaptation behaviour in some plants. If they are exposed to a strong wind, the plants lay their leaves flat in the direction of the wind. The plants reduce their surface to the wind. In very strong storms, the plants eventually shed some of their leaves. Certain plants therefore help to reduce wind forces acting on our climbing structures to a certain degree.

Oliver: Could this knowledge be used to develop better ranking structures in the future?

Rudolf: This is exactly the point. The technical implementation of large-scale tendril structures will thus change. With the new knowledge, we can dimension material more precisely. More economical solutions are also possible. We will be able to build structures that are lighter and more filigree because we can calculate the maximum forces acting. Overall, we will achieve greater precision in planning.

Oliver: What can city dwellers already do today for more green?

Rudolf: I would like to motivate people in our cities to start greening on a small scale on their balconies and terraces. For this purpose, climbing structures are suitable as a modular system that can be expanded step by step. Climbing plants such as kiwi not only provide greenery, but also bear great fruits. Larger-scale greening of facades, squares and roofs could be installed wherever there is a need for shade and cooling. In the process, the greenery will very quickly contribute to a more positive cityscape. Here, urban planners, residents and greening specialists can work together to develop new solutions.

Environmental benefits of renovation

Text and photos by Bona



The benefits of restoring floors instead of installing new ones are obvious. Energy savings of up to 95 percent and a reduction of carbon emissions by up to 90 percent* can be achieved when existing flooring is restored rather than replaced with new.

Hard facts that strengthen our passion

For years Bona has enjoyed seeing the resource saving benefits of properly maintaining and renovating floors. However there have been few studies quantifying and verifying the positive effects. Until now. That is why Bona initiated an ambitious project together with the IVL Swedish Environmental Research Institute, to find out the hard facts.

Renovation not only offers long-term benefits for the environment, but also cost savings, as well as increased floor hygiene. Furthermore, modern innovations from Bona provide total design freedom, making it possible to create a new expression when renovating a floor, without the need to replace it. All to create a brighter floor future.

Energy for 9,000 houses



By renovating a floor rather than installing a new one, the energy savings are as high as 95 percent*. Let's take Bona's yearly production of floor finishes and calculate the square feet of floors they cover. If new floors were installed instead on same amount of floor surface, the energy use would have been 1.8 billion kWh more*! In comparison, these savings correspond to the yearly energy use of 9,000 households* or a small US town!

9,600 flights around the globe

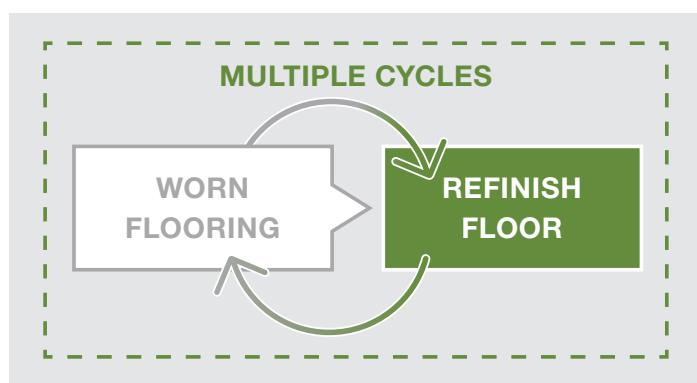
Floor renovation saves up to 90 percent* in reduced carbon footprint vs. installing a new floor. If we look at Bona's yearly production of floor finishes and calculate the square feet of



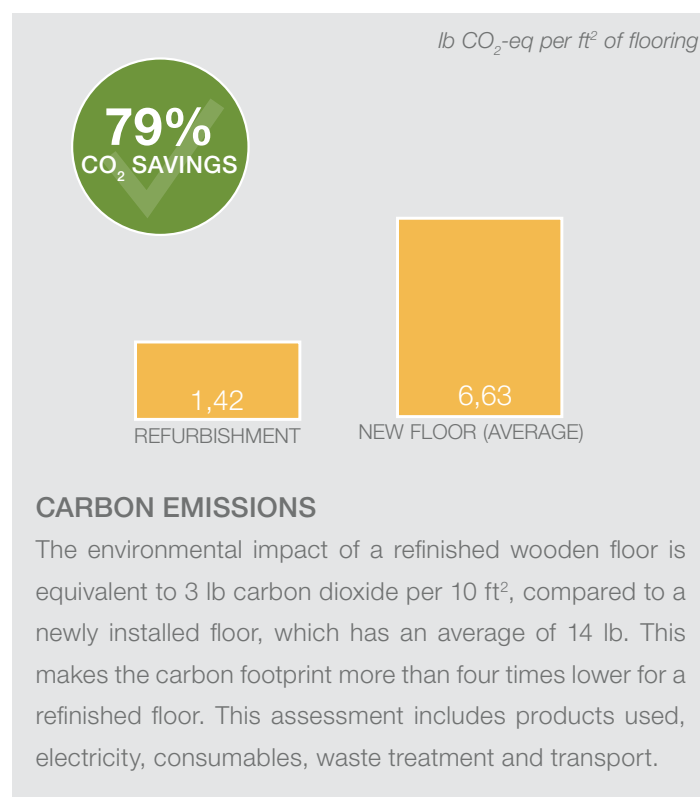
floors they cover, the carbon footprint reduction per square feet vs. new floors is 108,000 tons CO₂. This is equal to CO₂ emissions from 9,600 flights around the world*.

When you renovate wood floor instead of replacing

One cycle of a wooden floor is about 15 years. However, a wooden floor can be refinished up to 4 times, which means it can last for 60 years. When comparing costs for renovated floor with a new installation, it is also important to consider all actions involved. The square feet cost of a new floor is only one part, so to make a fair calculation comparison you need to include all costs associated with a floor replacing.



