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INTERIOR Retail designs **LANDSCAPING** Playground Equipment (Wet)

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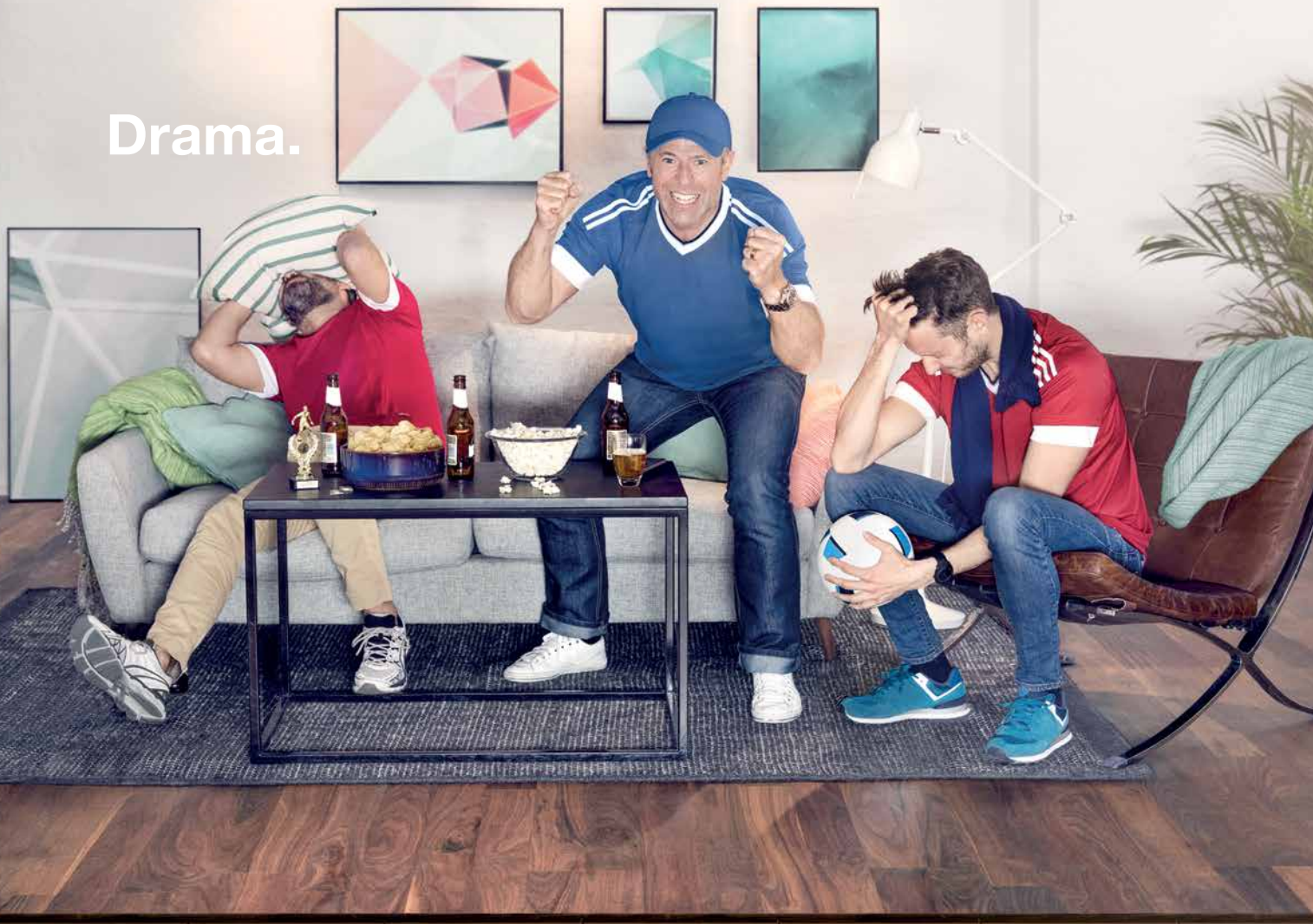
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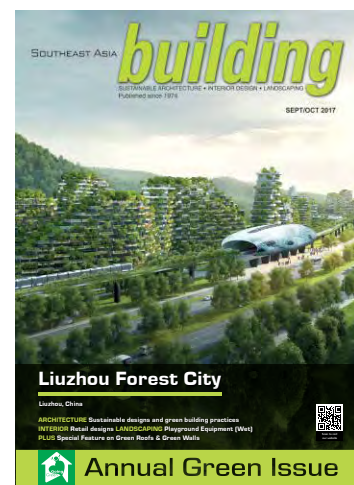
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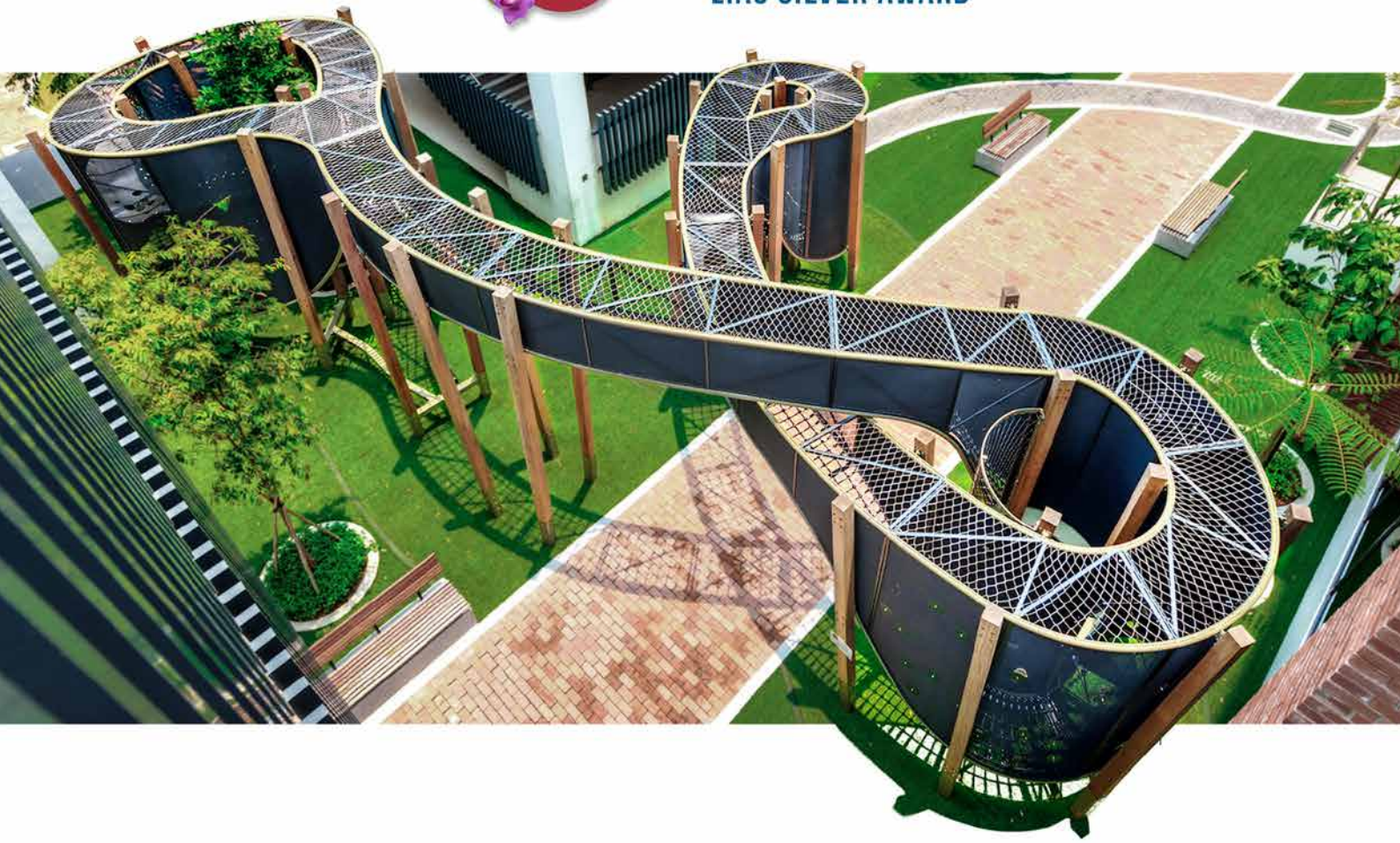


On the Cover: Liuzhou Forest City in Liuzhou, China. Image: © Stefano Boeri Architetti

Cover design by Fawzeeah Yamin



DULWICH COLLEGE LIAS SILVER AWARD



WATERWAY POINT FRASER CENTREPOINT'S CHILDRENS PLAYGROUND LIAS SILVER AWARD



CINEMAXX JUNIOR LIAS MERIT AWARD (OVERSEAS)



PLAYGROUND | WATERPLAY | INTERACTIVE PLAY | 3G FITNESS | SKATEPARK | STREET FURNITURE



Dear readers, welcome to the September / October issue, which is also our annual issue on green buildings and sustainable designs.

Sustainability is a key design feature and top priority in many parts of the world now such as Middle East and Southeast Asia. This trend is expected to continue as more and more green building regulations come into effect and as more developers see the benefits of it. We have compiled a number of green building projects packed with colourful images.

We also explore design concepts for retail malls and show how water play equipment can make a difference to a property through a showcase of projects.

Finally, we have a special feature on Green Roofs & Green Walls. Here, we have interviewed manufacturers and architects on the benefits and implementation of green roof and green wall systems in buildings.

Check it out and enjoy your reading!

Amita Natverlal

NEXT ISSUE THEMES

- Architecture – Smart Buildings: Internet of Things (IoT)
- Interior – Religious
- Landscaping – Water Features

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HOK-designed LG Science Park reaches major construction milestone

Seoul, South Korea – LG Science Park, the HOK-designed 11.8 million-square-foot research and science campus for global consumer and electronics brand LG Group, is now three quarters of the way to completion. The next-generation campus will accommodate LG researchers from disciplines including electronics, chemistry, nanotechnology, display, fabrication, life sciences and new materials.

Situated in Seoul's Magok District on the edge of the Han River, the development will be one of the world's largest new corporate research campuses. Some 6,000 construction workers are currently employed on site, with their work scheduled to conclude in summer 2018. Once complete, LG Science Park will serve as the company's world research headquarters and house more than 19,000 LG employees, placing staff from 10 affiliates under one roof

for the first time. The number of employees working within the LG Science Park could eventually grow to 21,000.

HOK was responsible for creating the overall campus masterplan and architecture, including the design of 10 laboratory and office buildings totalling more than 8 million square feet. Gardens and linear parks link the buildings at ground level. All are connected by an underground amenities and service floor, in addition to several subterranean parking levels. The gardens and plazas will be accessible to the community, and the campus faces a large new public park.

Several restaurants on the ground level will have the capacity to serve 6,100 people while doubling as informal collaboration hubs for scientists from all areas of research. In addition to this communal dining facility, the campus will encourage scientific collaboration with flexible spaces, informal meeting areas, seminar suites and bridges linking researchers from different disciplines. In the middle of the campus, the Integrated Support Centre (ISC) will house gathering spaces including a welcome centre, multipurpose event hall, conference and seminar rooms, exhibition areas and a VIP lounge. The ISC also will include daycare facilities, sports and recreation areas, and convenience retail. It will connect to central fabrication labs, clean rooms and special convergence labs.



Photo: © HOK

Building critical infrastructure skills in Singapore

Singapore – Faithful+Gould, together with colleagues from Atkins Acuity (Acuity), is helping to build infrastructure capacity in Singapore through a strategic relationship with the Singapore Economic Development Board (EDB), resulting in a \$5 million investment in skills in the region.

With support from the government agency EDB, which acts to stimulate economic growth and create employment opportunities in Singapore, Faithful+Gould and Acuity are investing and training consultants, managers and directors to expand skills in project management and whole asset lifecycle infrastructure development. Faithful+Gould will be investing up to \$2 million over the next five years to develop 16 high-potential project managers in deepening their skills for project leadership roles.

Acuity has plans to invest \$2.5 million over the next five years on recruiting and developing 18 high-potential consultants, managers and directors in Singapore to develop skills in advanced infrastructure development, overcoming complex asset management challenges, and delivering solutions across

the whole asset lifecycle for developing economies.

Faithful+Gould's Chief Executive Officer Donald Lawson said: "Investment in skills is essential to drive innovation and enable sustainable economic growth in the region. Specifically, with the advent of digital, we see an unprecedented momentum of change in the construction industry. Our partnership with EDB is empowering us to prepare for this change and build capacity and create job opportunities in Singapore while helping grow the infrastructure market."

Ms Fong Pin Fen, Director for Cities, Infrastructure and Industrial Solutions at EDB, said: "We are pleased that Atkins has set up its global end-to-end advisory business, Acuity, whose senior leaders are based in Singapore. Atkins Groups' investment will help bring value to Singapore's infrastructure ecosystem and strengthen our standing as Asia's leading infrastructure hub. With talent as a key pillar of the sector, EDB looks forward to partnering Faithful+Gould and Acuity in not only growing its business, but also in the building up of skilled talent that will help fuel the industry's growth."

ICS Pilot Valves

Higher pressure and fewer variants

The new Danfoss Pilot Valve program for ICS control valves is reduced to 4 high-quality variants based on patented Danfoss membrane package.

To better meet market demand for high-pressure valves, Danfoss now launch the new Pilot Valve program for ICS control valves. The program will be cut from the current 8 to just 4 variants, which will benefit both wholesalers and end-users.

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Kaer delivers multi-million dollar air-conditioning system to Chinatown Point that didn't cost a penny

Singapore – Kaer has launched its state-of-the-art air-conditioning system at Chinatown Point, a shopping mall cum office building located in Chinatown. A launch celebration was held in June 2017 and it was attended by over 50 guests, including dignitaries and customers.

Kaer designed, financed and installed the new system within the development, and has also been appointed to monitor and operate the chilled water plant system within the building for the next decade. With over 70 years of experience, Kaer is the largest and fastest growing “air-conditioning as a service – Acaas” provider in the world.

Speaking at the launch, Justin Taylor, CEO of Kaer said: “The team at Chinatown Point recognise that outsourcing of non-core activities has enormous benefits for them. As well as the attention-grabbing fact that there is no capital cost of the building owner there is the fact that we are passionate about ensuring every air-conditioning system that we are responsible for is operating at maximum performance. Helping businesses maximise sustainability and profitability.”

Air Conditioning As A Service is becoming the norm and Chinatown Point has chosen the Kaer Water service which entails the outsourcing of the chilled water production. Kaer designed, installed, financed, owns, monitors and operates the chilled water system within the building. The owners of Chinatown Point only need to pay a single rate applied to the consumption of chilled water on a monthly basis. They do not have to pay for repairs, maintenance, electricity and all other costs associated with the chiller plant system.

After the implementation of Kaer Water, the new system now operates at 0.6 kW/RT and below, beating the Platinum efficiency benchmark for Green Mark certification.

The Singapore Green Building Council recognises Kaer as a valuable contributor to the industry. Kaer is a SGBC-accredited energy performance contracting firm and is also a partner of the SGBC-BCA Zero Capital Partnership Scheme.

“The Singapore Green Building Council (SGBC) would like to congratulate Kaer on the launch of its latest Kaer Water Plant in Singapore,” said Mr Tan Swee Yiow, President of the Singapore Green Building Council. “This innovative business model, which reduces the cost of utilities while ensuring the performance of the air-conditioning system at the same time, will help to significantly improve building efficiency. As the industry continues towards the national goal of greening 80 percent of our existing buildings, we need more of such innovative solutions as we forge ahead in our journey towards greening the built environment,” added Mr Tan.

Justin Taylor, CEO of Kaer said: “We are very happy to offer the Kaer Water model, as it allows the owners of Chinatown Point, and indeed most other building owners, to focus on their strategic business functions. At the same time, the building owners can be rest assured that the chiller plant is being run at the highest possible levels of performance by a team of dedicated professionals using the very latest monitoring and reporting technology.”



The launch of the latest Kaer Water plant at Chinatown Point was attended by Kaer's partners, customers and dignitaries. Photos: © Kaer

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First edition of LAOBUILD 2017 Expo hailed a success

Vientiane, Laos – The recently concluded LAOBUILD 2017 – Laos' Biggest International Trade Show for the Building, Construction and M&E Industry was a sold-out event packing in the whole Convention Hall at the Don Chan Palace Hotel in Vientiane from 15 to 17 June 2017. More importantly, a record 86 percent of exhibitors rated their participation a success, and an even higher 92 percent are happy with the performance of the organiser – AMB Tarsus Events Group.

Held concurrently with the Association of Lao Architects & Civil Engineers (ALACE) Annual Congress 2017, the event attracted over 750 top architects, developers and engineers on the first day alone. In addition, over 100 architects from the Association of Siam Architects attended the Expo and the Networking Dinner.

With over 800 projects currently underway for infrastructure, special economic zones, and commercial, industrial and residential construction projects, the country's construction sector has become ripe for business and investment opportunities.

The expo was officiated with much pomp by the Professor PHD Bounleum Sisoulath, Assistant Minister of Public Works and Transport; Mrs Chanthachone Vongsay, Executive Vice President of the Lao National Chamber of Commerce and Industry (LNCCI); Mr Phonexay Southiphong, President of the Association of Lao Architects and Civil Engineers (ALACE) and Andrew Siow, Director of AMB Tarsus Events Group.

LAOBUILD 2017 together with co-located events LAOWATER 2017 and LAOENERGY 2017 featured over 150 exhibiting companies grouped in pavilions representing 15 countries including China, Italy, Malaysia, Singapore, Taiwan, Thailand, and the host country Laos. Major sponsors for the event included AkzoNobel, TOA Paints, Comin, Schneider, Veolia, Sany, Hafele, Formica, Endress+Hauser and Kone. Aside from that, LAOBUILD 2017 also hosted a number of seminars and technology symposiums to provide industry professionals with the latest updates on innovations, trends and developments. Based on the theme of "Transforming the Building & Construction Industry through Green Technology", the seminars featured speakers including senior government officials and internationally renowned experts, who gave lectures and presentations on new technology & processes, sustainable/green building, building designs and case studies.

Reception to the expo had been very positive across the board from the exhibitors, with many commenting on the great opportunities for networking it provided. "It's been an excellent show this year," said Mr. Ang from leading Singapore-based concrete and construction equipment trading company ACME Equipment Pte Ltd. "I made many contacts here, and I look forward to meeting more of them at your next one!" he added.

Yvan Bolliet from Comin Asia, a well-established mechanical and electrical contractor in Southeast Asia remarked: "It's been a positive show overall, with a quality audience and reception. We will definitely be back next year."

Pheutsapha Phoummasak, President of Asia Investment, Development & Construction Sole Co Ltd (AIDC) visited LAOBUILD 2017, calling it the best exhibition in the country. Kristzana Janthon, the Managing Director for Trade UPVC Windows & Doors Co Ltd also expressed great satisfaction with the exhibition. "We plan to double the size of our booth at your next show in LAOBUILD 2018," said Kristzana.

LAOBUILD 2018 will be staged from 13 to 15 June 2018. For more information, email Ms Rina at rina@ambtarsus.com or visit www.laobuild.com.



Photo provided by AMB Tarsus Events Group.

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Hunter Douglas announces completion of fitting out LRT Ampang Line Extension to 11 Stations in Malaysia

Kuala Lumpur, Malaysia – Hunter Douglas is pleased to announce the successful completion of its fit out of the LRT Ampang Extension to 11 Stations with its Sun Control Aeroscreen System in Malaysia.