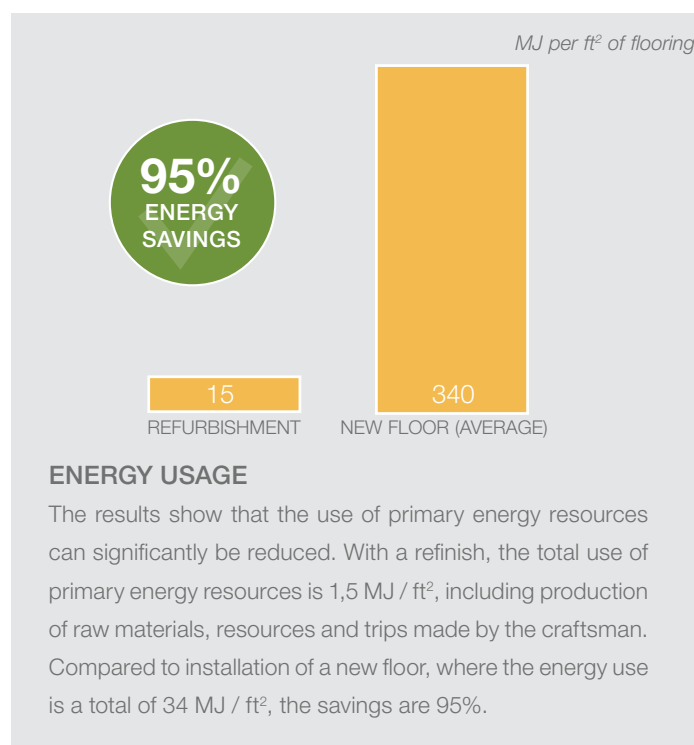
Carbon emissions



The environmental impact of a refinished wooden floor is equivalent to 3 lb carbon dioxide per 10 square feet, compared to a newly installed floor, which has an average of 14 lb. This makes the carbon footprint more than four times lower for

a refinished floor. This assessment includes products used, electricity, consumables, waste treatment and transport.

Energy usage



The results show that the use of primary energy resources can significantly be reduced. With a refinish, the total use of primary energy resources is 1,5 MJ / square feet, including production of raw materials, resources and trips made by the craftsman. Compared to installation of a new floor, where the energy use is a total of 34 MJ / square feet, the savings are 95 percent.

Product range

Bona has the ideal surface treatment for all types of floors, whether you are aiming for high shine, rich colour, slip resistance or durability. The company offers a full range of products, from low-VOC and solvent-free waterborne finishes to oils with renewable raw materials for taking care of your wooden floors over their lifetime. Bona's floor products and treatments have always focused on a circular and holistic view on the complete process, and it strongly believes that reuse is the way to a sustainable future.



* Read more on Bona's website.

PLAY @ HEIGHTS PARK:

A resort like playground in heartland Toa Payoh



Besides the iconic dragon playground located in Toa Payoh estate, there is now a new playground called Play @ Heights Park. Located at 144 Toa Payoh Lorong 2, Play @ Heights Park is slated to become the most Instagrammable playground in Singapore.

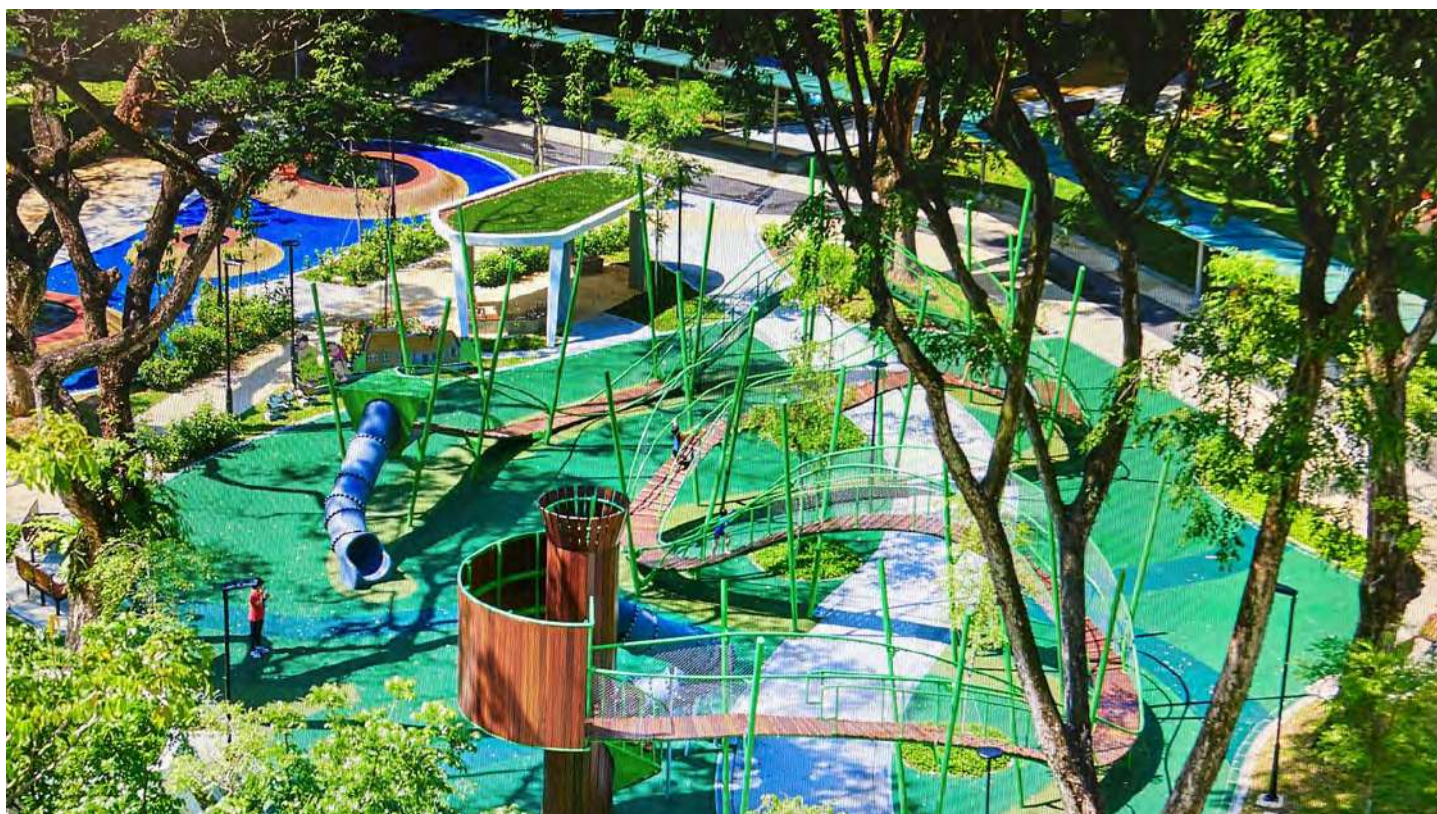
Play @ Heights Park has an exciting array of amenities for the 3 generation families such as an adventure rolling bridge playground for the children and adults, a water park, a playground for toddlers, trampolines, a zipline, a bicycle park and fitness stations for parents and grandparents.

Rolling Bridge Playground

Being the first rolling bridge playground designed for 6-12 years old in Singapore, children need to stay alert and maintain their sense of balance as they navigate the wavy sloping bridge that comes with different obstacles along the path.

Waterpark

While not being the first waterpark in the heartlands, it is still an attraction for families and tourists who want to bring



All photos credit: Playpoint (Singapore) Pte Ltd

their children to the park. With an interesting nautical theme playground, it has the spray guns, ground spray, boat and stone sprays to create the experience of 'an adventure in the high seas'.

Flying Fox and Swings

For the adrenaline children who enjoy swinging and zipping, there is a flying fox and swings to entertain them. The sand pit is also a welcome activity for children who wish to build sand castles or just to have fun playing with sand.

Bicycle Track

The bicycle track with its undulating terrain creates a stimulating ride around the track. Children can test out their skills on the track, which is an introduction to competition bike track. "As Singapore is the most trend setting playground in Asia, Play @ Heights Park can be marketed as a unique tourist attraction in the heartlands for tourist with families to admire the unique cultural and the park playgrounds within public housing estates," said Jason Sim, Managing Director, Playpoint (Singapore) Pte Ltd.

Sustainability of Playgrounds

Text from CT-Art Creation Pte Ltd

Importance of Playgrounds

Playgrounds are the places where children can build physical and mental skills such as motor skills, collaboration abilities, muscle development, self-esteem, and social awareness. It is the perfect place for free play or structure play depending on children's individual preferences.

Both children and adults are spending large amounts of time interacting with electronic devices and are less active than previous generations. Even the youngest children are sitting in front of a TV or computer against the recommendation of the American Academy of Pediatrics. In addition, the ability to play is being challenged in parts of the country where children and adults can't easily access playgrounds. As a result, very few people are spending 60 minutes a day being physically active.

We talked about the many benefits of play. If people play, they will:

- Live longer and healthier lives
- Be less likely to be obese and have related health concerns
- Likely be more successful in school and in the workplace
- Be happier

Despite the large amount of research that shows how valuable play is, we also heard how play is being threatened. The quality, the safety, lifespan and environmental factors of all play components are questionable in a lot of countries.

Play + Sculpture = PlayForm 7™

Meet this playground in the middle of downtown, Marina Bay, Singapore.

Playground Transformation

PlayForm 7™ at Marina Bay, Singapore, was originally completed in the year 2015. Tagging on the landmark of Red Dot Design Museum, PlayForm 7™ with its linear and geometric outlines, it echoes the architectural elements of the museum's structure.

Scheduled maintenances had been carried out properly, but due to demands and expectation, people are looking for a fresh new playground every few years in Singapore.

In mid 2020, partnering with Urban Redevelopment Authority, we looked at upgrading and enhancement works to the playground. With 10 to 15 years extended lifespan goal, we looked at placemaking inspirations to help rejuvenate colours and life onto PlayForm 7™.

The theme and concept of "Animals in the Tropics" was chosen in contra to the nearby concrete jungle of the central district area. And instead of trashing everything to make way for a new playground, we navigate towards the reuse, reduce, and recycle policies. Hence, we engaged a local mural artist, Tiffany Yao, to hand painted all the PlayForm 7™ poles and boards. The end result is still fun and unconventional till today.



Before playground transformation. Photo from Playworld



After playground transformation. Photo from CT-Art Creation

PROJECT DETAILS

Project Type: Playground

Project Location: Marina Bay, Singapore

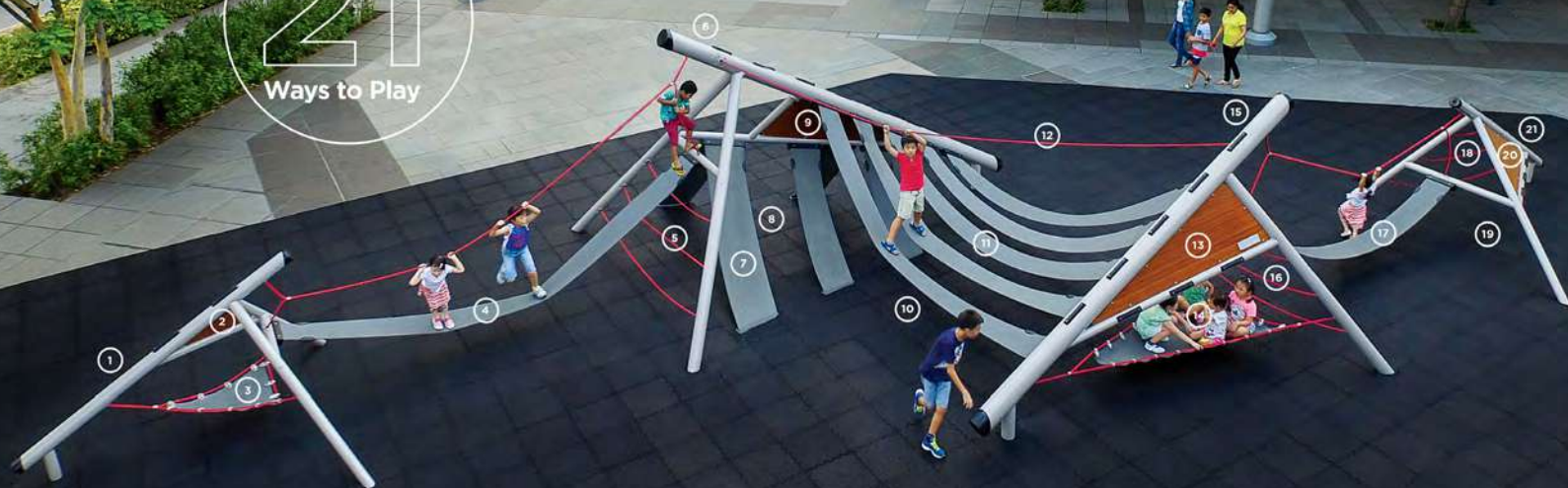
Products Manufacturer: Playworld

Project Sponsored By: CT-Art Creation Pte Ltd, Playground and Recreation Equipment Specialist

Completed: 2021

21
Ways to Play

Designed for a range of play experiences.
Across all challenge levels. For all ages.