The Ampang Line Light Rail Train extension starts from the Terminal Station at Sri Petaling Station and passes through Kinrara, Puchong, and ends at Putra Heights. The extension is 17.4 kilometres long with 12 new stations. Combined with the existing line, the total length of Ampang Line after the completion of the LRT Line Extension Project is 45.1km.

All stations are equipped with various facilities for customer's convenience such as lifts, escalators, public telephones, suraus and public toilets.

For this project, Hunter Douglas' architectural range of products was installed for both the exterior facade as well as the interior ceiling.

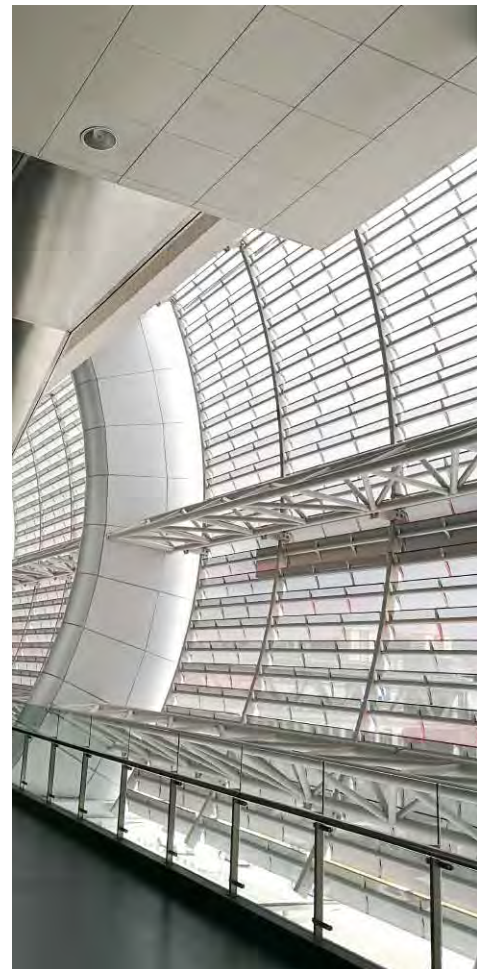
Ms Tay Wang Teng, AP Manager, Hunter Douglas Malaysia, shared: "The built environment is an exciting world. Through the selection of proper materials, the architect and the designer could make a positive impact, not only on the users and the occupiers but the environment as well. Life can be more interesting, perhaps more positive too. At Hunter Douglas, we give great emphasis on collaboration with the architects, the designers and the developers. We take it upon our mission to provide solutions that are practical, befitting and long lasting. The Aeroscreen Sun Louvres have roll-formed and perforated fins. These are made from 1.0mm thick aluminium skin coated in PVDF finish, which is superior for external installation. The perforation on the skin allows light penetration, ventilation and sun shading, whilst providing a great view from the interior of the station. The interplay of colours in the exterior creates an interesting display to passer-bys and the surrounding environment."

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- Aesthetic products - Colours, shapes and details offer unparalleled design freedom
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Today, the Aeroscreen System is widely used in varied applications across the globe. Many renowned architects have harnessed the tremendous creative possibilities offered by this Sun Control System to create buildings which integrate both stylish design and functionality to create a striking visual effect as well as a comfortable environment.

LRT Ampang Line Extension. Photos: © Hunter Douglas Asia



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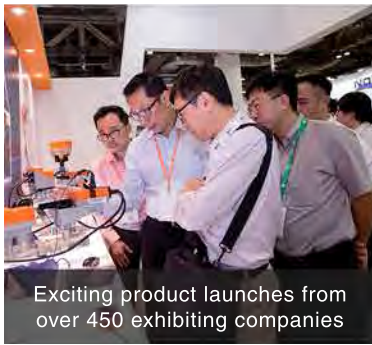


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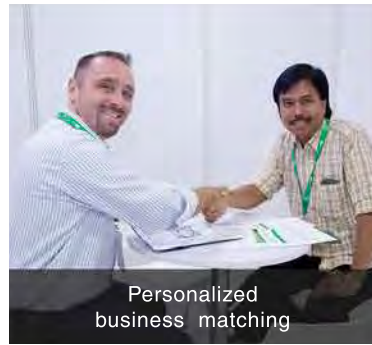


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Boon Edam installs tallest revolving doors at Melbourne's Rialto Towers

Sydney, Australia – Global architectural revolving door leader Boon Edam has enhanced the aesthetics, efficiency and functionality of the entrance to Melbourne's Rialto Towers by installing five of the largest revolving doors in the Southern Hemisphere, each standing 5 metres tall.

Boon Edam – which has dozens of Fortune 500 companies among its global clients, including some of the world's largest firms – already has more than 100 installations in Australia, spanning office buildings, airports, healthcare facilities, retail outlets, hotels, restaurants and national attractions visited by millions of people a year.

The new doors are a striking focal point of the \$100 million regeneration project for the Rialto building, managed by Built, to modernise the building and extend it by wrapping new buildings around its base.

Built Procurement Director Mr Peter Radovanovic says that Boon Edam's global expertise, recently established Australian operation and ability to undertake a service agreement were the key reasons they were selected to build the doors.

"Boon Edam has an excellent track record for delivering on complex projects. For the main entry into such an iconic Melbourne building, we had to go with a proven supplier," said Mr Radovanovic.

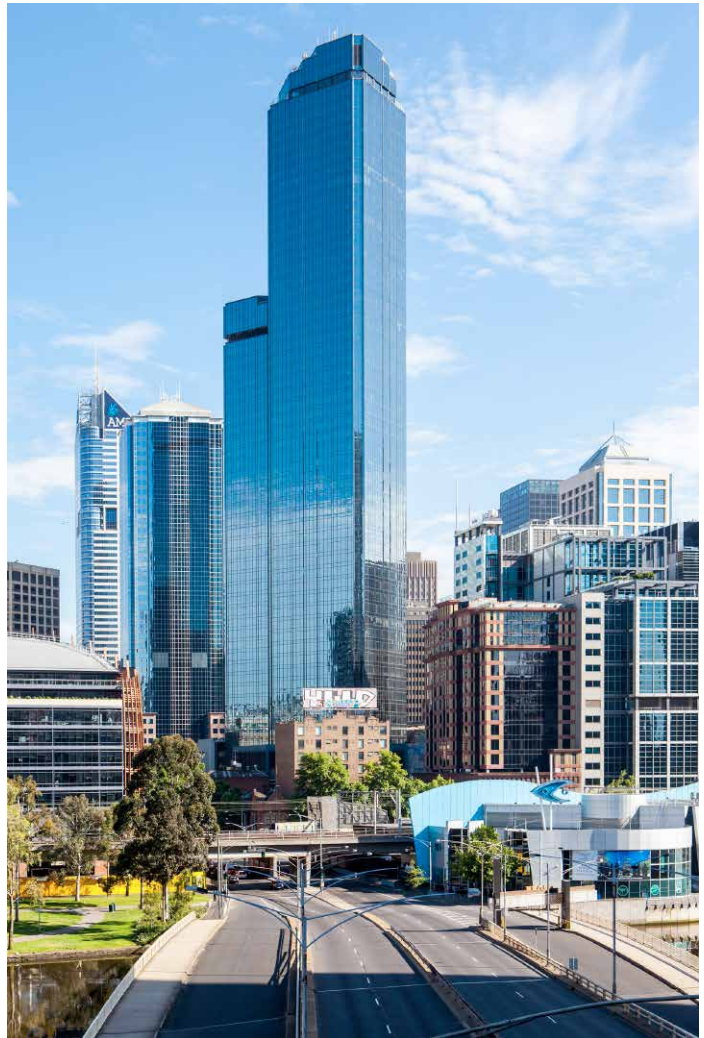
"Taking on the service agreement was another major advantage for us. Having a global leader that's also the door's original manufacturer look after all the service and maintenance gives us a greater level of confidence that the door will always remain standards compliant, and run at an optimum level of efficiency and reliability. Additionally, Boon Edam provided us with a robust Quality Assurance plan," he said.

The doors are part of Boon Edam's Tourniket range, with custom-made Tournex dual motors to control the giant 1.3t doors. These motors had to be installed at the top and bottom to control the door's wings and comply with Australian safety standards, which specify that the door needs to be able to stop instantly if an emergency sensor is triggered. Boon Edam worked closely with the project engineers to integrate this dual motor system into the building's existing infrastructure.

Mr Michael Fisher, Managing Director of Boon Edam Australia said that it was rewarding to work on such a unique and large-scale project. "This project presented us with a number of unusual challenges, but rather than balk at them, we used our highly experienced team to figure out the best solutions. A key focus for us is blending architecturally sound engineering with visually pleasing and functional designs," he said.

"Entrance doors are now more than simply a way in and out – they are mobility hotspots that often give the first impression of a building. Revolving doors are not only one of the most efficient ways to control people in and out of a building, but they also help with sustainability by reducing the load placed on the HVAC system. There is far less mixing of inside and outside air, so less energy is needed to heat or cool the building," said Mr Fisher.

Boon Edam's Australian office has recently introduced an OEM service offering, including full servicing and preventative maintenance, which can be applied to any revolving door in the country.



Rialto Towers in Melbourne. Photo: © Boon Edam



Boon Edam installed five largest revolving doors in the Rialto Towers. Photo: © Boon Edam

Broadway Malyan to design innovation campus in China

Shanghai, China – Broadway Malyan has been appointed to design a new building for the University of Nottingham Ningbo China (UNNC).

The UNNC Innovation Incubator is located on a key urban edge of the campus and city wetland park. The simple, elegant design of the building follows the curve of this edge, presenting a new face to the campus internally and externally. A significant new body of public realm will integrate the building with the city park and help generate a unique sense of place around existing buildings.

The design includes high specification spaces dedicated to research and technology, as well as more traditional learning and business school environments. The layered facility will also include live/work spaces and a range of complementary uses such as a restaurant, café, bar, roof garden and social areas, for students and visiting businesses to meet and relax.

Harry Hoodless, Director at Broadway Malyan, said: "The UNNC Innovation Incubator will set a new benchmark for infrastructure of this type in China. Providing not only a new face for the campus, but a valuable asset to the wider business community.

"Our project bridges the boundary between social, collaborative innovation space, and high quality private research and development space for business. In a blend of contemporary office and living space, students and young entrepreneurs have the opportunity to develop ideas in a live business environment, supported by the University. Demonstration and exhibition space provides external investors an opportunity to explore and collaborate on potential ventures that will in turn support the wider economy," added Harry.

As part of its 10-year anniversary celebrations UNNC outlined a number of objectives as part of a strategic 2020 vision to improve its offer to students, including improving the quality of facilities, strengthening the investment in research and becoming a more sustainable part of the community.



Photo: © Broadway Malyan

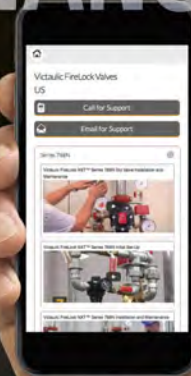
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Flowcrete Asia unveils The Euclid Group at ARCHIDEX 17

Kuala Lumpur, Malaysia – During ARCHIDEX 2017, Flowcrete Asia introduced the region's architects and developers to The Euclid Group – a new construction chemicals powerhouse that enables Flowcrete to distribute solutions from Euclid Chemical and RPM Belgium Vandex's product lines alongside its own.

The exhibition, that took place at the Kuala Lumpur Convention Centre in July, was an ideal opportunity for construction industry professionals to learn more about how this new development can enhance any building project regardless of market sector, complexity or location.

The Euclid Group was officially launched in November 2016 to the global construction industry. It was formed when several RPM International Inc. subsidiaries, including Flowcrete, Euclid Chemical and RPM Belgium Vandex, joined together to create a new worldwide leader in specialty chemicals and smart building solutions.

As part of The Euclid Group, Flowcrete Asia is now able to supply a wider variety of building materials than ever before thanks to a product catalogue that includes the coatings, adhesives, compounds, hardeners, sealants and concrete ingredients required for any modern building project.

This comprehensive collection of products means that Flowcrete Asia can assist architects with a start-to-finish specification of construction chemicals all from one supplier, under one quotation and with one point of contact.

Architects can now streamline the specification process for a significant amount of the building materials required for any construction, safe in the knowledge that all the products come backed by the knowledge and quality synonymous with The Euclid Group's brands.

Specifiers, designers and decision makers can all discover more about the innovative solutions now available to the region's construction industry by contacting Flowcrete Asia.



Photo: © Flowcrete

Atkins brings an architectural icon to Da Nang to enhance tourism industry of the most liveable city in Vietnam

Hong Kong – Atkins has been appointed by Empire Group, one of Vietnam's leading property development pioneers to provide architecture and interior design services for Cocobay Towers. The project is a new architectural icon created by Atkins, following the design of the multiple award winning 461 metre supertall Landmark 81, in Ho Chi Minh City.

Cocobay Towers will be located in Da Nang, the third largest city in Vietnam where tourism is gradually becoming a key economic industry for the city. In 2016, it is estimated that tourism created 27,000 jobs and revenues worth US\$720 million. The city has set a target of attracting 6.1 million visitors in 2017, including 1.9 million from other countries. Tourists are drawn to this central Vietnam coastal city for its beach which was voted by Forbes Magazine as one of the sixth most beautiful beaches, its rich heritage and idyllic natural setting. Another popular base for visiting the area is inland Hoi An; an ancient town located to the west of the city having stunning views of Da Nang Bay and the Marble Mountains.

According to Coco Tran, Vice CEO of Empire Group, "Our mission is to reboot the Vietnamese tourism industry and put Da Nang on the world map as a leading tourism destination. We aspire for Cocobay, the 31-hectare Entertainment & Hospitality Hub, to become a world-class entertainment destination, setting a new standard for hospitality, travel and entertainment. We are very confident to work with Atkins on the Cocobay Towers to create 'a new world's wonder', which sets to become a new beacon for the country and complements the Atkins-designed Burj Al Arab for Dubai."

Ian Milne, Atkins' Senior Design Director, said: "Cocobay Towers is a new iconic building for Vietnam that will help draw tourism to the region and contribute to the rapid and aspirational growth strategies for the country. Our design is inspired by the auspicious

'double fish' symbol which represents prosperity and wealth in Vietnamese culture. The shape of the towers and its façade maximise the spectacular views of the beautiful coastal city of Da Nang for its guests and residents to enjoy from every perspective.'

Located between Da Nang and Hoi An, a UNESCO World Heritage Site, stands Cocobay Towers. The project consists of twin towers rising to a height of approximately 200 metres. The development has a total gross floor area of 145,000 square metres and each tower will accommodate both a luxury hotel and a condominium for the Viceroy and Mirai brands. Beneath the towers, the podium will contain ballrooms, hotel function rooms, retail, cinemas and a wax works museum. Guests can indulge themselves in the rooftop infinity pool, sky dining experience in the 360-degree restaurant, and at the most diverse shopping hub in central Vietnam.

The towers are connected by two 52-metre long lightly curved crystal sky bridges, that form a loop and provide a viewing gallery on the 48th floor. The feature offers tourists and guests a breath-taking experience, with panoramic views of the vast East Sea, impressive Marble Mountains, charming Co Co river and the evergreen view of two international standard golf courses for tourists and guests to emerge in. At the height of approximately 200 metres, the Cocobay Towers Crystal Sky Bridge is the tallest crystal sky bridge in Vietnam and thought to be the world's tallest glass-floored bridge connecting two buildings.

The project has now entered the scheme design phase, with a fast track to construction that's set to start in summer 2017. In addition to the Cocobay Towers, Atkins has completed the landscape concept design for the Cocobay masterplan's main axis.



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Acquisition of Flexcrete Technologies Ltd by AkzoNobel

Leyland, UK – On 3 July 2017, it was announced that UK-based concrete repair and protection manufacturer Flexcrete Technologies Ltd has been acquired by leading global paints and coatings company AkzoNobel. As part of the acquisition, 100 percent of the shares in Flexcrete Technologies Ltd have been acquired by AkzoNobel.

Flexcrete has been working alongside AkzoNobel since 2010, establishing the Intercrete range of mortars and cementitious coatings which have proven highly successful when used in combination with the established AkzoNobel resin-based coating and lining systems. Flexcrete's original Founders Graham James OBE and Chris Lloyd will continue to manage the existing day-to-day sales, manufacturing and technical operations from Flexcrete's head office and manufacturing complex in Leyland, Lancashire, and all Flexcrete staff have been retained as part of the acquisition. AkzoNobel is committed to a long-term presence on the existing Flexcrete site in Leyland.

Graham James OBE, Co-Founder of Flexcrete Technologies Ltd said: "We are excited about the huge benefits that the acquisition will bring. Although it will be very much business as usual and contacts will remain the same for our customers, the acquisition will enable us to build on our capabilities as a niche technology provider with the development of new, innovative and sustainable solutions for our target markets.

"We will benefit enormously from access to AkzoNobel's Technical Centre in Felling where over 300 staff focus on R&D related activities and intend to strengthen the Flexcrete brand and increase sales both in the UK and overseas. We are already recruiting additional external sales staff to service the demand," he continued.

Mauricio Bannwart, Managing Director of AkzoNobel's Protective Coatings business, said: "This deal generates a number of synergies which will deliver significant benefit to our customers. We are already leaders in protection of metal substrates and the acquisition of Flexcrete aligns perfectly with our existing portfolio of products, allowing us to provide customers with essential concrete and metal protection through one dedicated supplier. The deal also offers us a great opportunity to pursue further coatings innovations in a number of our core markets."



The Emirates Spinnaker Tower in Portsmouth which has been protected with AkzoNobel's steel coatings and Flexcrete's concrete coatings. Photo: © Flexcrete

New leadership for Green Building Council of Australia

Sydney, Australia – Rod Fehring, Chief Executive Officer of Frasers Property Australia, has been appointed Chair of the Green Building Council of Australia (GBCA).

Frasers Property Australia is one of the nation's largest diversified property groups, and topped the Global Real Estate Sustainability Benchmark (GRESB) table last year for diversified office, industrial and non-listed funds.

"As our cities grow, we have an obligation and an opportunity to embrace building practices that deliver healthy, resilient and positive places for people and the natural environment," said Mr Fehring.

"There may be some uncertainty around the Paris Agreement and global commitments to tackle climate change, but industry remains rock-solid in its commitment to sustainability. Almost 1,500 Green Star projects have been certified around Australia – and 38 per

cent of the nation's office space is Green Star certified. More than 1.3 million people shop in a Green Star retail centre every day," added Mr Fehring.

He added: "The GBCA's focus over the next year will be leading the shift to net zero buildings, and to reshaping the way Australians live, work and play in their cities. The GBCA's board is determined to accelerate market transformation and to set the sustainability agenda throughout our region – and I'm excited to be leading this transformative team of leaders."

Mr Fehring is joined by deputy chairs Kylie Rampa, Lendlease's Chief Executive Officer, Property Australia and John Flecker, Chief Executive Officer of Multiplex Australasia. The GBCA's Chief Executive Officer Romilly Madew welcomes Mr Fehring's appointment, and pays tribute to outgoing chair, Tanya Cox. "Tanya's term has been characterised by a laser-focus on strong governance, strategic board appointments and the



Rod Fehring. Photo: © Green Building Council of Australia

development of an ambitious new agenda for a carbon positive industry. Her impact will be felt for many years to come. Tanya will continue on the GBCA board and will remain as our representative on the World Green Building Council board as a member of its Executive Committee," said Ms Madew.

Sembcorp acquires two more rooftop solar facilities in Singapore

Singapore – Sembcorp Industries (Sembcorp) has announced that it has added two operating rooftop solar facilities in Singapore to its global renewable energy portfolio.

Through its wholly-owned subsidiary Sembcorp Utilities, Sembcorp completed its purchase of 100 percent of Solar C&I Holdings (Solar C&I) for S\$3.3 million from REC Solar. The consideration paid was internally funded. Solar C&I owns grid-tied rooftop solar assets located at the premises of Asia Pacific Breweries Singapore (APB) and Stolthaven Singapore (Stolthaven). Already in operation, these assets provide power directly to APB and Stolthaven and have a combined capacity of 2.3 megawatts.

Neil McGregor, Group President and CEO of Sembcorp, said: "The addition of these two new rooftop solar power projects is in line with Sembcorp's goal to grow solar power capacity through more self-development and acquisition projects, and move into the emerging distributed solar energy market in Singapore. The acquisition will also complement our local electricity generation and retail capabilities in the country."

"This small but significant acquisition reinforces Sembcorp's commitment to sustainability and supporting greener energy for Singapore, as the power market here moves towards full retail competition," added Mr McGregor.

Last year, the company acquired 49 percent of Changi Mega Solar, the developer of a 3.6 megawatt grid-tied solar energy system on the rooftop of SATS Airfreight Terminals 5 and 6 at Singapore's Changi Airport. This was one of the largest single-location solar energy systems in the country. Globally, Sembcorp has over 2,000 megawatts of renewable energy and energy-from-waste capacity in Singapore, China, India and the UK. This includes wind, solar and biomass power assets. This acquisition is not expected to have a material impact on the earnings per share and net asset value per share of Sembcorp Industries for the financial year ending 31 December 2017.



Premises of Asia Pacific Breweries Singapore (APB).
Photo: © REC Solar

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Winners of the BCA Awards 2017 announced

Singapore – On 13 June 2017, the building and construction fraternity gathered at Resorts World Sentosa to celebrate the winners of the BCA Awards 2017.

This year, the Building and Construction Authority (BCA) gave out a record of 493 awards to industry players who have made achievements in construction and quality excellence, design and engineering safety, universal design, construction productivity and green buildings.

Mr Lawrence Wong, Minister for National Development and Second Minister for Finance graced the event as the Guest-of-Honour and delivered the opening address.

In his speech, Mr Wong said that an additional \$700 million in construction projects had been announced in this year's Budget. Of this, about \$160 million worth of projects are in design stage and tenders for them will be called in the second half of 2017. The rest will be put out by next year.

BCA Chairman, Mr Lee Fook Sun, said that this year, more firms were recognised for their productivity efforts, which included moving towards extensive prefabrication and advanced construction technologies. He cited the BIM Award winners as an example, stating that it represented firms that are embracing Building Information Modelling (BIM) and Virtual Design and Construction (VDC) to improve collaboration across the construction value chain. He added that while the industry had achieved a cumulative 10 percent improvement in site productivity in the last six years, it need to do more to enhance productivity in the sector and reduce reliance on low-skilled workers. The three key strategies that will drive this transformation are: technology adoption, a high-quality workforce and greater synergistic integration in the industry.

This year marks 15 years since BCA's Quality Mark (QM) scheme was introduced. To commemorate this 15th-year milestone, BCA launched a new Quality Star Champion Award at the BCA Awards Ceremony to recognise leading developers and builders who have been committing to QM and are consistently delivering high workmanship quality in their projects. City Developments Limited and Woh Hup (Private) Limited are the recipients of the inaugural Quality Star Champion Award for achieving five Quality Excellence Platinum awards. This year, five developers and seven builders received the Quality Excellence Award for delivering high quality projects.



Mr Lawrence Wong, Minister for National Development and Second Minister for Finance, delivering the welcome address. Photo: ©Building and Construction Authority



The HR guidebook was jointly launched at the BCA Awards ceremony by Minister Lawrence Wong; BCA Chairman, Mr Lee Fook Sun; Association of Consulting Engineers Singapore (ACES) President and Construction Industry Joint Committee (CIJC) Chairman, Er. Ling Shiang Yun; and BCA CEO, Mr Hugh Lim. Photo: © Building and Construction Authority

At the awards ceremony, BCA launched a human resource (HR) guidebook, developed in consultation with industry firms, to help firms in the built environment sector to improve their HR practices to attract, retain and develop talent. The HR guidebook comes with industry best practices, HR templates and self-assessment tools and resources to help firms improve their HR practices in areas such as performance management and training, recruitment and on-boarding, communication, rewards and compensation, and wellness and support schemes. Built environment firms who sign the Pledge can download the guidebook from BCA's Building Careers Portal (www.buildingcareers.gov.sg) for free.

To support the industry transformation and ensure graduates are equipped with the necessary skillsets when they join the sector, BCA is also planning to set up a joint taskforce with industry associations and Institutes of Higher Learning (IHL) to identify relevant content that can be incorporated into the curricula of built environment related courses at IHLs. In addition, BCA will be working with IHLs to explore the idea of introducing a capstone programme for graduating students to help them attain deeper industry knowledge, and better prepare them for work upon graduation.

"We expect to see steady growth in Singapore's built environment over the next decade, with more quality buildings and infrastructure. The ongoing transformation of the built environment sector will create good jobs for Singaporeans entering and in the sector," said Mr Hugh Lim, CEO of BCA.

BCA also officially launched the world's first dedicated green certification scheme for the design and operation of laboratories at the BCA Awards 2017. According to Mr Lee, The Energy Research Institute @NTU and the Singapore Sustainable Laboratories Group have contributed significantly to the design of this new scheme.



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New Otis R&D Centre, production facilities planned in Incheon, Korea

Seoul, South Korea – Otis Elevator Korea plans to build a research and development centre and new production facilities in Songdo, Incheon, gearing up to further support Otis' technological capabilities in Northeast Asia while also helping to revitalise Incheon's local economy.

Otis Elevator Korea signed a Memorandum of Understanding with the Incheon Metropolitan City and the Incheon Free Economic Zone Authority formalizing plans to invest in and build the R&D centre and production facilities. Construction is scheduled to start in September with completion anticipated in 2018.

Spanning a total area of 15,600 square metres, the new R&D centre and production facilities will be located in the High-tech Industrial Cluster (Section 4, Songdo-dong, Yeonsu-gu, Incheon, South Korea) of Songdo International Business District. The new facilities will be comprised of an R&D centre, state-of-the-art production facilities, a parts supply centre, a modernisation system centre, quality centre as well as technical training and customer experience centres.

"This investment is an opportunity to take our product and service technology to the next level for the benefit of our customers," said Philippe Delpech, President of Otis Elevator Company, who attended the signing ceremony. "South Korea's excellent research and development competence and increased



Otis Elevator Korea (OEK) signed a Memorandum of Understanding with the Incheon Metropolitan City and the Incheon Free Economic Zone Authority (IFEZA) for the development of a new Otis R&D center and production facilities. (From the left) Lee Young-geun, Commissioner of the IFEZA; Jeong-bok Yu, Mayor of Incheon Metropolitan City; Philippe Delpech, President, Otis Elevator Company; and IS Cho, Vice President and Managing Director, OEK, attended the ceremony. Photo: © Otis

production capacity will play a vital role in Otis' global business strategies for the future," he added.

Otis aims to utilise the new Songdo R&D Center as the R&D hub for its Northeast Asia region, which includes South Korea, Japan, Taiwan, Hong Kong and Macau. It will be a leading site for developing technology innovations in Asia. The new hub will engage in technological exchange and collaboration with Otis' global R&D center network and focus on the research and development of next-generation

connected elevators using Internet of Things (IoT) technology to best serve customers and passengers while also increasing efficiency in elevator service.

After completion of the new facilities, Otis Elevator Korea will integrate its existing R&D and production organisation, currently spread across Seoul, Incheon and Changwon, into one. Some features – the modernisation system centre and quality centre – will also be moved from Otis Elevator Korea headquarters in Yeouido, Seoul to the new facilities.

thyssenkrupp inaugurates world-class elevator manufacturing site in Pune, supporting fast-paced urban development in India

Pune, India – On 12 May 2017, thyssenkrupp inaugurated in the Chakan Industrial Area of Pune, Maharashtra, India its newest Multi-Purpose Facility (MPF) for the elevator industry, including manufacturing of elevators, distribution centre and training facilities. Representing an investment of 3 billion rupees (44 million euros), the new 20,000 square metres industrial facility is designed for an initial capacity of manufacturing 6,000 elevator units, extendable to over 10,000 units in the foreseeable future.

thyssenkrupp has built a strong global reputation in helping to improve mobility and efficiency in rapidly-growing urban areas around the world. Having established a 95 percent manufacturing localisation target, the opening of the Pune factory will enable the company to significantly expand in the region and support the increasing growth of the Indian construction sector, driven by strong urbanisation.

Nurturing local talent is an essential element of thyssenkrupp's plans for India. As part of the factory's inauguration, thyssenkrupp will also be launching a new seed campus training centre for field technicians. This facility will support the development of local skills and knowledge in line with the Indian government's wider training programmes to improve service provision and efficiency in businesses across the region. The global seed campus team is taking learning at thyssenkrupp Elevator to a new era, driving the evolution of learning tools and methodologies by including digitalization in all its forms: mixed reality, virtual reality, gaming applications and simulations.

On this occasion, Ravi Kirpalani, CEO of thyssenkrupp India, commented: "The urban population in India is one of the fastest



thyssenkrupp's newest Multi-Purpose Facility (MPF) for the elevator industry in Pune.

growing in the world. 30 percent of citizens currently live in urban areas, and this is expected to reach 40 percent by 2030. The government is focused on building new housing complexes, airports, malls, railway stations and harbors. We are delighted that our new local manufacturing site will better enable us to support this. With the addition of the new Multi-Purpose Factory to the Chakan Industrial Area, thyssenkrupp is poised to play an important role both in supporting the development of the local area, and contributing to wider Indian goals of sustainable and efficient urbanized growth."

Nakheel awards AED1.5 billion contract to build The Palm Gateway triple tower and beach complex

Dubai, UAE – Dubai master developer Nakheel has signed a construction contract worth nearly AED1.5 billion for The Palm Gateway, a new, three-tower residential, retail and beach club complex at the foot of the world-famous Palm Jumeirah.

Nakheel has appointed Shapoorji Pallonji Mideast LLC to carry out the work, which will begin in Q2 2017 and take two and a half years to complete.

Nakheel Chairman Ali Rashid Lootah said: "The Palm Gateway contract is among AED12 billion worth of construction contracts to be awarded by Nakheel this year. We look forward to delivering another iconic, landmark project at the entrance to Palm Jumeirah through this first-time collaboration with Shapoorji Pallonji."

Shapoorji Pallonji Mideast LLC, part of the Shapoorji Pallonji Group, has been active in the region for the over 45 years, delivering a range of prestigious projects. M. D. Saini, Managing Director and CEO, Shapoorji Pallonji International FZE, said: "We are honoured and excited to have been selected to deliver this prestigious project."

The Palm Gateway includes 1,265 luxury apartments across three high-rise buildings – the tallest topping 285 metres – to be constructed on top of the existing Palm Monorail terminal, which includes 14 levels of parking spaces. Units range from one to three bedrooms and will be available on lease.

The waterfront living and leisure complex, set in extensively-landscaped grounds, will also have an abundance of retail, dining and health and fitness facilities, including parks, pools, and sports courts. The Palm Gateway will boast convenient transport links to other parts of the island and to the rest of Dubai. The



Photo: © Nakheel

Palm Monorail, which will remain operational throughout the construction of the project, is already connected to the Dubai Tram and the Dubai Metro, giving residents and visitors easy access to alternatives to the car.

With panoramic views of Palm Jumeirah, the Arabian Gulf and some of Dubai's most famous landmarks, The Palm Gateway will also have its own beach club and park – a shaded, landscaped complex with a diverse range of waterfront dining and shopping options, pool, barbecue areas and fitness facilities, including a jogging track.

The Palm Gateway is one of three high rise developments by Nakheel on Palm Jumeirah. The Palm Tower, a 52-storey luxury hotel and residential complex at the centre of the island is under construction, while PALM 360, a 220 metre twin-tower penthouse, apartment and hotel complex, is currently being designed.

Messe Frankfurt joins forces with 'PEA' and 'The Exhibiz' to organise Thailand Lighting Fair 2017 roadshow in Myanmar

Yangon, Myanmar – Thailand's Provincial Electricity Authority (PEA), Messe Frankfurt and The Exhibiz Co., Ltd. conducted a series of international road shows featuring business forum on "Smart Technology for Smart City Safe City" in Myanmar to promote Thailand Lighting Fair 2017, which will take place on 16-18 November 2017 at BITEC, Thailand.

In addition to its flagship lighting technology, the 2017 edition will run in concurrent with Thailand Building Fair 2017 to follow Messe Frankfurt's world-class light+building series and Secutech Thailand 2017 under the main theme "Smart City. Safe City."

Ms. Walikar Apayasiri, Counsellor (Commercial), Office of Commercial Affairs, Royal Thai Embassy, Yangon stated: "The Thailand Lighting Fair 2017 road show in Myanmar will open the gate for economic ties and collaboration that will deepen the enduring friendship between Thailand and Myanmar and generate interest in the new opportunities that will arise through Thailand's exhibition platform, and the panel discussion will be a good educational forum as well as build a network for future business partnership for both private and government sectors."

Mr. Payomsarit Sripattananon, Deputy Director of Alternative Energy Encouragement and Efficiency Department of the PEA revealed that energy trends throughout ASEAN are all pointing towards the smart city ideal.

"With the concept already in place, the practicalities follow. At the PEA, we have developed a series of technology infrastructures that provide a solid foundation for energy efficiency and energy management which is also beneficial to smart city development. For example, the PEA smart grid seamlessly connects the electricity system with the information technology and the communications systems, while the PEA smart meters will optimise the power system operation to be more efficient, safe and reliable. Both these are fundamentals to develop smart homes, smart buildings and smart cities. PEA, as a technology driven organisation, is hosting the Thailand Lighting Fair for the third consecutive year."

Ms. Pakwan Jiamjiroj, General Manager of The Exhibiz Co., Ltd. said: "Due to the positive feedback of Thailand Lighting Fair over the past two years indicates the prospect of Thailand becoming the hub of ASEAN lighting technology and has deliver an impressive numbers of quality buyers to take part

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lighting fair 2017

in face-to-face business connections and discussion."

"This year, we will organise a bigger and better Thailand Lighting Fair, the 2017 edition will run in concurrent with Thailand Building Fair 2017 to follow Messe Frankfurt's world-class "light+building" series and Secutech Thailand 2017 under the main theme "Smart City. Safe City." cover ranges of technologies and solutions from upstream services to downstream supplies needed for smart city development in the digital era from lighting, electrical engineering, building automation to security under one roof which will make it more comprehensive for visitors in one visit," added Ms. Pakwan.

"The main focus of Thailand Lighting Fair will always be on latest lighting technologies and solutions that uplift the shows as the leading lighting trade fair in Southeast Asia. As a one-stop sourcing marketplace for lighting technology, design and solution, visitors can discover the latest lighting technology from over 500 brands, which will be ready to welcome over 15,000 visitors from over 40 countries worldwide. In addition, THLF 2017 will also create a business and networking platform, as a meeting point where local enterprises can exchange and disclosure up-to-date information and trends on the industry with foreign enterprises which will be applied into business activities further on," concluded Ms. Pakwan.

Full with many highlights, Smart City. Safe City. Landmark: a demonstration zone showcasing how street lighting will become smart city infrastructure and IoT platform. Along with ASEAN Smart City Forum with a series of international seminars under compelling topics including E-commerce for Lighting & IoT, Smart Energy & Energy Management, Net Zero Energy Building and many more from industry experts internationally as well as certificate courses by PEA.

Thailand Lighting Fair 2017 (THLF 2017) will be held at the Bangkok International Trade & Exhibition Centre (BITEC), Hall 102-104, from 16-18 November 2017. **For more information, contact The Exhibiz Co., Ltd. at tel (+66) 2 664 6499 ext. 200, fax (+662) 664 6477, email info@thailandlightingfair.com or visit www.thailandlightingfair.com.**



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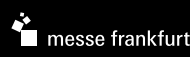
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USGBC announces Songdo IBD as the first to earn LEED for Communities Precertification

Incheon, South Korea – On 16 June 2017, the U.S. Green Building Council (USGBC) announced that Songdo International Business District (Songdo IBD), which is home to nearly 50,000 residents and 50,000 jobs, has earned precertification utilising LEED for Communities. LEED for Cities and LEED for Communities address sustainability, quality of life, education, prosperity, equity, public health and safety. The announcement was made at the 2017 edition of the New Cities Summit in Songdo.

“The sustainability mandates we set for Songdo IBD have always envisioned how the quality of life for our residents, workers and visitors could be enhanced by a commitment to environmentally responsible development,” said Stan Gale, chairman of Gale International, the co-developer of Songdo. “LEED for Communities certification will further validate Songdo’s commitment to be the vanguard of smart sustainable urban transformation,” added Mr Gale.

This pre-certification provides cities and communities with a framework for recording, measuring and managing the performance of water consumption, energy use, human experience, waste and transportation through Green Business Certification Inc.’s (GBCI) new Arc performance platform.

“Cities face many challenges in this day and age – citizens are demanding more transparency and information about the places where they live, work, learn and play,” said Mahesh Ramanujam, chief executive officer and president of USGBC and GBCI. “And now more than ever, local governments are laboratories of innovation and social problem solving,” added Mr Ramanujam.

The LEED green building rating system is administered by GBCI, the premier organization for independently recognizing excellence in green business industry performance and practice globally.

Leaders, especially in growing cities, have enormous opportunity to initiate a dynamic dialogue with citizens and invite them to contribute in the city’s progress. LEED for Cities is a framework that provides both citizens and their



Photo: © US Green Building Council

leaders with a detailed view of city and community-wide performance.

“It means a lot to us as we are making Songdo and other areas in IFEZ smarter and greener,” said Incheon Metropolitan City Mayor Jeong-bok Yoo. “Residents in Songdo will be proud of the environment leading to energy saving and doing something for our next generation.”

Added Incheon Free Economic Zone Authority Commissioner Young Geun Lee: “This is great news to Incheon as this is the first ever LEED precertification given to the district including dozens of buildings in Songdo. ‘Go Green’ is one of our priorities for our people and the environment. This is a first and great step and will continue to encourage and promote ongoing efforts.”

Songdo IBD, located in Incheon, South Korea, is widely recognised as the world’s first greenfield, sustainable “smart” city. Since construction began just over 10 years ago, it has grown to include more than 1,300 retail and hospitality businesses and numerous international corporations and NGOs. With nearly 70 percent of its space built out, Songdo IBD is home to 22 million square feet of LEED-certified space. Currently, the business district accounts

for 40 percent of all LEED-certified space in South Korea.

South Korea is the fifth largest country outside the U.S. for LEED-certified buildings with more than 6.5 million gross square metres of certified space. Recently, USGBC and the U.S. Seoul Metropolitan Government signed an agreement to accelerate LEED, the world’s premiere green building rating system, in Seoul. The partnership is an effort to lay the groundwork for further sustainable development and performance in Seoul through LEED certification as a way to help mitigate climate change.

“For years, U.S. Green Building Council has been leading the way in promoting more environmentally focused development and it’s LEED initiative has led to healthier and greener buildings in cities around the world,” said John Rossant, chairman, New Cities Foundation. “This recognition of Songdo and important step on the path to LEED for Communities certification acknowledges this exceptional, greenfield city. We are delighted such recognition has come during the New Cities Summit focused on better, more healthy cities,” added Mr Rossant.

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Mapei celebrates its 80th anniversary as your “one-stop partner for construction needs from start to finish”

Singapore – Founded in Milan, Mapei reached its 80th Anniversary milestone in 2017. For these 8 decades, Mapei have been helping to improve quality of life through research and development focusing on eco-sustainable products for construction.