1. **Small Slope** A fun balance challenge and an ideal training ground for the bigger slopes.
2. **Shelf** The perfect destination for perching and observing—but you have to climb your way there!
3. **Small Hammock** A cozy spot to take a break from the sun and the action, with the fun still in view.
4. **Slackline Challenge #1** The ultimate challenge. Reach new goals, try new stunts, and get creative!
5. **Lookout Climb** Master the ropes and discover a new route to Lookout Ridge and Slackline #1.
6. **Lookout Ridge** Climb to the top and plan your next adventure while taking in the view.
7. **Hill Run** Run or roll down the hill—then climb or run up to access Lookout Ridge and the slackline.
8. **Tent** A cozy hideaway to find some shade and plot your next adventure with friends.
9. **Cliff Wall** Challenge yourself to conquer the sheer wall, and access The Valley or Lookout Ridge.
10. **The Underpass** Area under The Valley. Explore the sheltered space and find a quiet place to play.
11. **The Valley** Central feature. Explore the slopes and balance, bounce or lounge on the dynamic terrain.
12. **Topline** Rope spanning The Valley. Use for support, or invent new moves. Sloth climb. Be a ninja.
13. **The Ledge** A great beginner wall to hone your climbing skills and transition to The Valley.
14. **Big Hammock** Social heart of PlayForm 7. Gather with adventurers. Take a nap in the shade.
15. **Vista Ridge** A little lower than Lookout Ridge. Climb up and wave to your friends across The Valley.
16. **Vista Climb** The rope rung route to Vista Ridge and Slackline #2. Surprise friends on the Big Hammock.
17. **Slackline Challenge #2** A smaller Slackline challenge where beginners can hone their skills.
18. **Cave Climb** Rope climb to the top of the cave and transition to Slackline Challenge #2.
19. **Cave** A social area for everyone to get together, share stories, and start new adventures.
20. **Scramble Up** A great place to enjoy the sunshine and practice your bouldering skills.
21. **Slope** Climb to the top, survey your options, watch others play and discover new challenges.
- ?? **What else?** See any other ways to play on PlayForm 7? Tell us about it with #PlayForm7.

Image and data from Playworld



Craig Mellott, Sculptor /
Designer, Playworld.
Photo from Playworld

Sustainability Design

From the beginning, this play component was about innovation. We wanted to step away from existing answers – to create something completely new. Play deserves that. Kids deserve that. Communities can benefit from that.

People are ready for new ways to be outside, to be together, to play

I'm a sculptor/designer, so that was a natural place to experiment. Children are drawn to sculpture. They want to interact with it. But most sculpture isn't designed with play in mind, and often is not accessible. So we set out to design a sculpture inspired by play and flowing terrain. PlayForm 7™ has come a long way from the original sketches. We made the first prototype and invited children to a play test. We learned a lot, made improvements, and built a second prototype. Then we kid-tested a second time, and observed, refined, and rebuilt again.

This process helped us create a landscape of play experiences with a wide range of challenge levels to encourage growth.

We identified 21 different play events, but children will find more.

I remember watching the kids see it for the first

time. Their reaction was a big "Whoa" and then a long pause. They had to process. Their first thought was, "I've never seen anything like it. I've never played on anything like it." It's not just physical play, it's intellectual play. You have to decide what you're going to do with it.

For me, that means we got it right. That sense of wonder. It's a lasting effect, too. Because the open-ended nature of it invites ongoing interpretation and discovery. You don't figure it all out in one glance or one session. Part of that is the combination of stability and dynamics. This thing is solid. But the flex treads react and respond, creating balance activity, swaying, feedback, interaction. Your motion can bounce six other people. In a way, it reflects your mood. You can play hard on it, or you can just relax.

The scale and strong lines coordinate well with urban environments. But it also has a lot of transparent space, so instead of blocking the scenery, it integrates well into natural settings, too. PlayForm 7 can define or redefine a space.

Our goal is to provide a dynamic environment where people can play together, in the here and now. Instead of parents and grandparents taking kids to the playground and passively watching from a bench, PlayForm 7 invites them to participate and interact on their own terms.

A carbon-friendly check-in

Since opening in Sønderborg in 2019, Hotel Alsik has focused just as much on offering customers a truly relaxing and luxurious experience as it has on making it a sustainable one. At 19 storeys high, Alsik is the region's first four-star conference and business hotel and was commissioned by PFA Pension and Bitten & Mads Clausen's Foundation, the latter of which owns Danfoss. Built in compliance with BR2020 energy regulations, the owners have a goal to make Alsik one of Denmark's most sustainable luxury hotels – with Danfoss providing the energy efficiency solutions to get them there.

To offer the perfect combination of luxury and sustainability, every inch of Hotel Alsik had to be built with a green mindset – all the way down to the cement. For its owners, four areas in particular stood out:

- The floors and ceilings were to be designed to allow in as much natural light as possible
- The facade had to be made using recyclable aluminum
- All concrete had to be cast using natural materials with a high thermal capacity
- The HVAC system had to run 24/7 while minimizing downtime, maintenance costs and energy use



Hotel Alsik. Photo credit: Danfoss

It was the latter area where Danfoss stepped in, working with the hotel's HVAC system to optimize operations without impacting air quality.

Danfoss installed VLT® HVAC Drive FC 102 units to build a fully optimized and energy efficient HVAC system while enabling central management and monitoring of all separate HVAC units. With the FC 102 units in place, the HVAC system was able to supply high-quality air while using less energy – in addition to working better for longer and, thus, lowering maintenance and overall running costs.

Danfoss also provided VLT® Pressure Transmitter PTU 025 units which, via the integrated filter monitoring system, can deliver early warnings regarding clogged filters, poor indoor climate and energy waste.