Mapei is today a world-leading producer of adhesives and complementary products for the fixing of all types of floor and wall coverings. In addition, the company is specialised in a wide range of chemical building products.

Mapei celebrated its 80th Anniversary Night at the Fullerton Hotel Ballroom. It was held on 26 May 2017. The event was attended by industry partners – architects, developers, clients, applicators, contractors, raw material suppliers and service vendors. VIP guests include the Ambassador of Italy, H.E. Dr. Paolo Crudele and Mrs. Crudele, Dr. Radicati, Italian Trade Commissioner, and Mr. F. Donato, President of the Italian Chamber of Commerce. Mapei’s management seated with distinguished guests were Mr. Marcel Smit, Director of Mapei Asia Pacific, Mr. K.L. Chua, Managing Director of Mapei Far East and Mr. Andrea Perego, Director of Operations, Asia Pacific.

Today MAPEI’s presence spans worldwide in 33 countries across five continents.

Mapei has built their strategy following three main directions:

- **Specialisation:** Mapei offers a wide range of special, technologically-advanced building products and systems.
- **Research & Development:** Annually, Mapei invests about 5 percent of total turnover and 12 percent of their employees in R&D. Most expenditures are devoted to eco-sustainable products. Mapei is fully committed to working and operating with the utmost respect for ethical practices combined with a strong responsibility to health, safety, social and environmental needs of its global community. In November 2015, Mapei has signed up for a grant of 45 million euros from the European Investment Bank (BEI) to help fund Research & Development activities in Europe. The grant is for a period of 6 years and will be used by Mapei SpA to help fund all their main research projects in Europe over the next five years.



Mapei Management acknowledgement of thanks to guests. Photo: © Mapei



Mapei task force at the event. Photo: © Mapei



Mapei Far East celebrated its 80th Anniversary Night at the Fullerton Hotel ballroom. Photo: © Mapei

• **Globalisation:** since the 1960s, Mapei has advocated for globalisation to be closer to local requirements and to maximise logistics efficiency.

Mapei has developed a technical-commercial network in major parts of the world. The Group now counts 81 companies operating in five continents and 18 research laboratories. Mapei Group's annual turnover in 2016 is about 2.4 billion euros. Total number of Mapei Group employees is 9,000.

MAPEI in Asia Pacific region

In the Asia Pacific region, MAPEI has made its presence felt since 1989 when Mapei Far East Pte Ltd was constituted in Singapore as a trading subsidiary. It was Mapei's first establishment in the Asia Pacific and the sixth in the world outside Italy. It started with a 500 square metres office cum warehouse in Serangoon Road. The present factory in Tuas West Road was started in 1995 covering a 10,000 square metres area. Recently, Mapei added 5,000 square metres of adjacent warehouse facilities.

Production facilities, which began from 1995, served both the domestic and export markets. In Singapore, Mapei is renowned as the "one-stop partner for construction needs from start to finish". This has enabled the company to contribute solutions to the most diverse kinds of projects: Marina Bay Sands, Gardens by the Bay, Victoria Theatre, Capitol Development, Singapore University of Technology and Design, South Beach, Sultan Mosque, Downtown Line, The Interlace, Church of Saints Peter and Paul, Port of Singapore Authority, Thomson-East Coast Line, etc.

Mapei is a Singapore Green Building Council (SGBC) member with products certified in the Adhesives, Resilient, Building, Wall Coatings, Floorings and Waterproofings lines. In 2016, Mapei Far East achieved the SGBC-BCA Sustainability Leadership Award.

Presently, Singapore is the regional base for the Management of MAPEI Group in the Asia-Pacific. There are Mapei companies in 11 countries with plants in Korea, China, India, Vietnam, Malaysia, Singapore, Australia, Indonesia and trading subsidiaries in Hong Kong, New Zealand and Philippines. Mapei is confident that the company is in step with Asia Pacific's growth and development.



Aerial view of Mapei Far East premise at Tuas. Photo: © Mapei

14th Guangzhou Electrical Building Technology concludes on a positive note

Guangzhou, China – The 14th edition of Guangzhou Electrical Building Technology (GEBT) ended on a positive note. The four-day fair, held from 9-12 June 2017 at the China Import and Export Fair Complex in Guangzhou, once again received overwhelming industry acclaim. Running concurrently with the Guangzhou International Lighting Exhibition, the show hosted 185 exhibitors and welcomed 156,898 visitors from 134 countries and regions, representing an 8 percent increase from last year.

Ms Lucia Wong, Deputy General Manager of Messe Frankfurt (Shanghai) Co Ltd, commented: “The show concluded with resounding success. I would like to express my heartfelt thanks to all the industry players for their support over the past 14 years. GEBT strives to keep abreast with the continuously evolving market when staging the latest building electrical, intelligent building and smart home solutions. The fair attendees were rewarded with exceptional opportunities to expand their market reach. A series of interactive forums and seminars delivered business insights and fostered mutual exchanges of expertise. This reaffirms the fair’s significance as a must-attend event in Southern China to tap into profitable opportunities.”

Unrelenting innovation fulfils sourcing demands

In response to the changing landscape of the industry, GEBT facilitates the development of international standards and enhances communication and integration among different systems. The show gathers notable intelligent building and smart home organisations to unveil a collection of exciting new technologies.

Founded over 10 years ago, zigbee alliance focuses on developing low-power, low data rate wireless standards for smart homes. It is the fifth time that zigbee alliance has organised a seminar at GEBT. Dr Wilma Su, Chair, zigbee Member Group China, expressed: “A lot of smart home manufacturers have adopted zigbee technology. Most of them are the target clients of upstream industries. The show drew interest from a considerable number of professional visitors from various disciplines, including but not limited to product development, marketing and distribution. GEBT has become a part of our annual budget plan.”

Being a sixth-time exhibitor, EnOcean Alliance specialises in intelligent building, smart home, wireless sensors and switches. Mr Graham Martin, Chairman & CEO of the EnOcean Alliance acknowledged the importance of the show: “This year, we introduced a new concept called ‘cognitive buildings’, also known as ‘self-learning buildings’. GEBT is a great trade show in which we have participated for the past six years. This year the visitor flow was once again very satisfying. The fair is important to the smart home, lighting and commercial building industry. I believe sensors and cloud solutions will play an important role in the future.”

The newest technologies on display were up to par with buyers’ sourcing needs. Mr Allen Lai, Director, R&D Division of Linkcom Manufacturing Co Ltd, praised the product breadth. “We look for local business partners. The event reflected the market trends by presenting a wide variety of products. GEBT covers a full spectrum of exhibits, which offered more than I expected.”



Photo: © Messe Frankfurt (HK) Ltd

Mr Gaurav Trigunayak, Assistant General Manager, Havells India Ltd visited the show for the 10th time. “I met more than 10 potential suppliers and above all the fair was very informative. The advanced technologies presented here divulged an array of forecasts for the industry. As the smart concept is becoming more prevalent in India, I come to China once every three months to keep track of upcoming trends and I will definitely be returning to GEBT next year.”

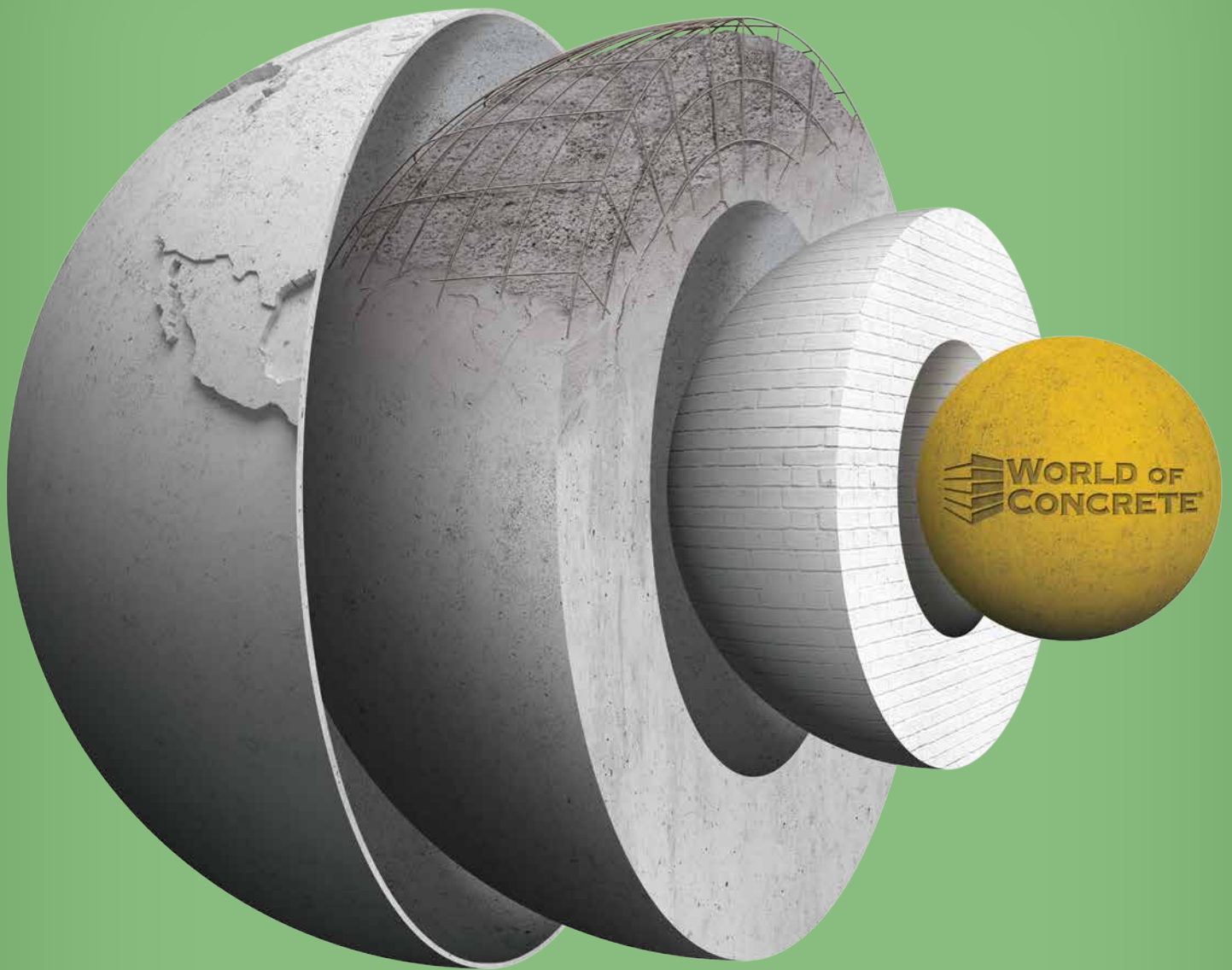
Concurrent events facilitate exchange of market intelligence

Hot topics of the concurrent events included overseas intelligent building and smart home standards, smart home development, smart hotel technologies, intelligent real estate technologies, smart city and smart community among others. The seminars and conferences were highly regarded for their added value as a learning and networking platform.

The Intelligent Engineering Branch of China Exploration and Design Association co-organised “Summit on Innovative Intelligent Building Technology Driven by Smart Cities 2017”. Ms Xiao Jianping, SAC/TC426 Commissioner of the association said: “GEBT is an all-inclusive fair. Smart city covers different dimensions of the industry. I witness the rapid development of intelligent building. The exhibition provided eye-opening experiences to industry professionals by presenting core competencies, national standards as well as research and development. I look forward to future editions of GEBT.”

Mr Liang Jujun, General Manager of Shenzhen Beauty to Intelligent Technology Co Ltd attended “China Intelligent Green Community Summit 2017” to research the direction of development and the latest products. He said: “The seminar was well-organised and focused on the idea of smart community. The future development of the industry, I believe, will lie in the interaction between audio and artificial intelligence. Openness is essential for industry growth.”

The Guangzhou Electrical Building Technology show, along with the concurrently held Guangzhou International Lighting Exhibition, is headed by the biennial Light + Building event. The next edition of Light + Building will take place from 18-23 March 2018 in Frankfurt, Germany. **For more information, visit <http://guangzhou-electrical-building-technology.hk.messefrankfurt.com>.**



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Benoy confirmed for Manchester Airport's Terminal 2 transformation

London, UK – Benoy is proud to confirm its appointment to the £1bn expansion of Manchester Airport's Terminal 2. Benoy's Team will be delivering the Interior Concept Design for the International Departure Lounge for the scheme which has been described as the biggest single construction project to take place in Greater Manchester.

"Terminal 2 at Manchester Airport is an exciting addition to our Aviation portfolio and we are honoured to be working alongside an incredibly talented team to design a new future for this global gateway in the North," said Anna Manning, Senior Architect at Benoy.

The International Departure Lounge of Terminal 2 will form one of the key features of the transformation works. Spanning two levels and 32,467 square metres, the space will feature new dining, retail and seating facilities.

An innovative double-storey green wall acts as the centrepiece of the space and is surrounded by bespoke seating, a children's playground and an expansive 'Market' with dining, restaurants, bars and retail offers.

Introducing a symbol of The North of England's industrious past and present, the bee, hexagonal honeycomb patterns have been applied to the glass ceiling and feature wall designs.

"Bringing a sense of place is incredibly important in airport design; we want passengers to feel as though they are in Manchester, as opposed to any airport in the world," said David Coyne, Executive Director at Benoy.

The completion of the Terminal 2 redevelopment is targeted for 2017, with significant changes to be noticeable to the public from as early as 2019.



Manchester Airport's Terminal 2 expansion. Rendering: © Benoy

Designs for Ourense Intermodal Station in Spain revealed



Image: © Foster + Partners

London, UK – Designs for the refurbishment and extension of the Ourense FFCC Station in Galicia, Spain, by Foster + Partners and Juan Cabanelas have been unveiled. The integrated design brings together high-speed rail and bus stations in a major urban intervention, which will open pedestrian links between the districts on either side of the tracks, and create a vibrant new public plaza for the city.

Capitalising on the practice's extensive experience in designing spaces for travel combined with pivotal urban interventions, the project represents a unique opportunity for Ourense. It will create key infrastructure for the future development of the city, while also providing it a new social focus.

The existing railway line is being upgraded to accommodate high speed rail links in the region, and the design of the new station caters for the increased passenger numbers while creating a framework for a new transport interchange. It includes a direct



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connection with the adjacent bus terminal, a new urban square in front of the station, and a pedestrian walkway and new public park over the tracks.

Creating a distinctive addition to the current station, the design is an ensemble of concrete plates on slender columns that provide shelter from Ourense's abundant rain and high temperatures in the summer. The concrete matches the colour of the existing station's granite, with the roofs designed as a modular system requiring minimal maintenance while also allowing for future growth. The entrance canopy defines a new portico, with cafes and shops animating the front façade. The station front spills onto a new urban square – a new meeting place for the city – that contains a water feature inspired by Ourense's famous hot water springs. The proposed bus station – which is outside the remit of the Foster + Partners' design scheme – will be relocated closer to the western edge of the train station, and there will be a new underground car park, and pedestrian walkway over the tracks to the east.

The internal lobby has been reconfigured to create a light-filled, triple-height space that provides a sense of calm within. The historic frescoes on the upper reaches of the walls have been retained and restored. Movement for passengers has been simplified to create an intuitive path through the station, with clear visual connections from the check-in stations to the trains. There is a direct internal connection to the bus station, providing easy links to the city centre and the surrounding areas.

Salt – a 3,700 square metres creative industries office block in Amsterdam designed by MVRDV breaks ground

Amsterdam, The Netherlands – On 29 June 2017 in Amsterdam, the ground breaking ceremony took place marking the beginning of construction for Salt – a 3,700 square metres office building offering flexible workspace in a prime harbour location part of Amsterdam's port redevelopment of Minervahaven.

Salt has a distinct concrete façade permeated with randomly placed windows. Salt is five levels high and a 30 metres x 30 metres x 20 metres cube-shaped building with distinct concrete frames stacked on top of each other. The concrete frames house a variety of different windows permeating the façade to keep the individuality of each 5m x 4m unit. Windows are arranged in a random order so that the buildings' distinct glass and concrete façade offers a different view depending on what side it is approached from.

"The area around Minervahaven still has an industrial feel to it due to its scale which is different from older harbour areas that have been transformed in the past. So no bricks here but concrete as a base for the new volumes. Our design reflects this industrial heritage, by creating concrete loft-like spaces using exposed and raw materials, but also by opening up the façade to great views of the harbour," said Jacob van Rijs, co-founder MVRDV.

All of the building's flexible loft-style working spaces are offered as rental spaces that can either consist of a whole floor or divided into smaller units. A private roof garden introduces a social gathering space at the south facade of the building while the full height lobby space with its grand cascading stair, connects the various levels vertically.

MVRDV was commissioned to design Salt by NIC Building Ambitions and will work together with: Firmus Vastgoed, Bulters & Bulters, Barten Groep, Ikaabee (structural engineers), Denedd (MEP engineer) and Hamel Regeltechniek (MEP advisor). The project completion date is set for January 2018.



Rendering: © MVRDV

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 A graphic featuring a close-up of a computer keyboard. A prominent blue key with the word "NEWS" in white capital letters is highlighted. The background shows other keys in a dark, slightly blurred setting.



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The **fourth edition of the International Skyrise Greenery Conference (ISGC)** continues to deepen the conversation of skyrise greenery. It will focus on the topics of resilience, new levels of greening and integrating social needs into urban infrastructure. The conference also offers an open platform to draw lessons from the challenges nature presents – shaping intents, outcomes and even the bottom line of greening projects. Scheduled for **9 & 10 November** at the Singapore EXPO Convention and Exhibition Centre, ISGC 2017 is the key skyrise greenery conference that you do not want to miss!

ISGC 2017 will be held alongside **GreenUrbanScape Asia 2017**, an international exhibition on landscape, leisure, greenery design, construction and technology, to be held on **9 – 11 November 2017**.

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Goettsch Partners wins design competition for 400-metre Greenland Optics Valley Center

Chicago, Illinois, USA – Chicago-based architecture firm Goettsch Partners (GP) recently won the design competition for the new Optics Valley Center complex, located in Wuhan, China. Developed by Greenland Group and totaling 315,000 square metres across three buildings, the project features a 400-metre-tall office tower, designed to symbolise the future vision of Wuhan as the perfect balance between modern development and the environment. The new landmark tower is a fluid form combining rounded corners with a graceful taper that, together, aid in reducing wind pressures on the structure. A rhythmic pattern of exterior shades wraps the building while stretching and compressing to further articulate the tower base and crown. The use of color in the façade further reinforces the “digital” rhythm and provides a subtle reference to the local technology culture.

“We are honoured to be selected to design this new icon for the expanding city of Wuhan,” said Paul De Santis, LEED AP, principal and senior project designer at GP. “It will distinguish the Optics Valley along the skyline and proudly expand the rich history of education and innovation for which Wuhan is famous,” he added.

The master plan for the new Optics Valley is ambitious in both scale and vision, establishing a new world-class downtown to the southeast of Wuhan. At the centre of the new district are two main parcels, which are intentionally allocated to host a mix of commercial functions. More importantly, these parcels will house the signature 400-metre landmark tower. At this height, unobstructed views will be unparalleled to the neighbouring mountain ranges, historic city centre and vast network of lakes and rivers that make Wuhan a prominent destination.

At the heart of the new district is a vast and meandering green belt that will function as the “spine” for the entire development. This large public amenity will connect the vast network of programmatic functions lining its edges, while ensuring that abundant natural light and generous parkland will be available for all structures.

“This project represents a continuation of our long relationship with Greenland,” said Travis Soberg, AIA, LEED AP, principal and director of sustainable design at GP. “Upholding Greenland’s philosophy to ‘create better life,’ the project addresses a number of sustainable initiatives in targeting LEED Gold certification,” added Travis.

Integral to the environmental vision for the area, two new subway lines will have direct access to the parcels. Extending from the existing network, the Optics Valley will be a closely tied development. The new commuter node will become the epicentre of activity and ensure immediate integration into the broader city.

The project is currently in schematic design and is scheduled to open in 2022.



Rendering: © Goettsch Partners

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Society Of Interior Designers Singapore (SIDS) celebrates World Interiors Day 2017 with a sharing session with reputed industry icons and the first “No Free Design” workshop to raise awareness against free pitches and free design services

Singapore – The Society of Interior Designers Singapore (SIDS) celebrated the second edition of World Interiors Day (WID) on 27 May 2017 with a special seminar, themed “Interior Design for Generations”. The objective of this is to tap into the comprehensive knowledge needed to foster a greater connection between the built environment, its occupants and time.

With the myriad of new tech disruptions and volatile market forces, the Interiors profession is increasingly facing the challenge of designing liveable spaces that serve many different generations, while catering to issues of accessibility, sustainability and functionality.

Ms Shashi Caan, Past President of the International Federation of Interior Architects/Designers (IFI) and Mr Phillips Connor, the Senior Creative Director of Independent Design Consultants, the firm behind the design of the internationally-acclaimed brand – Zouk, shared their insights on current trends facing the industry and innovative approaches. These trends have stood the test of time through the various decades.

Ms Caan gave a stimulating talk on the future of design and architecture, elaborating on the proposed 4,000 ft long, arched skyscraper, named “Big Bend” – planned for Manhattan, New York – which is currently in the developmental phase. Mr Connor spoke of his vast design experience working with multiple award-winning entertainment icon – Zouk for the past three decades.

Attendees were treated to a visual recount of the design evolution from the time when Zouk first opened its doors in 1991 after moving from the original premises on Jiak Kim Road to its current location along Clarke Quay. He also shared Zouk’s unique design heritage and the spectacular opening of Zouk’s super night club in Kuala Lumpur.

“This WID event is part of SIDS’ active outreach efforts to engage the interior design community on issues that matter to them professionally and also the public at large,” said Mr Keat Ong, SIDS’ President. “We are committed to raise not just professional standards in the industry but also awareness of our role as designers and how we can help make our living



Special guests Ms Shashi Caan (First row, third from left) and Mr Phillips Connor (First row, fourth from left) pose with SIDS’ Mr Rajesh Shah (Second row, fifth from right) for a group picture during the No Free Design Forum. Photo: © SIDS

environment better for everyone now and in the future.”

In addition to the sharing session with Ms Caan and Mr Connor, attendees at the seminar, held at the National Design Center Auditorium, also had a lively workshop on the issue of “No Free Design”.

Many industry practitioners and design connoisseurs with a passion in architecture and interior design took to the mikes to air their views about the practice of free pitches and free designs often expected from both public and private sector organisations. The importance of IP (Intellectual Property) protection and the value of design was also discussed at great length.

The session, which drew several thought-provoking and at times controversial questions and/or statements from the audience – was put together by Mr Nicholas Merrow-Smith and Mr Hendra Sutedjo, both of whom are Honorary Advisors to SIDS.

The workshop/discussion was led by Mr Rajesh Shah, Honorary Advisor of SIDS and who is also SIDS’ current Executive Director.

Mr Rajesh said: “We are pleased to see so many industry professionals sharing their views frankly and passionately about issues facing the industry. Many of

them are against the idea of free pitches and free designs as this is a practice that encourages wastage and massive losses of productivity. We should let clients and consumers know that there is no such thing as “free design”. Very often, those who offer “free design” services have already incorporated the design costs into their overall packages. Giving away free design is akin to not valuing the work you do.”

Suggestions to rid the industry of “free” pitches and design services include setting enforceable guidelines on fair practices for design services and pitches, getting views on similar issues from global practitioners via a worldwide survey, and coming up with IP protection for design concepts presented.

Mr Rajesh added: “The local design industry needs reform as many man-hours are currently wasted in areas such as pitching for new projects. For example, if only one proposal is accepted out of ten submitted pitches, it would mean that the nine other pitches have gone to waste. These man-hours could have been used more productively to produce uniquely creative designs; rather than resorting to cookie-cutter solutions. In the challenging economic climate that we currently face, every minute is paramount.”

Khaled Bushnaq of Emirates Green Building Council appointed Regional Chair of World Green Building Council's MENA Regional Network

Dubai, UAE – Khaled Bushnaq of Emirates Green Building Council (EmiratesGBC), an independent forum aimed at conserving the environment by strengthening and promoting green building practices, has been appointed Regional Chair of the Middle East and North Africa (MENA) Regional Network – a group of Green Building Councils working to advance green buildings within the region.

Bushnaq has been appointed for his proven leadership in the green building movement and dedication to improving the sustainability of buildings, both in the UAE and at the regional level.

Terri Wills, CEO of the World Green Building Council, said: "Whilst climate change is a global challenge, the solutions to it are often local and regional. Championing green building at these levels through our regional networks is therefore essential in order to deliver on our mission of green buildings for everyone, everywhere. Khaled has been a true champion of sustainability across MENA, and his leadership as Chair will help to strengthen the network of Green Buildings Councils in the region."

Saeed Al Abbar, Chairman of Emirates Green Building Council, said: "The appointment of Khaled as the Regional Chair for the MENA Network by the World Green Building Council, is a strong statement on his dedication to promoting sustainable built environments in the region. At EmiratesGBC, we congratulate Khaled on this recognition, which will further drive our work in promoting green building best practices. EmiratesGBC has been at the forefront in driving transformational change in sustainable buildings, and we will continue to work with our stakeholders in promoting a green building culture across the MENA region, which today focuses on energy diversification and efficiency and sustainability as important growth drivers."

Khaled Bushnaq said: "It is my honour to have been chosen as the Regional Chair and I thank World Green Building Council and Emirates Green Building Council for this recognition. The MENA region has tremendous potential to implement green building best practices, and one of the important remits of the MENA Network is to facilitate greater collaboration and partnership to promote sustainable built environments. The path-breaking achievements by EmiratesGBC in this regard will serve as a benchmark for the region."



Khaled Bushnaq. Photo: © Emirates Green Building Council

The MENA Regional Network comprises nine Green Building Councils based in the Middle East and North Africa Region: Bahrain, Egypt, UAE, Jordan, Kuwait, Lebanon, Morocco, and Palestine, amongst others. MENA is currently home to over 350 million people, and its population growth has been characterised by rapid urbanisation. This is projected to continue, with urban population expected to double from 2010 to 2050, from 200 million to nearly 400 million. This means a large demand for buildings, complicated by the challenges of conflict-induced displacement of people.

Yet the MENA region is also set to be critical for the growth of green building globally over the next few years. Green Building Councils in WorldGBC's MENA Regional Network are responding to the challenges and opportunities on the ground, ensuring that the region's buildings ensure a high quality of life for people, minimise negative impacts on the environment, and maximise economic benefits.

IDCS launches Design Excellence Awards 2017 with 12 new categories

Singapore – The 2017 edition of the Interior Design Confederation Singapore's (IDCS) Design Excellence Awards (DEA), one of the region's most anticipated interior design competitions, is now open for entries.

The DEA sets to recognise the best of commercial, residential and public design in Singapore and Asia Pacific, endorsing and celebrating the achievements of practitioners and students alike. With DEA, IDCS seeks to champion design excellence, as well as elevate and promote the quality and standards of interior design.

The 5th cycle of the Awards is marked by the introduction of 12 new categories across the two competition tracks: Interior Design Excellence Awards (IDEA) for interior designers and firms; as well as Spatial Design Awards (SPADE) for students. Notable new categories include Exhibition Design, Sustainable Design, Environmental Design for both tracks; and IDEA Project of the Year, Emerging ID Firm of the Year, Top 3 ID Firm of the Year and AkzoNobel Colour Award, which are exclusive to IDEA.

With a wider selection of categories, the DEA 2017 aims to be a more inclusive platform to honour the interior design industry with the highest accolades. The Award is considered a seal of excellence and proof of outstanding achievements in the design field, acknowledged by a professional jury panel. Benefits for the DEA 2017 participants include regional publicity and major exposure, free 1-year IDCS membership, a ticket to the prestigious DEA Gala Dinner for the first 300 entries and a feature promoted by AkzoNobel. "This year, the Design Excellence Awards would like to call on practitioners and students to observe 'The Sense of Place' in their entries," said Mr. Tung Ching Yew, DEA Chair, IDCS. "A 'Space' will remain as something abstract with no value or social connections. A 'Place' on the contrary embraces human experiences and create emotional connections with people."

Entries to the Design Excellence Awards 2017 are now open and the submission deadline is 31 October 2017. **For more information, visit www.idcs.sg.**



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www.mcxpocomfort-asia.com

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IGBC 2017

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Email: igbc@reedexpo.com.sg
Website: www.bca.gov.sg/events/
sgbw/en.html

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Singapore EXPO Hall 3 & MAX Atria
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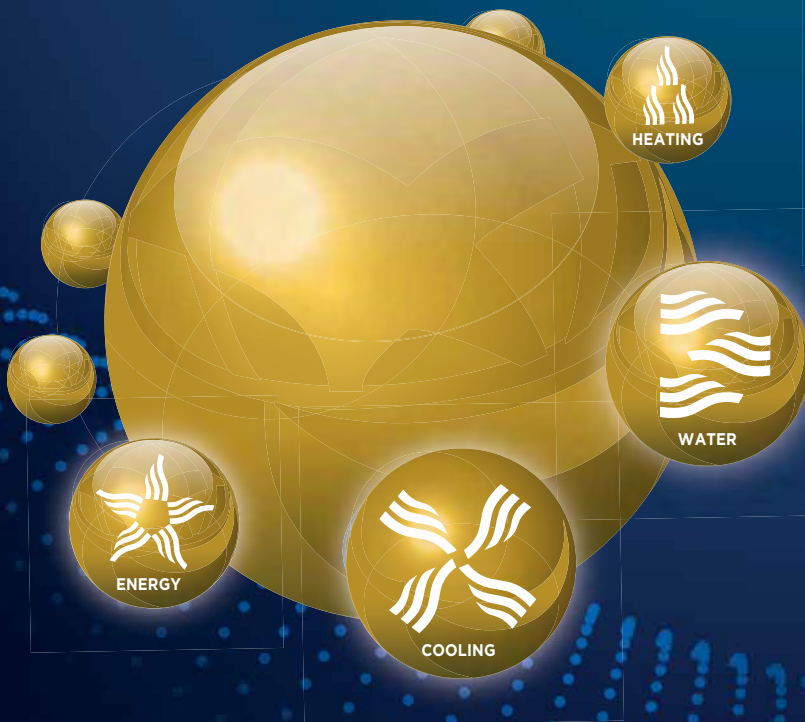
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Bamboo House

Bamboo House, designed by **Vo Trong Nghia Architects** in Ho Chi Minh City, is a prototypical housing design that targets to provide green space within high-density neighbourhood.



Planter boxes on the Bamboo House. Photo: © Hiroyuki Oki



Exterior view of the Bamboo House. Photo: © Hiroyuki Oki

Under the rapid urbanisation, cities in Vietnam have diverged far from their origins of being low density tropical green spaces. Newly developed urban areas are losing their connection with nature.

“Bamboo House” is a small residential project in a narrow alley called “Hem” in Ho-Chi-Minh City. This project aims at developing the concept of “House for Trees”, a series of a prototypical housing design that targets to provide green space within high density neighbourhood.

In Vietnam, there are countless narrow alleys called “Hem”. They are 2-3 metres wide, with similar, narrow, and long buildings running along both its sides, resembling a ravine. The lanes are lined with imposing forms, and their cold facades give the street a dense and weighty aura. The windows are mostly kept closed to ensure their privacy.

With this in mind, Bamboo House has been designed to create a comfortable living space in spite of the limited area available. The site is dense and narrow, with only two sides to allow natural ventilation and light into the building. The front facade is playful with planter boxes located at random points, creating interest and a more welcoming entrance.

The client’s love for bamboo and its high relevance to Asian context resulted in a facade covered with bamboo plantations. In addition, the planter boxes that pop out from the front facade form deep eaves that allow the windows to be kept open even during the rainy season.

Towards the back end of the house, the design incorporates a semi-open staircase which is enveloped by creepers, allowing

the branches and the leaves to function as a buffer layer that cut out direct flow of sunlight. Moreover, it also creates a comfortable distance between the neighborhoods. This is evidently visible in the bedroom that is close to the open bathroom and staircase.

The front and the back facade are mostly open, wrapped with greenery, allowing cool wind to pass through the house. As a result, the use of air-con in the house has considerably reduced.

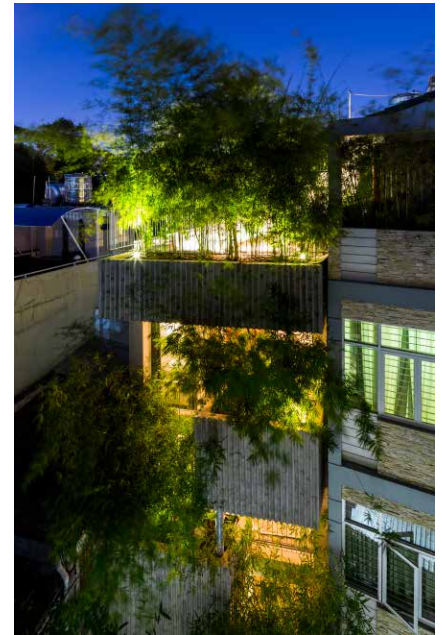
In addition to growing bamboo on the front facade, the concrete formwork is also made by using bamboo to allow a consistent design language. The bamboo texture also helps to reduce the intense and heavy appearance of conventional concrete wall and thus, improves the overall aesthetic quality of the house.

The client expressed: "I wake up to the sound of birds chirruping every morning, as the plantations attract them. My home feels like a jungle in the middle of a bustling city. The green spaces also keeps the house cool at all times, reducing the usage of air conditioner. The space also feels larger because of the large openings on two sides."

This project provides a solution to create a comfortable and open living space that is surrounded by green in a highly dense and small site. It not only meets the functional and aesthetic needs but also connects the people with one another and more importantly, with nature.



Roof on top of the Bamboo House.
Photo: © Hiroyuki Oki



Night view of the Bamboo House.
Photo: © Hiroyuki Oki



Living room in the Bamboo House. Photo: © Hiroyuki Oki



Bathroom in the Bamboo House. Photo: © Hiroyuki Oki



Bedroom in the Bamboo House. Photo: © Hiroyuki Oki

PROJECT DATA

Project: Bamboo House
Location: District 1, Ho Chi Minh, Vietnam
Architect: VTN Architects (Vo Trong Nghia Architects)
Principal Architect: Vo Trong Nghia
Associate Architect: Kuniko Onishi
Contractor: Wind And Water House JSC
Program: Private house
Site area: 60.72 square metres
Footprint: 60.72 square metres
GFA: 217 square metres
Status: Built in July 2016
Photographs: © Hiroyuki Oki



South Beach in Singapore - A sustainable development



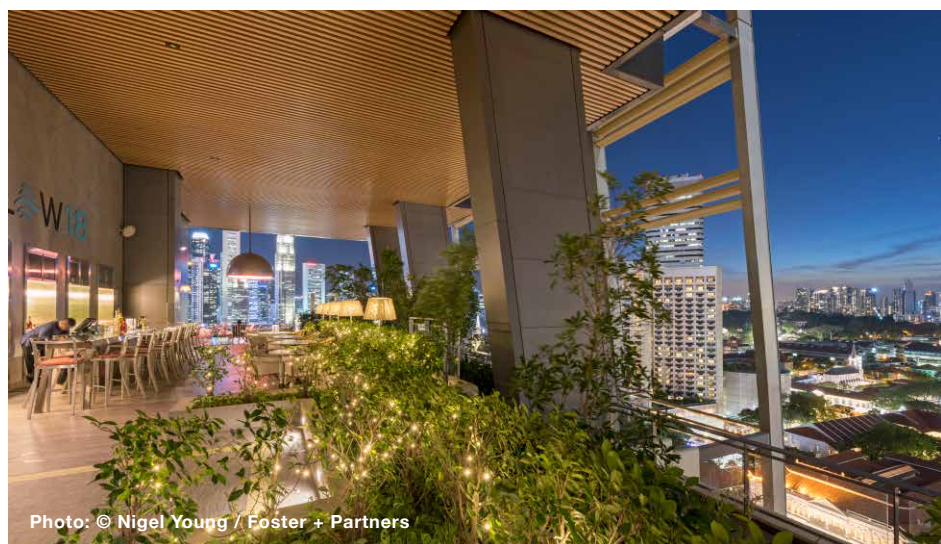
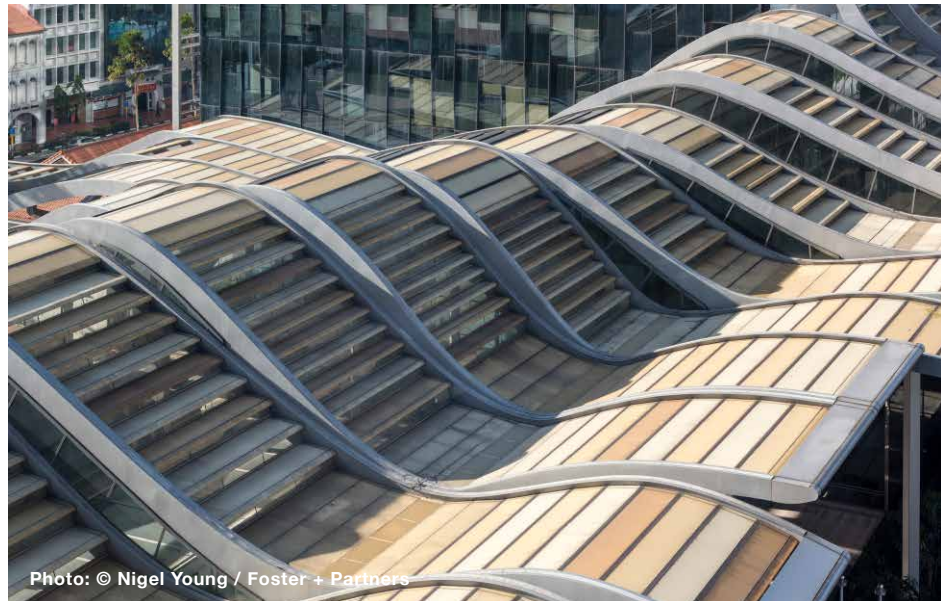
Photo: © Nigel Young / Foster + Partners



The South Beach development, designed by Foster + Partners, covers an entire city block between the Marina and Civic District in the heart of downtown Singapore. Combining new construction with the restoration of existing buildings, the mixed-use, energy efficient new urban quarter brings together places to live and work with shops, cafes, restaurants, a hotel and public spaces. A wide landscaped pedestrian avenue – a green spine – weaves through the site and is protected by a large canopy, which shelters the light-filled public spaces beneath from the extremes of the tropical climate.

Two interconnected pairs of towers stand towards the north and south of the site, connected by the green spine – the south towers are divided between a hotel and apartments, while the north towers contain offices. Their facades extend into a gentle arc, which continues the language of the undulating canopy below – they are angled to capture prevailing winds and direct air flow to cool the ground level spaces. Reinterpreting the Singaporean ideal of the ‘city in a garden’ in a high-rise form, the towers are intersected by densely planted sky gardens with impressive views of the city and Central Business District. At a lower level, the treatment of the perimeter buildings is sensitive to the scale of the nineteenth century Raffles Hotel on the opposite side of the street – the four adjacent former military buildings along Beach Road have been carefully restored and are interspersed with mature trees, which have been conserved on the site.