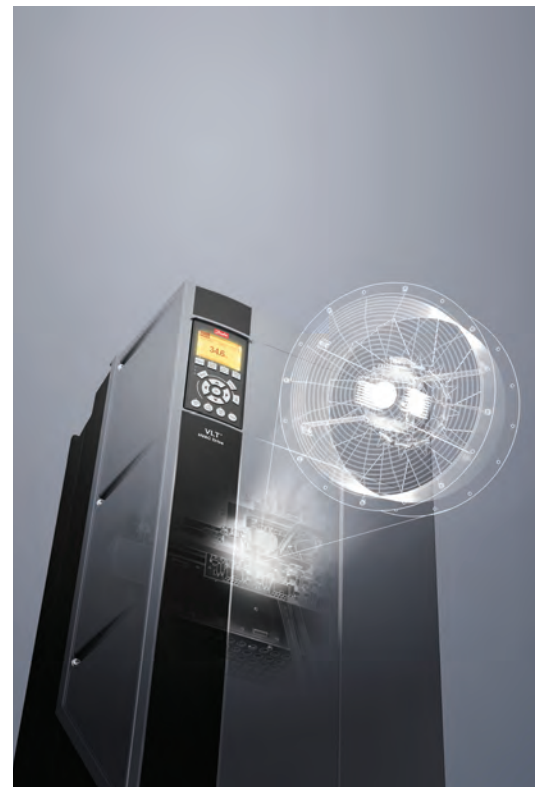
The work was carried out in cooperation with HVAC experts Nordomatic and with assistance from Danfoss' DrivePro® service partner STYREG.

Today, just two years after its opening, Alsik is 76 percent CO₂ neutral.

The hotel's Building Management System, which is connected directly to the decentralized HVAC system, intelligently controls the flow of heated or cooled air to all guest rooms, conference rooms, restaurants, and the three-story spa.

Each separate ventilation unit is connected to the hotel's booking system so rooms can be heated to the right temperature before guests arrive, and the temperature is automatically lowered when rooms are not booked out, leading to significant energy savings.

And so, from the design of the hotel itself to its daily operations, and the power supply to the 380 square metres of solar panels on the roof, the horizon looks clear for Alsik to continue lowering its carbon output.



VLT® HVAC Drive FC 102 with fan.
Photo credit: Danfoss



VLT® HVAC Drive FC 102 – Get even more drive in your HVAC – with rock-bottom lifecycle costs in any climate

Features and benefits:

- Slim down your Total Cost of Ownership (TCO). Ongoing demands for lower TCO are challenges the VLT® HVAC Drive can help you meet.
- Install it outdoors in extreme climates. Searing heat and deep frost are all in a day's work for the enhanced VLT® HVAC Drive. You get full reliability running this drive outdoors with temperature extremes from 50°C to -25°C.
- Save time. You can parameterize and troubleshoot the drive from outside the AHU, thanks to the remote LCP. Maximize uptime by reducing the shutdown, since there is no need to open up the AHU and lock it down again afterwards.
- Get the freedom to choose your favorite motor. Choose exactly the motor you prefer, for whatever reason from supply security to performance optimization. The enhanced VLT® HVAC Drive is not only optimized to control induction, permanent magnet and synchronous reluctance motor technologies; our development team is working all the time to include compatibility with upcoming motor technologies in future software updates as well.
- Get the freedom to communicate. The ability to integrate the AC drive easily into your building automation system is a key to optimal control. The VLT® HVAC Drive features a number of HVAC-specific communication protocols, such as BACnet/IP, that give you flexibility of installation in both new and existing building automation systems.



VLT® HVAC Drive FC 102 with wireless communication panel LCP 103. Photo credit: Danfoss

Source:

<https://assets.danfoss.com/documents/latest/201487/AE414849645408en-000101.pdf>

<https://www.danfoss.com/en/products/dds/low-voltage-drives/vlt-drives/vlt-hvac-drive-fc-102/#tab-overview>

Jakob®
Rope Systems

Green walls for the city

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 your greening project.

Factory Jakob Saigon (Vietnam)

jakob.com

Towards net zero emissions by 2050

UMC cuts AHU power consumption by up to 40 percent with ebm-papst EC Fan System.

Hsinchu, Taiwan – Being the first semiconductor foundry to pledge net-zero, UMC has aggressive goals in its roadmap to attain net-zero emissions by 2050¹. Starting from 2020, UMC aims to achieve a 25 percent reduction in both direct greenhouse gas emissions and indirect emissions from electricity consumption by the year 2030.

As the plants are always in operation round the clock, energy efficiency is always at the top of the mind for the semiconductor giant and remains a huge challenge to meet their sustainability goals. With these factors in consideration, UMC

sought a ventilation technology solution that can help to reduce the power consumption for their air handling units (AHUs) while at the same time, improving the air efficiency for their Singapore wafer fab facility.

While searching for a more efficient ventilation system, Mr Wayne Tan, UMC's M&E Aircon System Engineer, got to learn about the benefits of EC fan systems and ebm-papst. A leading brand in the World of Ventilation and Drive Technology, ebm-papst is then shortlisted for its energy-efficient, intelligent solutions and extensive range of products.

Under professional guidance and tight collaboration from ebm-papst and a qualified installer partner, UMC successfully implemented the EC centrifugal fans in their facility.



UMC's Singapore Wafer Fab Facility, located at 3 Pasir Ris Dr 12, Singapore 519528.

EC centrifugal fans – A cost-effective solution that offers beyond higher efficiency

Before adopting ebm-papst's ventilation solution, UMC used the conventional AC belt-driven system with VSD which is less energy efficient, requires more maintenance work, and has no operational redundancy.

With UMC's sustainability goals in mind, the ebm-papst team proposed ebm-papst EC centrifugal fans which offer higher efficiency and lower power consumption.

From a long-term perspective, ebm-papst EC fans offer a cost-effective solution to UMC in the following ways:

- Offering higher efficiency with minimal energy losses, achieved through its integrated designs where components are optimised for each other.
- 100 percent variable speed control via analog or serial interface. In EC fans, energy is used only when needed. The lowest possible speed for AC belt-driven fans is 25Hz, which is 50 percent of the speed range. This limits efficiency when operating at a lower frequency, leading to energy wastage.
- Eliminating the need for frequent maintenance as the motor, electronics, and impeller are integrated into the EC fan. Due to the integrated design, there is also no wear and tear issue which is common in belt-driven systems.
- Ease to retrofit due to its compact design which saves space and enables operational redundancy; multiple units can be installed in place of an AC belt-driven fan. The integrated and compact design where the electronics and motor form one unit also ensures easy installation, reducing the hassle of costly component matching on commissioning or for earthing and screening work.
- Long service life which helps to reduce operating and life cycle costs.
- Significant noise reduction as compared to AC fans.
- Future-proofing and scalability with ebm-papst's digital technology.

After retrofitting their facility with ebm-papst EC centrifugal fans, UMC is able to achieve up to 40 percent savings in energy.