The canopy’s ribbons of steel and aluminium louvres flex above the primary circulation routes and public spaces, and dip near the edges to meet the Beach Road buildings. The ribbons are supported by slender pillars and rise up the exposed east and west elevations of the towers to form a series of vertical louvres, which are carefully angled to encourage natural ventilation. The entrance to the canopy rises up to form an arc, which acts as a wind scoop, drawing the prevailing breezes through the space and promoting natural ventilation. Beneath the canopy are a series of smaller buildings and flexible spaces for functions and events. Combining rainwater harvesting with a range of environmental strategies, the development aims to achieve the Green Mark ‘Platinum’ Rating. Creating a highly permeable pedestrian public realm, vehicle access to underground parking and drop off points are placed around the edges of the site, and public transport is integrated via a direct ‘green’ link to Esplanade MRT station.





Paya Lebar Quarter Office Towers 1 and 2. Photo: © Paya Lebar Quarter by Lendlease

Paya Lebar Quarter achieves highest rating for new Green Mark standards

Paya Lebar Quarter by Lendlease (PLQ) has become the first mixed-use development in Singapore to achieve a Platinum rating under the Building and Construction Authority's (BCA) latest version of its Green Mark scheme for new non-residential buildings, Green Mark for Non-Residential Buildings NRB: 2015 (GM NRB: 2015).

Currently benchmarked as the highest sustainability standard for non-residential buildings in Singapore, the GM NRB: 2015 Platinum has been awarded to Paya Lebar Quarter's three office towers and retail mall. The development's residential component, Park Place Residences at PLQ has also been awarded the BCA Green Mark Platinum for Residential Buildings.

GM NRB: 2015 addresses sustainability in a balanced and holistic manner which rewards overall performance of buildings that are climate responsive, energy effective, resource efficient, smarter and have healthier indoor environments.



Paya Lebar Quarter Office Tower 3. Photo: © Paya Lebar Quarter by Lendlease



Paya Lebar Quarter Retail Mall. Photo: © Paya Lebar Quarter by Lendlease

The assessment criteria also reflects a strong recognition of sustainable design features that boost the health and wellbeing of building occupants.

Paya Lebar Quarter's sustainability vision focuses on creating an active, green and engaged environment by putting people at the centre of its design. The development offers more than 100,000 square feet of green public spaces, seamlessly linked with the Park Connector Network. Its public space design which fuses retail, entertainment and leisure experiences allows the community to engage in a diverse range of activities and the vast, open spaces where they can relax and mingle makes Paya Lebar Quarter a vibrant, evolving place.



Paya Lebar Quarter Public Realm. Photo: © Paya Lebar Quarter by Lendlease



Paya Lebar Quarter Alfresco promenade. Photo: © Paya Lebar Quarter by Lendlease

Mr Richard Paine, Managing Director of Paya Lebar Quarter by Lendlease, commented: "Lendlease places people at the heart of our vision to create the best places. We are deeply honoured and encouraged by this award, recognising our holistic approach towards sustainability which is aligned to BCA's Green Mark evolution placing greater focus on the health and wellbeing of building occupants, energy effectiveness, climatically contextual design, smart buildings and resource use. We will continue to create inclusive urban living spaces that redefine the way people work, live and lead truly connected lives."

Paya Lebar Quarter recognises that an efficient performing building will also result in operational savings enhancing property valuation on top of conserving the environment. As such, the precinct has incorporated various features to efficiently use resources throughout the building's life cycle.

With the implementation of high efficiency water fittings along with monitoring and leak detection systems, the development expects to save over 40 percent of water annually during operations. The development will also achieve over 30 percent in energy savings, in comparison to a reference building designed for code compliance. The energy savings stem from a variety of design solutions, from high performance facades to the use of Light Emitting Diodes (LED) and more efficient air-conditioning systems.

Future retail and office tenants will also benefit from Lendlease's Green Lease programme, which encourages tenants to adopt sustainable fittings, equipment and mindsets for operational savings and providing a healthier environment for their employees in their tenancies.

The project's focus on health and wellbeing on top of energy efficiency is also evident from other progressive initiatives throughout Paya Lebar Quarter. The lush landscaping resulted in a precinct-wide Green Plot Ratio of 6.93 and the precinct wide tree-positive strategy means there will be three times more trees as compared to the original site. Paya Lebar Quarter will also introduce some of the best active mobility provisions in Singapore, including end-of-trip facilities for office and retail tenants, ample bicycle parking spaces, and almost one kilometre of dedicated mobility routes seamlessly connected to the wider Park Connector Network.

Paya Lebar Quarter's Green Mark achievements are the latest in a series of sustainability milestones, testament to Lendlease's commitment to creating liveable cities that positively contribute to the social, economic and environmental fabrics across urban landscapes. In addition to Green Mark, Paya Lebar Quarter is also the first private mixed-use development to be designed and certified under the Public Utilities Board (PUB)'s Active, Beautiful and Clean Waters (ABC Waters) programme through the incorporation of water sensitive urban design principles.



Paya Lebar Quarter Mobility Paths. Photo: © Paya Lebar Quarter by Lendlease



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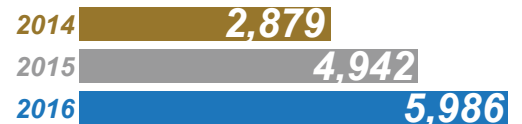
Fast Facts

- Myanmar's construction sector registered a 7.2% compound annual growth rate from 2011 to 2015, and is set to carry a 10.37% annual growth rate from 2016 to 2020.

- Myanmar construction industry's value stood at US\$8.2 billion in 2015, and is anticipated to value US\$13.5 billion in 2020.

- FDI in 2015-16 real estate sector raked in roughly \$345 million worth of foreign investment flowed into the real estate market in Myanmar through the end of January 2016 with nearly \$100 million of that sum invested in January alone.

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MahaNakhon

MahaNakhon in Bangkok is a metropolitan skyscraper which dissolves the mute shaft of the generic and reconnects the tower to the city.



MahaNakhon by Buro Ole Scheeren Group through HLS. Photo courtesy of PACE



MahaNakhon by Buro Ole Scheeren Group through HLS. Photo courtesy of PACE

MahaNakhon is a new 77-storey high-rise complex located in Bangkok's Central Business District, with a direct link to the Chongnonsi BTS Skytrain station. The development of more than 150,000 square metres will be comprised of a landscaped public plaza; a multi-level retail centre with restaurants, cafes, and 24-hour marketplace; 200 serviced apartments operated by the Ritz-Carlton; the Bangkok Edition, a 150 room boutique hotel in collaboration with Marriot International and Ian Schrager; and a rooftop Sky Bar and restaurant. MahaNakhon will be the most ambitious complex of contemporary architecture and urbanism in Thailand and the tallest building in Bangkok.

The design of MahaNakhon dismantles the typical tower and podium typology, creating a skyscraper that melds with the city by gradually 'dissolving' as it flows downward to meet the ground. A series of cascading indoor/outdoor terraces at the base of the tower accommodates retail and entertainment facilities, evoking the shifting protrusions of a mountain landscape. An adjacent freestanding seven-storey building – the "Cube" with corresponding terraces creates an expansive outdoor atrium – forming a valley and network of social, dining, and leisure spaces that serve the residences and the public. MahaNakhon Square, at the front of the tower, is designed as a dynamic public plaza, a spot for planned and spontaneous cultural events, a landscaped retreat for the city's inhabitants, and a rare venue for cultural and social interaction.

MahaNakhon Tower has been carefully carved to introduce a three-dimensional ribbon of architectural pixels that coil up the tower's full height to reveal the inner life of the building. This generates a set of specific features – projecting glass skyboxes with sweeping views and generous indoor/outdoor spaces – uncommon to high-rise living, but well-suited to the tropical climate of Bangkok. The pixels have been designed to

maximize unobstructed panoramas and offers rare birds-eye views of the city and Chaophraya River. Residences located in the non-pixelated area of the tower enjoy a parallel innovation: double-height living spaces equipped with multiple bays of full-height bi-fold balcony windows – sections of facade that fold inwards and upwards – transforming living areas into indoor/outdoor environments. The top of the tower houses a three-floor Sky Bar and restaurant with double-height spaces and an outdoor rooftop bar with 360° views, floating 310 metres above the city.

PROJECT DATA

Project: MahaNakhon

Location: Bangkok, Thailand

Site: Narathwas Ratchanakharin Road adjacent to Chongnonsi Sky Train Station

Client: PACE Development Co., Ltd.

Design Architect: Büro Ole Scheeren Group through HLS

Type: Mixed-use, High-rise

Scale: 150,000 square metres

Program:

Tower Residences 67,000 square metres, Residential Amenities 4,400 square metres, Hotel 16,600 square metres, Hotel Amenities 11,600 square metres, Retail 5,900 square metres, Sky Bar 3,500 square metres, MEP 5,200 square metres, Parking 10,400 square metres

Retail Cube: Retail 9,000 square metres, MEP 1,000 square metres, Parking 5,400 square metres; Offsite Parking 8,300 square metres

Status: Commission 2008/2012; Completion 2017



Photo: © Cyberview Sdn Bhd

Cyberjaya Community Recycling Collection Centre

The Cyberjaya Community Recycling Collection Centre, designed by **ATSA Architects** for Cyberview Sdn. Bhd., recently won the Silver A' Design Award for Sustainable Products, Projects and Green Design.

The A' International Design Award and Competition, based in Italy, had recently announced the Cyberjaya Community Recycling Collection Centre as the recipient of notable Silver A' Design Award for Sustainable Products, Projects and Green Design. The facility is a community recycling project commissioned by Cyberview Sdn. Bhd. as part of its continued development of Cyberjaya into a Smart City and Living Lab for innovations.

"When we set out to re-define our focus for Cyberjaya's transformation under the Cyberjaya Smart City Framework, we made sure that the necessary conditions were put in place to support the development and deployment of Smart City Solutions to improve our impact on the environment, our

infrastructure, economy as well as the social element of the city," said Dato' Faris Yahaya, Managing Director, Cyberview Sdn Bhd.

"And with the Natural Resources and Environment Ministry recently committing to amending environmental laws; ensuring sustainable development in line with Malaysia's 2050 National Transformation (TN50) goals, it is clear that environmental sustainability will remain a key area of concern for all Malaysians," added Dato' Faris.

"While we will continue to make strides in improving the liveability factor of Cyberjaya for our inhabitants, it is important to note that these sustainability initiatives including this facility will not only positively impact the lives of the city's



Photo: © Cyberview Sdn Bhd

inhabitants but also act as test-cases that can be adapted by other up-and-coming urban developments nationwide," added Dato' Faris.

"As designers and guardians of the built environment, it is our responsibility as architects to aim for buildings that minimise our impact on the environment such as through energy or resource efficiency. We are very honoured by the recognition accorded to us for our work on the Cyberjaya Community Recycling Collection Centre; which also happens to be our second sustainability focused project in Cyberjaya following the Green Building Index (GBI) Platinum rated Masjid Raja Haji Fi Sabilillah," said Ar. Azim Tan Sri A. Aziz, ATSA Architects.

Incentivising Sustainable Behaviour

With Malaysians recycling only five percent of the 30,000 tons of waste generated every day, there is a pressing need to rapidly improve our waste management practices as urban developments the likes of Cyberjaya continue to develop and grow. The Cyberjaya Community Recycling Collection Centre is operated by Alam Flora who reimburses Cyberjaya inhabitants for their separated domestic waste, most of which will be diverted to recycling centres instead of landfills. The centre also organises recycling scheme initiatives directly engaging businesses based in Cyberjaya.

Cyberjaya Community Recycling Collection Centre design inspiration

The Cyberjaya Community Recycling Collection Centre was designed to be a Green Certified Building and used various materials that are considered green or recyclable. It is a pilot project or a prototype concept that can be replicated elsewhere.

The design calls for an area of approximately 1,200 square feet (111 square metres) to include main entrance, foyer and lobby, seating area, receiving centre, prayer room, restroom and waste segregation area and storage area. A playground area was also included within the built up area. A mezzanine floor is added to accommodate an area for used clothes to be sold.

The building is designed to face north-south with minimum exposure to east and west sun. The roof is designed to tilt southeast for maximum exposure to the sun for future installation of solar panels. A signature free-standing wall is incorporated into the building to act as a focal point to identify

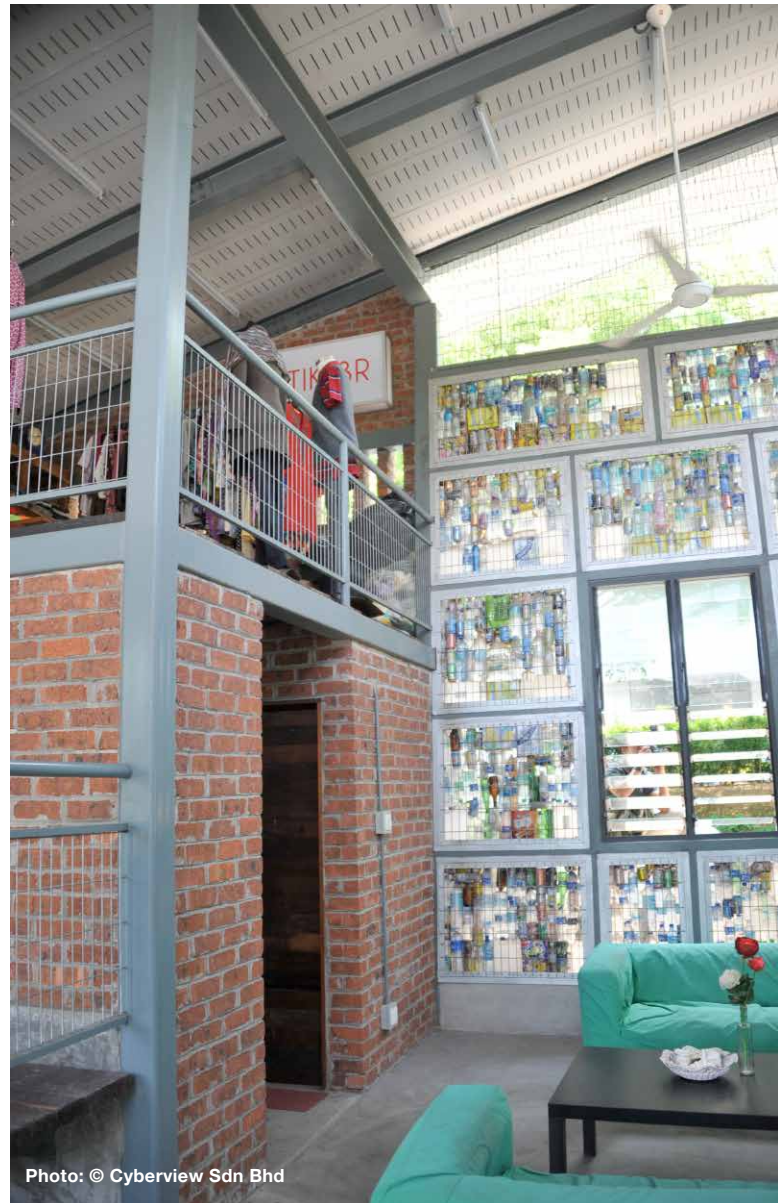


Photo: © Cyberview Sdn Bhd

the building from far. It is built using fly-ash concrete. A water harvesting equipment was also installed to collect water for water irrigation. The whole building is designed to be cooled using natural ventilation and fans.

The walls were designed to reflect the purpose of the building. The top of the walls is left open for natural ventilation, and the walls are made permeable using galvanised steel as a cage to hold recycled bottles, tins and bottles. The 'cage' is openable to allow for the replacement of the bottles, plastics and tins as we anticipate that due to exposure these materials will degrade over time. The floor boards of the mezzanine floors and staircase threads are repurposed from disused railway sleepers. The entire site is also paved with interlocking grass pavers and it is anticipated that in time, the grass will cover most of the driveway areas. This will reduce the heat generated from the pavement if it is made out of pre-mix. One of the features of the recycle centre is a drive-through bin, which allows the public to drop-off their separated recyclables after hours.



The first Forest City is under construction in China



Image: © Stefano Boeri Architetti



Image: © Stefano Boeri Architetti



Image: © Stefano Boeri Architetti



The Master Plan by **Stefano Boeri Architetti** for a new green city that fights air pollution is now under construction in China. The works on Liuzhou Forest City will begin by 2020.



Image: © Stefano Boeri Architetti

The first Chinese Forest City by Stefano Boeri Architetti is turning into reality. A city where offices, houses, hotels, hospitals and schools, are entirely covered by plants and trees.

Once completed, the new city will host 30,000 people, absorb almost 10,000 tons of CO₂ and 57 tons of pollutants per year and produce approximately 900 tons of oxygen.

Liuzhou Forest City will be built in the north of Liuzhou, in the mountain area of Guangxi, in the southern part of China; in an area that covers 175 hectares along the Liujiang river. The new green city, entirely wired, will be connected to Liuzhou through a fast rail line used by electric cars and will host various residential areas, commercial and recreational spaces, two schools and a hospital.

Liuzhou Forest City will have all the characteristics of an energy self-sufficient urban establishment: geothermal energy for interior air-conditioning and solar panels over the roofs for collecting renewable energy.

The great innovation of Stefano Boeri Architetti's project is the presence of plants and trees over every building, of all sizes and functions.

Liuzhou Forest City will host in total 40,000 trees and almost 1 million plants of over 100 species.

The diffusion of plants, not only in the parks and gardens or along the streets, but also over building facades, will allow the energy self-sufficient city to contribute to improve the air quality (absorbing both CO₂ and fine dust of 57 tons per year), to decrease the average air temperature, to create noise barriers and to improve the biodiversity of living species, generating the habitat for birds, insects and small animals that inhabit the Liuzhou territory.

Works on Forest City will begin by 2020 and will have a very short time. For the first time in China and in the world, an innovative urban settlement will combine the challenge for energy self-sufficiency and for the use of renewable energy with the challenge to increase biodiversity and to effectively reduce air pollution in urban areas – which is really critical for present-day China – thanks to the multiplication of vegetable and biological urban surfaces.

Right after the success of Vertical Forest in Milan – which is going to be replicated in many other parts of the world and in China in Nanjing, Shanghai and Shenzhen – with the Liuzhou Forest City project Stefano Boeri Architetti continues its researches for a new generation of architectures and urban environments that faces climate change, proposing new models for the future of our planet.

PROJECT DATA

Project: Liuzhou Forest City

Location: Liuzhou, China

Client: Liuzhou Municipality Urban Planning Bureau

Architects: Stefano Boeri Architetti Milan/Shanghai

Partners: Stefano Boeri, Yibo Xu

Project Leader: Pietro Chiodi

Team Architects: Julia Gocalek, Yinxin Bao, Shilong Tan with Giulia Chiatante

Cooperative Design Institute in China: Shanghai Tongyan Architectural and Planning Design Co. Ltd

Type: Forest City Planning

Area: 138.5 hectares

Images: © Stefano Boeri Architetti



Shanghai Tower - A sustainable premier global landmark

A new icon on the exciting Shanghai skyline, **the Gensler-designed**, 128-storey, 578,000-square-metre Shanghai Tower completes a trio of “super-tall” buildings in Shanghai’s Lujiazui financial district.



Photo: © Blackstation



Photo: © Blackstation

Currently ranked as the tallest building in Asia and the second tallest on the planet, the 632-metre tower is a sustainable premier global landmark, containing Class-A office space, retail, an exhibition centre, boutique hotel, museum, and cultural venues. The new tower takes inspiration from Shanghai’s traditional *shikumen* neighbourhoods, recast in high-density urban form. Its curved façade and spiraling shape symbolise the emergence of modern China as a global financial power, while setting new standards for performance. In addition to its beauty, the tower is a showcase for technologies that raise the bar for the next generation of super high-rise buildings. Gensler’s design team implemented three important strategies – the tower’s asymmetrical form, its tapering profile, and its rounded edges – to allow the building to withstand the typhoon-force winds common to Shanghai. Using wind tunnel tests, Gensler and structural engineer Thornton Tomasetti refined the tower’s form, which reduced building wind loads by 24 percent. The result is a more tapered structure that saved \$58 million in material costs. By emphasising public space and locating shops, restaurants, and urban amenities at the atrium levels, Shanghai Tower embodies a new way of inhabiting super-tall towers. These atrium levels, or “sky lobbies,” provide light-filled gardens that foster community and support daily life. The sky lobbies bring people together throughout the day in settings that recall the city’s historic landscaped courtyards. Shanghai Tower’s scale and complexity created so many “firsts” for China’s construction industry that more than 100 expert panels were assembled to scrutinize the design. Clay-based soil conditions of the Yangtze River Delta meant supporting the tower on 1,079 concrete-and-steel bore piles driven deep into the ground. To pour the 61,000-cubic-metre mat foundation



Photo: © Connie Zhou

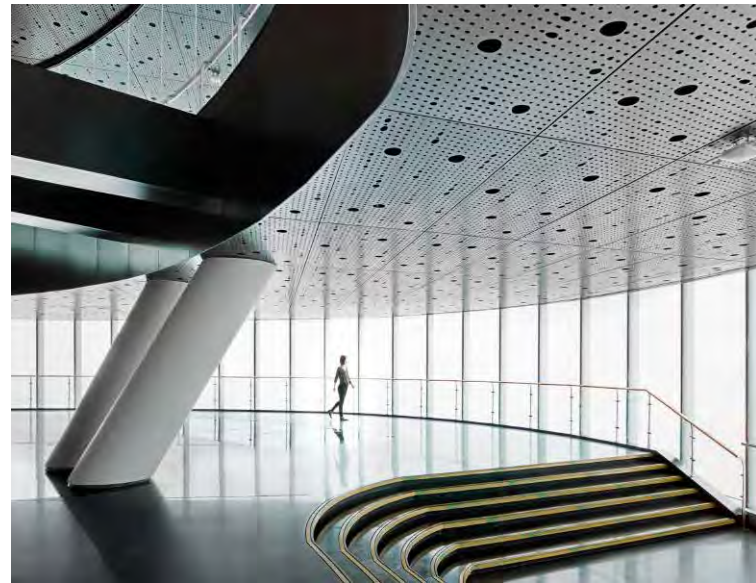


Photo: © Connie Zhou

slab, a fleet of trucks pumped concrete for 63 hours straight.

“The successful execution of a project of this scale and ambition is a testament to our commitment to collaboration across our firm, to assemble the right talent, and to operate as a unified global team,” said Peter Weingarten, Regional Co-Managing Principal of Asia-Pacific, at Gensler. “Our project leadership on the ground, led by Xiaomei Lee, were able to successfully meet the challenge of delivering this distinguished addition to Shanghai, establishing a new bar for the design of sustainable mega-tall buildings, not only in Asia, but around the world,” he added.

Gensler’s design incorporates cutting-edge sustainability features, including a double-curtain wall façade, wind turbines, and a rainwater collection system at the building’s apex. A central aspect of the building’s sustainable design is the transparent second skin that wraps the entire building. This double-curtain wall façade provides atriums that insulate the building, and help reduce energy use for heating and cooling. Gensler’s design for Shanghai Tower’s rooftop leverages a state-of-the-art water collection system, which provides greywater for the building’s plumbing. Between the lower-level conference and retail areas and the top-floor observation deck, Shanghai Tower is divided into seven zones. Five have offices; two house a luxury hotel. Each section has a main floor with stores, restaurants, and open spaces – a plaza in the sky. More than a landmark, the mixed-use tower represents a new way of envisioning and creating vertical cities. The tower opened to the public in 2015 and remains the most sustainable super-tall building in the world.



Photo: © Connie Zhou

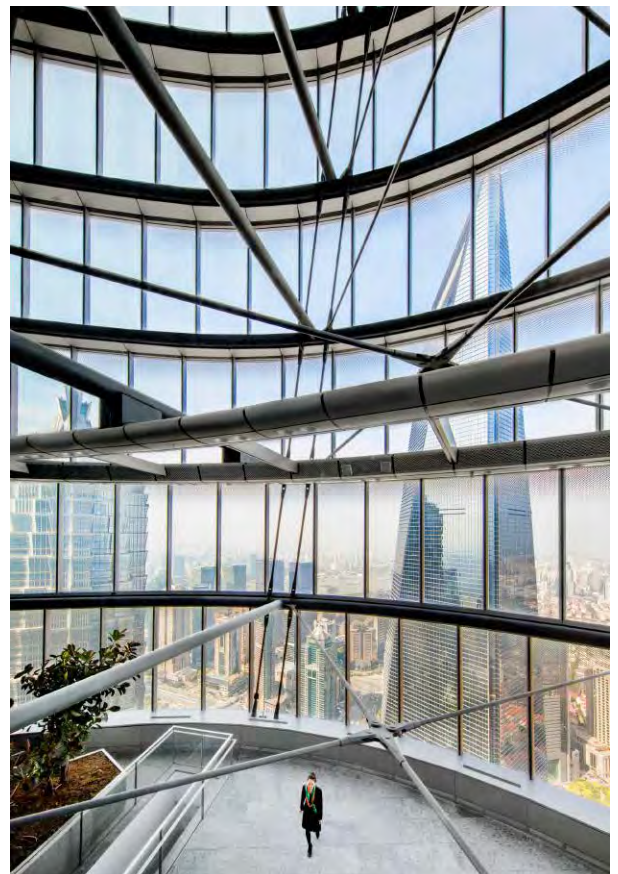


Photo: © Connie Zhou

Kuehne + Nagel Singapore Logistics Hub unveils new rooftop solar system

Kuehne + Nagel Singapore and Cleantech Solar have entered into 20-year solar energy partnership.

A newly installed rooftop solar system by Cleantech Solar is expected to deliver 20 percent of the electricity requirements for the Kuehne + Nagel Singapore Logistics Hub at Pioneer Crescent.

The 844.8 kWp solar system will generate over 1,000 MWh per annum, representing 11,700 tons of CO₂ to be saved across the 20 years partnership.

Laurent Simon, Managing Director of Kuehne + Nagel Singapore and Malaysia said: "Kuehne + Nagel has a clear goal to minimise environmental impact and the use of renewable energy is an integral part of our sustainability targets. Solar-as-a-service is the ideal extension to this logistics hub which was built according to highest environmental standards. As a service provider, Kuehne + Nagel is a solid partner in energy efficiency and sustainable logistics and is committed to aligning with the environmental goals of our customers."

Raju Shukla, Chairman of Cleantech Solar commented: "We are delighted with the commissioning of this outstanding project in Singapore. Not only is it a privilege to count Kuehne + Nagel as one of our new partners but the way the Kuehne + Nagel team made sure the building was "solar-ready" from the onset is exemplary and this has helped us deliver what we think is one of the fastest implementations for a solar project of this size in Singapore."

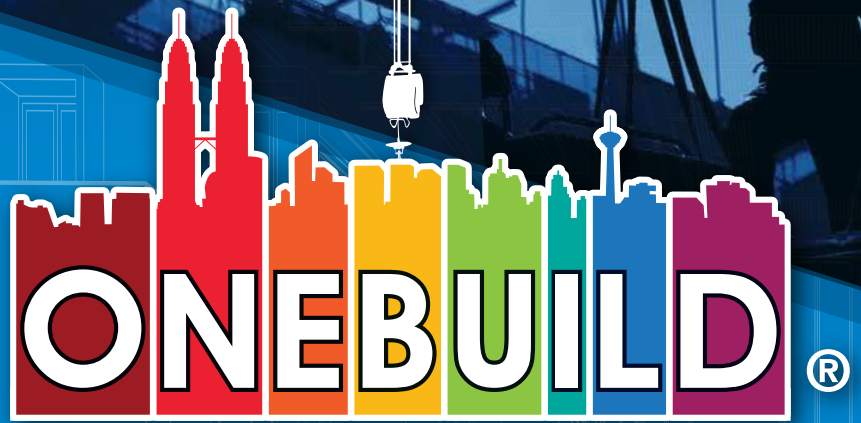
The Kuehne + Nagel Singapore Logistics Hub is BCA Green Mark Platinum and LEED GOLD certified. The 50,000 square metres built-to-suit facility has been in operation since January 2016, offering both standard warehousing services and a centre of excellence for high-tech, industrial, pharmaceutical and healthcare customers providing supply chain optimisation and value-chain transformation solutions.



Photo: © Cleantech Solar



Photo: © Cleantech Solar



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OBO Bettermann South East Asia Pte. Ltd.

Since the 3rd of January 2015, OBO Bettermann South East Asia's CEO, Mr. Conrad de Lange has set up the headquarters for the Southeast Asian market in Singapore. Complete with warehouse and logistic facilities at 18 Tampines Industrial Crescent, OBO Bettermann is ready to serve the market with industry experience and expertise of more than a century. Besides cable support systems, OBO Bettermann offer professional products in the following segments as well:

- Connection and Fastening System
- Transient and Lightning Protection System
- Fire Protection System
- Cable Routing System
- Device System
- Underfloor System

The Future of Cable Support Systems has begun

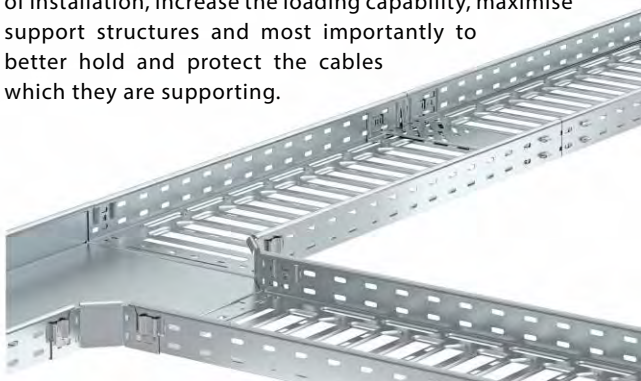
What is more than a simple piece of steel plate to carry cables going around from infrastructures like tunnels and bridges to buildings like hospitals and industrial plants? With the ever increasing demand for more services and complex network of pipes, cable supports and HVAC systems, the task has never been easy for consultants and mechanical and electrical engineers.

Skyscrapers, Green buildings and mission critical industrial plants all demand better and more reliable cable support systems with a tad more innovation and intelligence. Increasing labour cost calls for more productive methods of installation which in turn facilitates shorter project timeline.

OBO Bettermann from Germany, brings about a new generation of cable support system and accessories with paradigm shifting possibilities and ideologies.

The 'Magic' Cable Tray System

Available in different grades of material and finishing, suitable for every industrial, commercial and infrastructure application. The Magic cable tray system was designed to improve the way of installation, increase the loading capability, maximise support structures and most importantly to better hold and protect the cables which they are supporting.



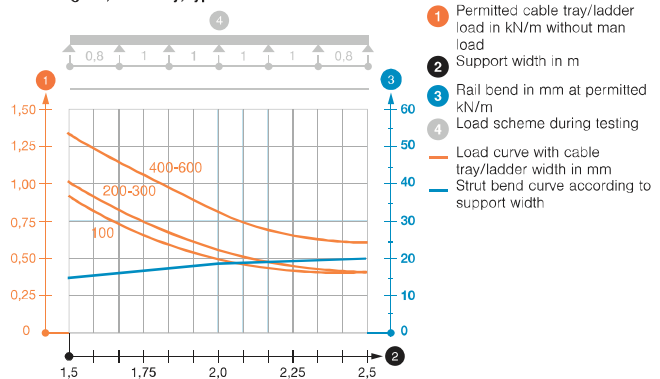
Simplified mounting

The lighter structure produces a considerable benefit for overhead mounting and at great heights. The Magic cable tray system is the world's first completely screw-less tray system. All the system components and tray types are equipped with the innovative Magic connection from the tray through to the fitting. The combination of both advantages makes mounting simpler and quicker. To illustrate this, a 400 metre length of cable tray connection requires only 24 minutes compared to 4 hours and 16 minutes with the conventional cable tray using bolt and nut connection.

Load capacity increased

Compared to previous systems, Magic cable trays offer greater stability. The complex 3D structure and the different material structure around the laser seam produce previously unachieved load values. As an example, a minimum support distance at 1.5 metres apart is achieved with less than 20mm deflection for all ranges of cable tray width.

Load diagram, cable tray, type RKSM 60



Lockable fittings

Even faster. Even simpler. All the classic fittings, such as bends, T pieces, mounting/branch pieces and intersections are equipped with the trusted, lockable Magic connector. The cable tray is run into the fitting connection from above with the spring element. Just connect the pieces, lock them in place – and you're done. Gone are the days where a big and costly Tee piece is required when the Magic add-on Tee does the same function with increased flexibility and yet at a lower cost.





Improved eco-balance

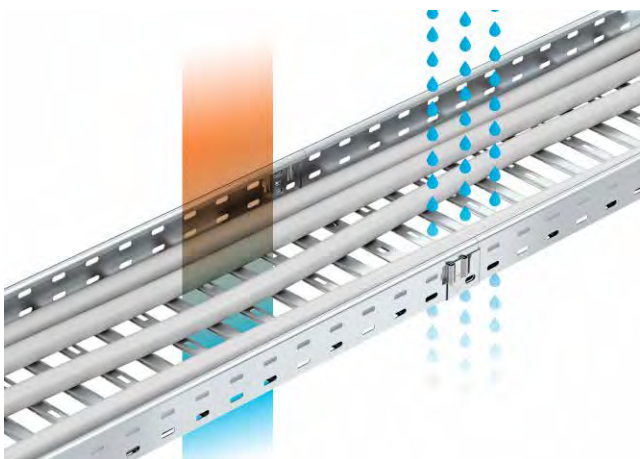
The use of the new, highly innovative and patented manufacturing method DUO-Plus leads to a considerably optimised CO₂ balance for the entire product family. This technological leap saves 2,600 tonnes of CO₂ emissions per years. OBO Bettermann cable tray system fulfils the Green requirement of being a sustainable product. This was the main reason that OBO Bettermann is proud to be a member of the Singapore Green Building Council.

Improved cable ventilation

The completely new base structure allows perfect cable ventilation. According to VDE 0298-4, a tray made up of more than 30 percent holes is considered a perforated tray. This means that lower reduction factors must be taken into account during cable dimensioning, possibly allowing the use of cables with smaller cross-sections thus achieving cost savings.

Water run-off guaranteed

All the perforated Magic cable tray systems of width 200 mm and wider are suitable for safe installations under sprinkler systems - in accordance with the requirements of the VDS. The new base structure allows perfect water run-off.



Guarantee of EMC

Cable support systems can make an important contribution to the improvement of EMC. They are passive and can thus make a safe, long-lasting contribution to EMC through the fact that cables are run within cable support systems or are shielded by them. Routing cables inside cable support systems greatly reduces the galvanic decoupling and coupling due to electrical and magnetic fields in the cables. Thus cable support systems can make a contribution to the reduction of coupling from the source to the sink. The shielding action of cable support systems can be quantified by the coupling resistance and the shield attenuation. This gives the planner important engineering parameters for cable support systems for the EMC engineering.

From the analysis of the effectiveness of EMC in buildings (EN 62305-4), we know that lightning discharge is one of the greatest sources of interference to be expected. This causes a direct current feed into the entire equipotential bonding system in the building and/or to magnetic decoupling of

interference currents in electrical cables. With regard to these couplings, cable support systems can offer an effective contribution to the reduction of interference voltages.

Surface testing/salt spray mist test

All the system components must show sufficient resistance against corrosion in agreement with the standard, DIN EN 61537. The minimum zinc layer thicknesses are determined through a measurement. The grouping into the appropriate class is located at the right of the table. The top of the table shows the area of application and the zinc loss to be expected according to DIN EN ISO 12944.

Whether indoors or outdoors, in aggressive atmospheres or under special hygienic conditions: OBO can offer the perfect surface and materials for your cable support system, no matter what the requirements may be. OBO cable support systems are machined from high-quality sheet steel or steel wire and are available with various surfaces. Different hardening and coating methods ensure tailor-made corrosion protection, specially tailored to the appropriate application. In addition, OBO cable support systems are available in stainless steel and with coloured coatings.

Corrosion categories to DIN EN ISO 12944

Corrosion category	Typical environment, inside	Typical environment, outside	Corrosion load	Average zinc loss
C 1	Heated buildings with neutral atmospheres, e.g. offices, shops, schools, hotels	-	Insignificant	<0.1 µm/a
C 2	Unheated buildings in which condensation can occur, e.g. warehouse, sports' halls	Atmosphere with low level of impurities. Often rural areas	Low	0.1 to 0.7 µm/a
C 3	Production facilities with a high level of humidity and some air impurities, e.g. plants for food production, laundries, breweries, dairies	City and industrial atmosphere, considerable impurities through sulphur dioxide, coastal areas with low salt load	Medium	0.7 to 2.1 µm/a
C 4	Chemical plants, swimming pools, boat sheds over seawater	Industrial areas and coastal areas with low salt load	Strong	2.1 to 4.2 µm/a
C 5/4	Buildings or areas with almost constant condensation and with high levels of impurities	Industrial areas with high levels of humidity and aggressive atmosphere	Very strong (industry)	4.2 to 8.4 µm/a
C 5-M	Buildings or areas with almost continuous condensation and with high levels of impurities	Coastal or offshore areas with salt load.	Very strong (sea)	> 4.2 to 8.4 µm/a

Classification of corrosion resistance (from the draft of DIN EN 61537)

Class	Reference material and surface treatment
0*	None
1	Electroplated to a minimum thickness of 5 µm
2	Electroplated to a minimum thickness of 12 µm
3	Pre-galvanised to 275 degrees according to EN 10327 and EN 10328
4	Pre-galvanised to 350 degrees according to EN 10327 and EN 10328
5	Galvanised to a zinc coating thickness of (minimum) 45 µm according to ISO 1461
6	Galvanised to a zinc coating thickness of (minimum) 55 µm according to ISO 1461
7	Galvanised to a zinc coating thickness of (minimum) 70 µm according to ISO 1461
8	Galvanised to a zinc coating thickness of (minimum) 95 µm according to ISO 1461 (usually high-alloy silicon steel)
9A	Rustproof steel, manufactured according to ASTM: A 240/A 240M - 95 a designation S30403 or EN 10088 degree 1-4301 without finishing **
9B	Rustproof steel, manufactured according to ASTM: A 240/A 240M - 95 a designation S31603 or EN 10088 degree 1-4301 without finishing
9C	Rustproof steel, manufactured according to ASTM: A 240/A 240M - 95 a designation S30403 or EN 10088 degree 1-4301 with finishing **
9D	Rustproof steel, manufactured according to ASTM: A 240/A 240M - 95 a designation S31603 or EN 10088 degree 1-4404 with finishing **

* For materials which do not have a declared corrosion resistance classification

** The end treatment process is used to improve the protection against crack corrosion and the contamination of other steels

OBO offers cable support systems made by professionals for professionals. The technical properties are guaranteed by DIN EN 61537 (follow-up to DIN VDE 0639). It describes all the relevant parameters – from the area of application, through test conditions, up to corrosion resistance and temperature classifications. BIM modelling is also available on the range of Magic cable tray.