¹ Source: https://www.umc.com/en/News/press_release/Content/csr/20220623

Increase productivity by up to 30 percent with Dulux Professional Weathershield Express



Photo credit: Dulux Professional

AkzoNobel, a leading global paints and coatings company, claims to be the first to launch Dulux Professional Weathershield Express, a premium quality exterior paint that combines sealer and paint (topcoat) in one, delivering the same high performance and superior all-weather protection homeowners trust but requires one less coat, saving time, increasing productivity by up to 30 percent.

Designed to give the best in speed, quality and durability, Dulux Professional Weathershield Express is an acrylic waterbased paint, designed as a two-coat system offering higher efficiency, while delivering the same superior all-weather protection as conventional three-coat system. Without the need for a sealer and hence one less coat to apply, enabling painters to achieve results faster with just one product that has everything they need from a complete paint system.

Innovative technologies

Eco-certified as low in volatile organic compounds (VOC) and has no added heavy metal, alkylphenol ethoxylates (APEO) or formaldehyde, Dulux Professional Weathershield Express also contains the following Weathershield Technologies:

- Algae & Fungus Guard – prevents damage from alkali and fungus attacks
- Alkali Guard – protects against damage caused by alkali salts
- Colourlock™ – retains colour vibrancy
- Dirt Guard – actively resists dirt and dust
- Keep Cool™ – Heat from the sunlight is reflected to reduce exterior wall surface temperature by up to 5°C, keeping interiors cooler
- Singapore Green Building Council Certification
- Compliant to SS345 and SS579

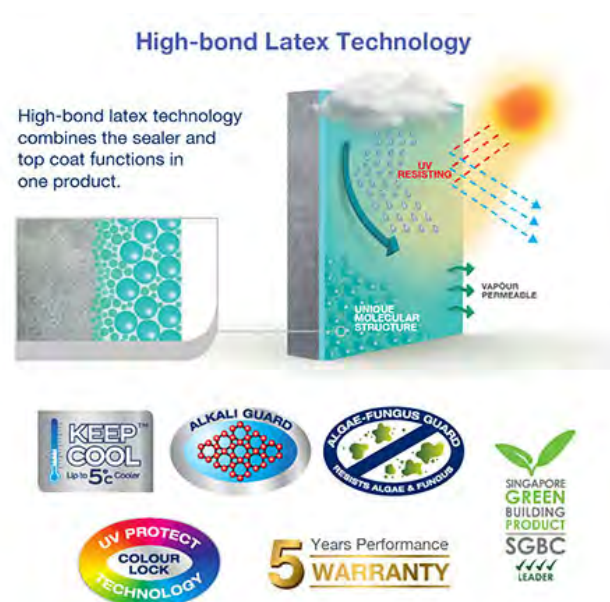


Photo credit: Dulux Professional

Sustainability is at the core of AkzoNobel's business strategy, and the brand is committed to driving innovation and delivering more value from fewer resources. The brand has also been ranked #1 on the Dow Jones Sustainability Index (DJSI) for four consecutive years, and has made further commitments to be carbon neutral and use 100 percent renewable energy by 2050.

Fairview launches new sustainable cement facade cladding

Fairview has launched 'Genesis' – the latest in natural, durable and sustainable pre-finished fibre cement cladding, offering a class-leading, 15-year warranty on the complete facade system, including all key components.

Manufactured in Europe yet available throughout Australia via Fairview's direct distribution network, Genesis is an architectural quality cement cladding deemed non-combustible as per the Deemed-to-Satisfy provisions of C1.9 (e) & 3.7.1.1(d). As well as being compliant with AS4284 weatherproofing standards, it claims to be more cost effective than its rivals.

Genesis heralds a new era in sustainable, green design and is as natural and enduring as mother nature itself. Fairview asserts that the Genesis carbon credentials, design features and tough robustness – it is impact, graffiti and impact resistant – place it at the forefront of natural construction materials, and an ideal solution for community-related projects like:

- aged-care facilities
- entertainment precincts
- healthcare and hospital campuses
- schools and sports environments.

With full project support and multiple options in colour, shading and texture, the product palette ranges from cool greys and stony carbons to vibrant terracottas and rustic sand tones, with evocative colour names such as Depth, Hewn, Groove, Infuse, Raw and Rustik.

Fairview Category Manager, Meena Somi commented:



"Genesis is a new breed of cement cladding, which takes fiber cement cladding to the next level. By beating the product warranty offered by many competitors by 50 percent, it is an environmentally sound and energy efficient investment. Even better, the through-colour panels are available in large sheet sizes and allow architects to seamlessly blend textures and aesthetics creating truly natural design aesthetics."

Fairview believes Genesis – available as a warrantied, one-stop building facade system – offers potential cost-economies (of between 5 percent – 20 percent). Via a dynamic marketing campaign, Fairview hopes it can educate the market about the beneficial attributes of its new cladding option, and believes it can capture a significant share of the market for durable, environment-friendly and sustainable cladding systems.

Gush odourless, VOC-free paints reduce air pollution

Gush is an advanced materials company committed to innovating solutions that make living spaces healthier. Its flagship product, *cair* interior paint, purifies the air and keeps indoor spaces free of harmful air pollutants including Volatile Organic Compounds (VOCs), mold, and bacteria. After realizing that traditional building materials and changing climate conditions drastically increase people's exposure to harmful VOCs and mould, Gush sought solutions to improve the liveability of residential and commercial spaces. As walls form the biggest surface in dense urban environments, Gush started with the most malleable solution possible: paints.

Gush is on a mission to empower everyone to care for themselves and their loved ones, starting with a vital resource: the air we breathe. Their *cair* and *cair fresh* paint series features air-purifying and humidity-regulating capabilities, enabling walls to protect occupants' health round the clock. Formulated with the Gush Proprietary Catalyst (GPC), *cair* transforms walls into passive air purifiers that break down VOCs at a rate of 99 percent in just 21 hours. The paints' odourless and VOC-free properties promise customers a safe and comfortable painting process. Customers can enjoy their freshly painted indoor walls almost instantly – without worrying about being exposed to toxins in the air. Gush's paints are also anti-bacterial and anti-moulding, ensuring that indoor walls stay clean and hygienic.



Photo credit: Gush

Byssso: Luminaries and acoustics at play

Impact Acoustic is a rising star in the world of acoustic solutions, turning PET bottles into a wide range of office room and ceiling panels and baffles, desk dividers, Chatpods, and other acoustic accessories. Aside from these, the company also designs bespoke acoustic lighting fixtures.

All of Impact Acoustic's lighting solutions are developed in partnership with the Austrian experts PROLIGHT. Together, they work to make a difference in sustainable developments in their respective expertise. Working hand in hand, they develop lighting solutions with the highest standards for all professional needs. Prolicht is responsible for the luminary technology and Impact Acoustic develops the design and the acoustic performance. In partnership with Prolicht, Impact Acoustic designed Byssso.



Light can be focused and directed in a targeted manner using the reflectors, thus guaranteeing the best illumination of workplaces. The processing of the recessed light sources ensures that the light in the acoustic panel almost disappears. The rounded corner design of the Byssso floating sail creates a secure feeling of space. It comes in all 28 colours offered by Impact Acoustic.

Impact Acoustic recycles PET bottles into functional, aesthetic, and sustainable acoustic solutions, from ceiling elements, wall cladding, acoustic partitions, and furniture. ARCHISONIC® is developed by Impact Acoustic with one goal in mind: a global ban on PET bottles.

Go green with Flowcrete's Deckshield traffic coatings for car parks

In most commercial buildings, the car park is the first place a visitor sees, making it an important environment that sets the precedence for an upmarket experience.

That's where the Flowcrete Deckshield range of products come in. Deckshield traffic coatings improve the quality of the visitors' experience by addressing common car park problems such as dull, grey aesthetics and tire squeal. The surface coatings deliver a high-performance finish that provide bright & colourful aesthetics, slip-resistance, as well as long lasting durability.

In addition to an excellent service life, the Deckshield coating systems use components that are Singapore Green Label certified making it a sustainable option for green-conscious developers.

Flowcrete is a Tremco Construction Products Group (CPG) brand. Tremco CPG is a world leading manufacturer of specialty construction solutions that enhance the longevity of a building from the rooftop to the basement. Search "Tremco CPG" for more information.



Photo credit: Flowcrete

Architects and engineers will stay focused and design more with new capabilities now available from Graphisoft in Archicad 26, BIMcloud, BIMx, and DDScad

Graphisoft, a leading Building Information Modeling (BIM) software solution developer for architecture, announced the release of Archicad 26, and updates to its BIMcloud, BIMx, and DDScad solutions, on 14 July 2022.

Thanks to powerful improvements to automated design, documentation and collaboration workflows, and professional out-of-the-box visualization solutions, architects and engineers can dedicate more of their time and attention to their valuable design work.

With Archicad, architects can design, visualize, document, and deliver projects of all sizes with powerful built-in tools and an easy-to-use interface that make it the most efficient and intuitive BIM software on the market.

"Thanks to the powerful enhancements in Archicad 26, users can focus on their designs while increasing productivity through smoother design, documentation, and collaboration workflows, and their increased productivity translates into more time for design," said Zsolt Kerecsen, Vice President, Software Success at Graphisoft. "Beginning with Archicad 26, our newly unveiled Adaptive Hybrid Framework approach helps us bring new technology to market faster," he added.

BIMcloud – Great architecture starts with collaboration

The pandemic compelled architectural design practices to change the way they work almost overnight – and working from anywhere created an instant need for online collaboration and remote access to office infrastructure. BIMcloud Software as a Service closes the gap between the home, office, and the construction site – regardless of location or software used. Architects get fast, efficient, and secure access to shared projects in real-time thanks to their own secure BIMcloud hosted by Graphisoft in the cloud.



Example capabilities include:

- Getting started with BIMcloud SaaS is fast, easy, and affordable.
- Architects can start sharing their projects in the cloud right away – without any additional investments in hardware.
- BIMcloud SaaS is easy to use – no IT experience is necessary for quick and secure file sharing in the cloud.
- Practices can scale up or down as their workload demands and pay as they go.

BIMx – Explore, Engage, Mobilize

Bridge the gap between the design studio, the client's office, and the construction site with award-winning BIMx, the most popular presentation and collaboration tool for desktops, mobile devices, and the internet.

The latest version of Archicad 26 features key updates to BIMx functionality on all desktop and mobile platforms. Customer buy-in is faster than ever thanks to an immersive 3D environment regardless of which platform viewers are using.

- Real-time shadows on BIMx Mobile offer a more realistic look on mobile BIMx versions

- Greater realism, simpler Publisher workflow, and new customization feature of Archicad's texture export in BIMx Desktop Viewer.
- Immersive 3D environment regardless of which platform clients are using.

DDScad Viewer – Process IFC files with ease

DDScad Viewer is a powerful IFC viewer that allows users to process multiple files and different file formats – free of charge. Users can view, check, edit, and create these files. DDScad Viewer provides several features to coordinate OPEN BIM models such as advanced clash detection analysis, powerful IFC data visualization, and the bidirectional interface with BCF servers.

- Archicad-like user interface provides excellent usability
- Processes IFC, BCF, gbXML and other file formats
- Clash detection analysis available when using multiple IFC files
- Supports BIM Collaboration Format (BCF) for easy and precise issue management
- Number of displayed IFC models not limited – visualize the entire project

Zonecheck: Making every journey greener and sustainable for wet sprinkler system

Zonecheck is a non-disruptive simple testing, especially designed for residential, commercial, and industrial buildings that includes Data Centres, Airports, Hospitals, Hotels, etc. It has been installed worldwide and remains the most efficient and code compliant ways to test flow-switches saving hundreds of thousands of litres of water every year in the process.

Zonecheck is the automatic flow-switch testing system that works by using a closed-loop system that re-circulates water to simulate sprinkler head operation and tests the flow-switch without discharging water nor activating the fire pump. The Key-switch is one method that used to activate the Zonecheck test and has an enhanced feature which indicate the local butterfly valve-status.

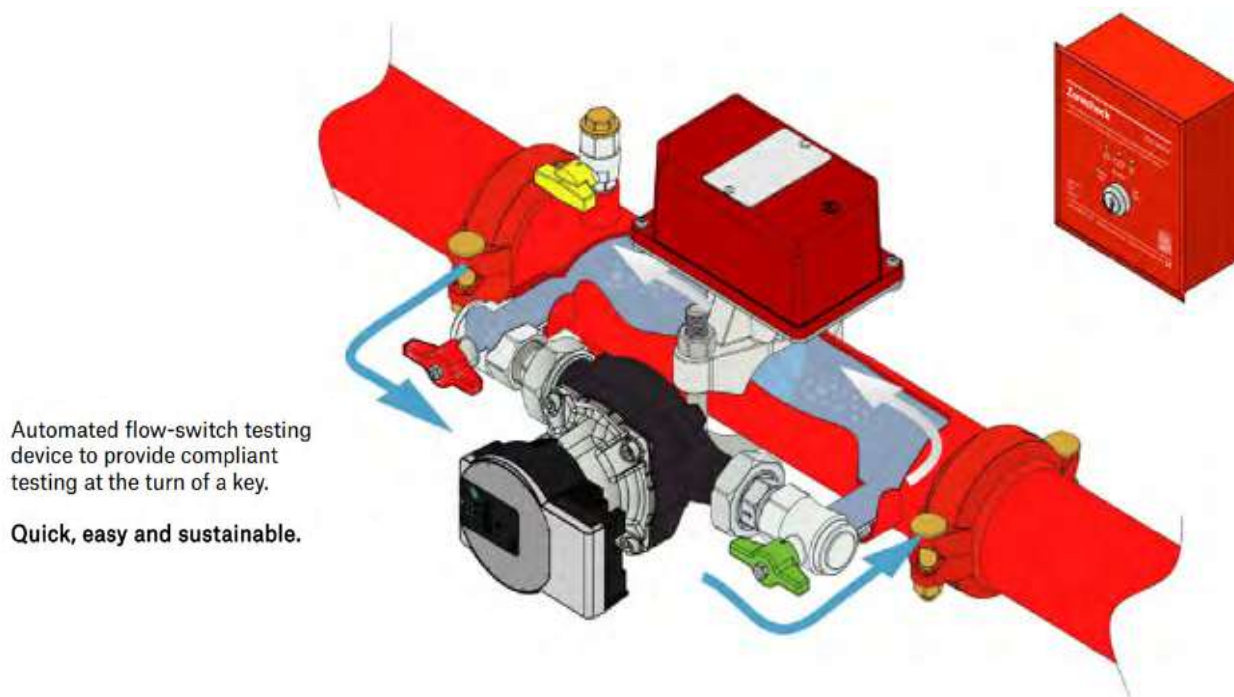
The Zonecheck solution is available in a) using Key switch or b) Addressable system. Zonecheck Addressable system is approved to UL life safety standards UL346 & UL864 and fully complies with relevant life safety fire codes. All components from the fire rated cable down to the special wiring glands are approved for life safety. Automatically managed by a single controller located in the building management suite (BMS), the Addressable Controller monitors all the flow-switches, twenty-four hours a day, seven days a week. The smart system flags any errors with system flow-switches or zone valves whilst automatically managing the monthly 'soft tests' that comply with code standards without activating any fire alarms or auxiliary equipment.



Zonecheck Addressable. Photo credit: ECO-Zone Technology Pte Ltd

Zonecheck conforms with the relevant code requirements detailed in BS EN12845 and NFPA25. Zonecheck is fully approved to UL, FM, LPCB and VdS standard. Zonecheck has also had its environmental claims validated and is UL Environment certified. It has also Singapore Green Mark certification and Malaysia Green Building Index approval.

Zonecheck is available in Singapore from ECO-Zone Technology Pte Ltd.



Zonecheck Key Switch. Photo credit: ECO-Zone Technology Pte Ltd

Fix chalky paint with Nippon Paint with Nippon Paint's No More Chalk

Ever faced paint feeling powdery and peeling at certain spots even though the surface was recently painted? Nippon Paint's new No More Chalk solution is an ideal treatment for fixing this issue and the answer to perfectly coated homes.

Just like its name, No More Chalk helps treat and reinforce pesky, powdery paint surfaces— a result of existing paint disintegrating due to the use of poor-quality paint, or wall fillers that dry to a powdery surface.

By penetrating the substrates and binding to the powdery surface, No More Chalk creates a stable foundation for painting or plastering jobs in order to enhance adhesion with subsequent coatings. Designed with safe indoor application in mind, No More Chalk is a low odour product containing low amount of harmful VOCs (volatile organic compounds). Non-toxic and fast-drying in nature, the treatment can be used in households for quick and simple touch ups or even when revamping the interiors of the house.

Fix powdery paint once and for all with No More Chalk, available at all Nippon Paint authorised retail shops and Nippon Paint Official Online Store now.



Photo credit: Nippon Paint Singapore



Flaking paint resulting from painting over chalky surfaces.

Photo credit: Nippon Paint Singapore



Powdery painted surface resulting from poor quality paint or fillers.

Photo credit: Nippon Paint Singapore

Speck Pump provides high quality, reliable, durable and safe products

Speck Pump has arrived in Southeast Asia. The 100 years old German product Speck Pump set up its manufacturing operations of the German Engineered products for supporting all of its Asia market centre in Bangkok, Thailand. Speck Pump Asia operation is set up to service regional customers for fast delivery and easy access with a short turnaround time.

Featuring premier BADU series, the SuperPro as the flagship and PPL Smart line the Aqua-Master. The all-plastics housing pump with high quality electric motor provide the unique world-class quality, reliable, durability and safe products. Innovative design of electrical separated seal brings integrity of the pump to the installer and the user. Original design to suit Asia market into private pool, residential and commercial swimming pool, leisure industrial and aquaculture market as well. All pumps meet German and European new energy regulation. Consider they are green products, and support Net Zero carbon initiative.

Fully integrated manufacturing operation, produce exactly the same quality standard as built in Germany, with qualified trained personal. Technical engineers are on site for research and development including for field customer support.

The company will make the job for the installer easier with less maintenance and after-sales service.



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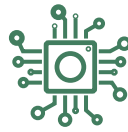
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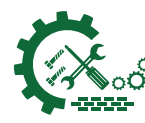
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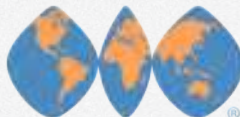
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| Building Construction Technology Expo 2022 | 21-23 Sept 2022 | Bangkok | Thailand | https://bct-construction.com | 64 |
| ConsBuild ASIA 2022 | 29-30 Nov 2022 | Bangkok | Thailand | www.consbuild-asia.com | IFC |
| Architecture & Building Services 2022 | 16-18 Nov 2022 | Singapore | Singapore | www.architecturebuildingservices.com.sg | 63 |
| Earthquake Expo Asia 2022 | 7-8 Dec 2022 | Singapore | Singapore | www.theearthquakeexpoasia.com | IBC |
| Archidex 2023 | 26-29 July 2023 | Kuala Lumpur | Malaysia | https://archidex.com.my | 67 |

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