Project Highlights

Esteemed customer and world renowned partner to the tobacco industry, Hauni Malaysia Sdn Bhd has recently installed a full range of cable support systems including cable trays, cable ladders and accessories at their production facility in Malaysia.



Hauni supports customers worldwide in the fields of tobacco processing as well as filter and cigarette manufacturing and emphasises quality and innovation not only in the products but also in the manufacturing environment. OBO Bettermann's cable support systems provided ease of installation as well as guaranteeing the reliability and safety of the overall electrical infrastructure within the facility.

Also in the beginning of 2017, OBO Bettermann SEA has supplied the magic cable tray and mesh cable system to the German European School of Singapore (GESS). This is one of the first international school project in Singapore to adopt the innovative screw-less connection cable tray system. This is in line with BCA's call for productivity and adoption of products which reduces installation time.



At the beginning of 2017, the Magic cable tray system is also awarded with 2 ticks from the Singapore Green Building Council, making it the only cable support system with Green certification in Singapore. On top of that, the Magic cable tray system is also recognised as a product with more productive installation methods thus making it eligible for the BCA's Productivity Innovation Project (PIP) grant.

For more information, contact OBO Bettermann SEA office at tel (+65) 6385 5805 or Mr James Gan, Sales Engineering Manager at tel (+65) 8822 0286 or email info@obo-bettermann.com.sg.



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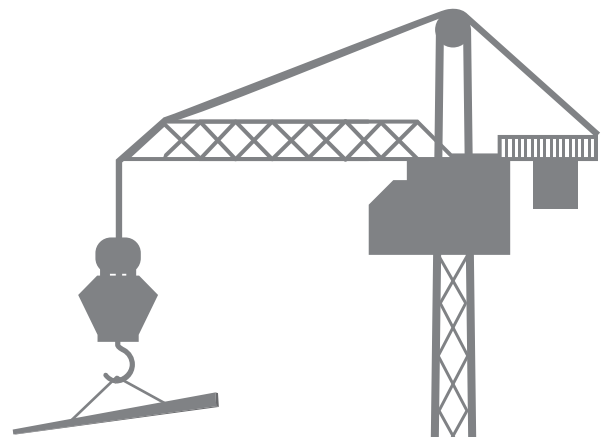
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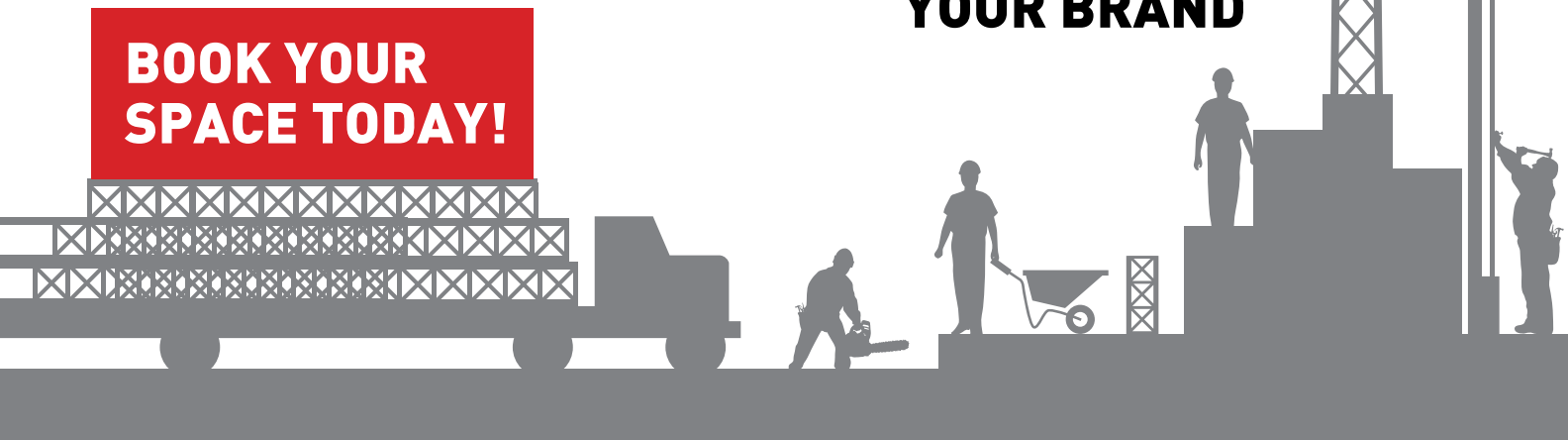


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CT-Art Creation completes installation of new aquatic play structure at Tampines Hub

The Tampines Hub is a first ever mega integrated community and lifestyle hub in Singapore, offering a comprehensive range of services and facilities for recreation, sports and play.

CT-ART Creation Pte Ltd's proposal for Aquatic Play for the new Tampines Hub was selected for its latest design as an Aquatic Play Structure.

The equipment was made by Vortex International Aquatics from Montreal, Canada. It features a Superwave that creates anticipation, fun and joy when it is unleashed, a massive 360-degree water wave effects onto swimmers.

It has multi-level decks that provide interaction opportunities with ground features. Cannons rule the heights while, choice of slides provides a safe getaway. Multiple water effects on and around the structure for a total play experience.

Children of all ages and adults can enjoy the facility.

Features of the new aquatic play structure

Number of Interactive Water Play Features: 18

Number of Water Play Features: 10

Number of Water Slides: 3

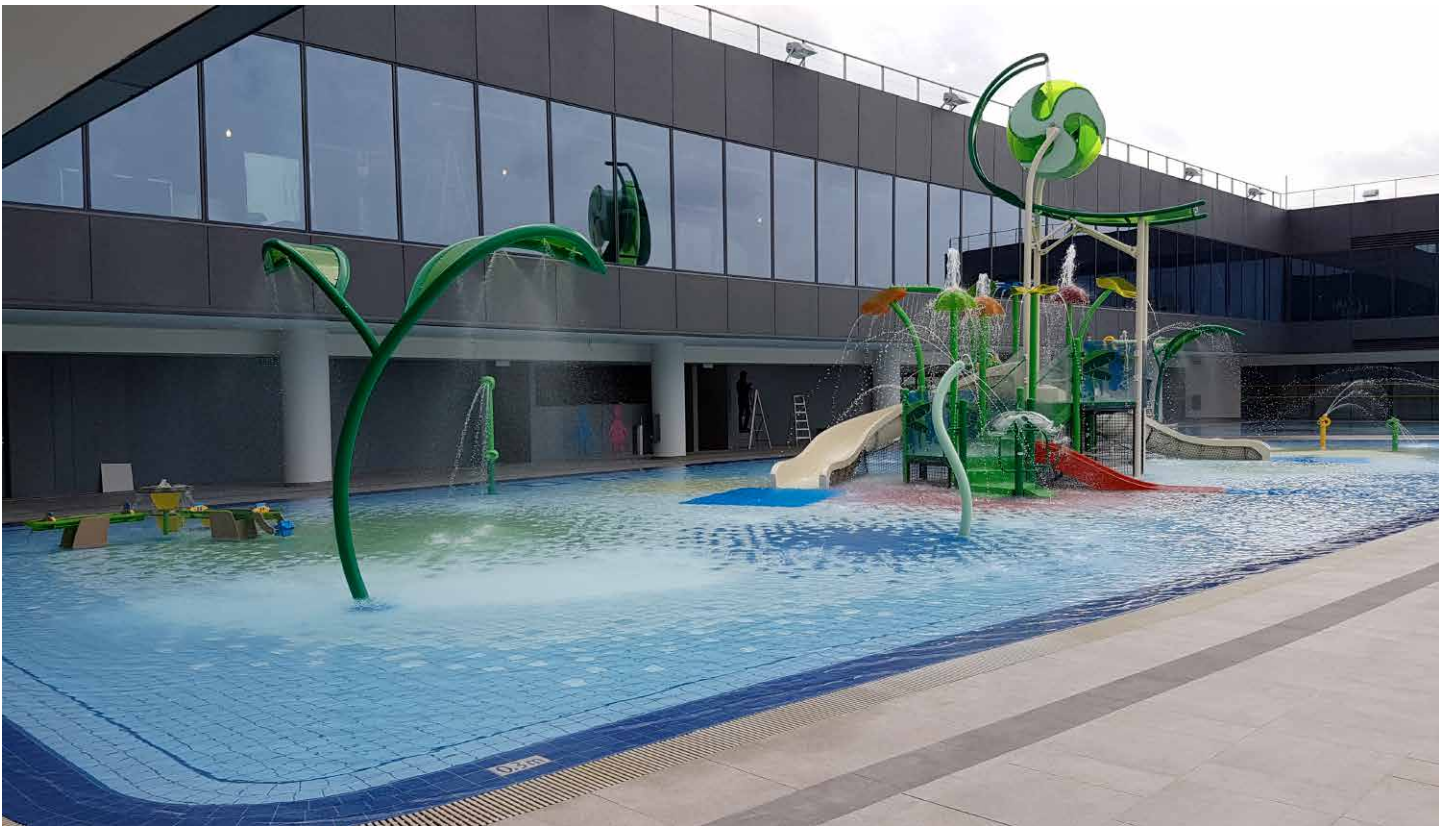
PROJECT DATA

Implementing Agency: People's Association

Architect: DP Architects Pte Ltd

Main Contractor: Hexacon Construction Pte Ltd

Swimming Pool Specialist: Waterland Services Pte Ltd



For more information, contact CT-Art Creation Pte Ltd at tel (+65) 6762 9891, fax (+65) 6762 7980, email sales@ctart.com.sg or visit www.ctart.com.sg.

Longfor Times Paradise Walk

Inspired by the name of the shopping centres, the design for both retail facilities creates a place of extreme delight, harmony and timelessness – a paradise on earth.

Aedas Interiors developed three schemes for each property to deliver distinctive, bespoke retail malls which share a consistent identity and present a recognisable branding.

The 'Heavenly Paradise' refers to the general arcade and circulation areas where complementary materials were used to enhance the interior design and create a bright ambiance and natural background for the mall, showcasing its tenants and their merchandise to maximum effect.

As a place where people meet, the central atrium is always a focal point. The 'Tropical Paradise' scheme adds a sense of discovery to the central atriums, pop-up retail concepts and open event spaces, appealing to the younger market.

The 'Garden Paradise' scheme is applied to the resting areas and kids area, denoting a place of refuge and evoking ideas of relaxation, comfort and rest.

PROJECT DATA

Project: Longfor Times Paradise Walk

Location: Chongqing and Beijing, China

Client: Longfor Properties Co. Ltd

Interior Designer: Aedas Interiors

Project Design Director: Logan MacWatt

Gross floor area: 160,000 square metres (Chongqing) and 220,000 square metres (Beijing)

Completion year: 2015

Photos: © Aedas Interiors



Longfor Times Paradise Walk, Chongqing, China



Longfor Times Paradise Walk, Beijing, China





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Movenpick Resort & Spa picks Playpoint to design water playground

Located near to Jimbaran Beach in Bali, Movenpick is a family lifestyle resort that caters for the young as well as adults.

Working with Salad Dressing, a renowned landscape architect in Singapore, Playpoint (Singapore) Pte Ltd designed a whimsical themed grassland that fits with the Balinese theme of the development.

Featuring Waterplay Grassland collection, consisting of tall blades of grass, whimsical wild flowers, and friendly creatures, creates wonder and beauty of nature to the resort pool.

The colourful spiral tunnels adds a dash of fun where children runs through the ring with water shoots at them from the rings.

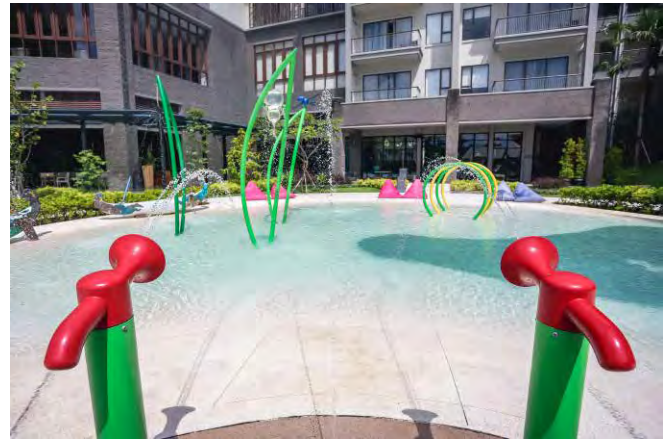
Three splash blasters and ground spray in the form of ants, add a sense of fun and dynamism to the water playground.

The main highlight of the water playground is no doubt the Activity Tower where buckets of water rain down from the structure and waterslides makes a thrilling ride from the structure to the pool awaiting the children below making it endless of fun for the adults and children alike.

All water play products are made of 304 stainless steel with powder coating preventing corrosion and ensuring the longevity of the water play products.

For more information, contact Playpoint (Singapore) Pte Ltd at tel (+65) 6398 1558, fax (+65) 6398 1559, email info@playpoint.com.sg or visit www.playpoint.asia.

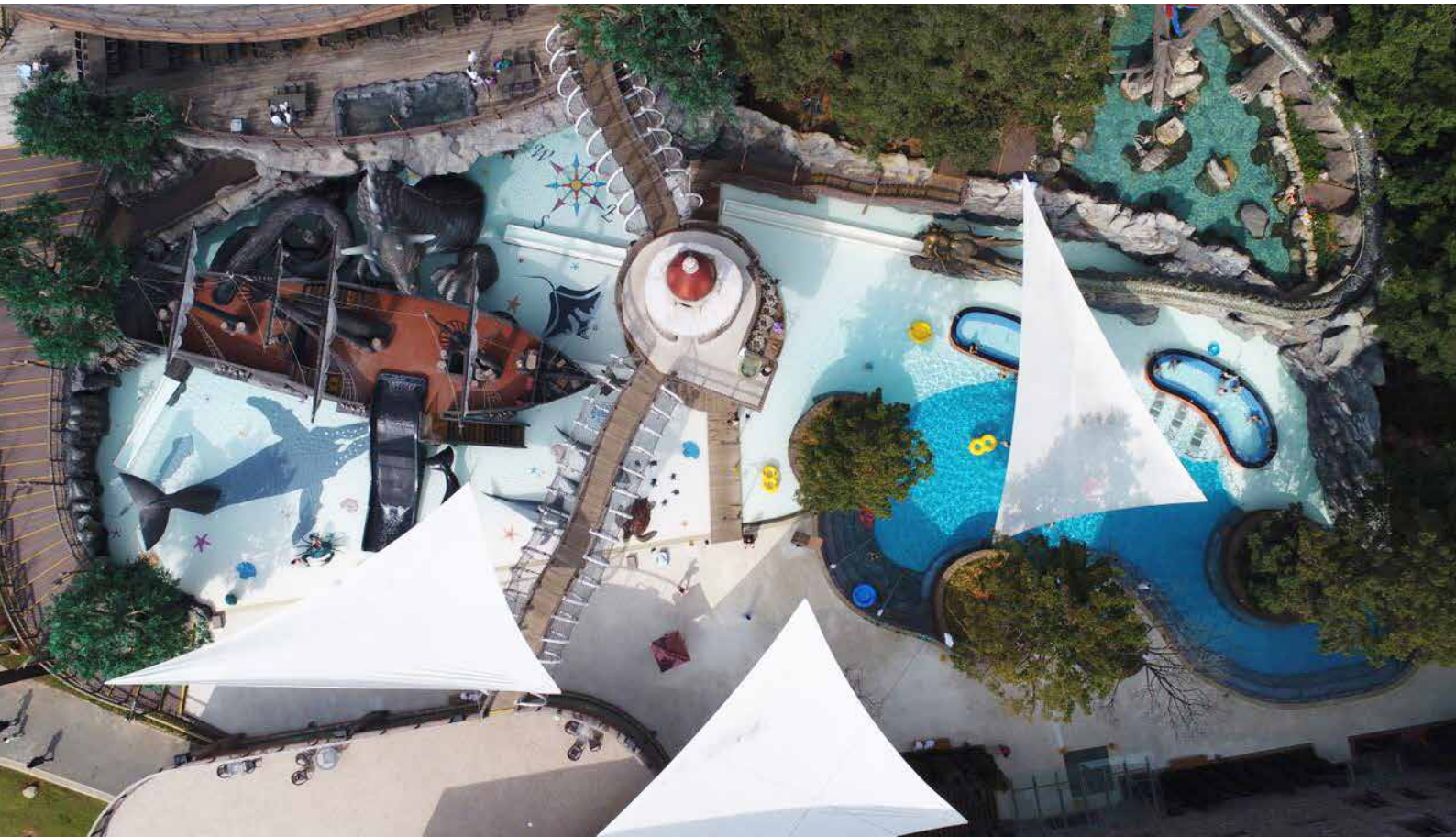




PROJECT DATA

Project: Movenpick Resort & Spa
Location: Jimbaran Beach in Bali, Indonesia
Landscape Architect: Salad Dressing
Playground Equipment Supplier: Playpoint (Singapore) Pte Ltd
Photos: © Playpoint (Singapore) Pte Ltd





Overview of Jin Fang Spa. Photo: © PolySoft

PolySoft takes the waters at Jin Fang Spa

Deep in the woods of south-western China's Yunnan province is a pirate-themed spa experience that is kind to your feet. No walking the splintery plank here – it is a showcase for PolySoft.



Jin Fang Spa. Photo: © PolySoft



Pirate Ship at Jin Fang Spa. Photo: © PolySoft

Kunming in China is famous for its hot springs. PolySoft played an integral part in the recent reimagining of a five-star spa hotel's surrounds, combining colour and fantasy figures with a waterworld of fun for the whole family. Johnny Depp may not be a fixture in this scene reminiscent of *Pirates of the Caribbean*, but PolySoft safety, durability and versatility take centre stage.

The spa's owners commissioned Michael Pua of Perfect Sense, a renowned Singapore-based landscape, lighting and sound-design consultancy to create an experience both entertaining and soothing. His solution was to set pirate ships, and 3D sea creatures in an expanse of PolySoft Play/Splash, incorporating the colourful shapes of crabs, giant squid, seahorses and whales ... Adjacent to the family area, he also created a forest hideaway of rock pools, Japanese tea cups and sake cups – a slightly more traditional spa experience for grown-ups.

In all, PolySoft provided 3,000 square metres of non-skid, soft-fall, easy-maintenance surface, made up of super-sized PolySoft beads – the 4mm monster granule – to enable fast drainage.

Said installer Song Tao of Kunming Junmi Trading Company: "The water park is a variety of entertainment. We've got a huge pirate ship in the middle of the kids' pool, where children can find treasure in the cave behind the ship. We designed a giant country hidden in the woods with big cups, hot pots and parrots. There's a long Chinese-dragon slide, straight from the top of the hill to the adults' pool in the

bottom. It's the perfect place for a vacation."

PolySoft Arctic White and Alabaster were combined for a natural white-sand effect over 95 percent of the installed area, while the illustrated sea creatures used almost the full palette of PolySoft hues to fantastic effect.

And as Tao explained, "In a water park, people don't wear shoes, and PolySoft is not like cement or polyurethane films – it's soft, anti-skid, colourful and most important – it's safe."

The hardest part of the massive installation job, said Tao, was working in the rainy season, "But we built rainproofing overhead, applied primer, mixed the granules with the binder and ..." away they went. He conceded that it required "time and perseverance" to perfectly render the intricate animal shapes on the spa floor.

From start to finish, including erecting the rain shelters, PolySoft installation took about a month. And the results are spectacular. Part water playground, part adult chill zone, this fantasy spa satisfies all needs.

Ophelia Zhu, Managing Director of PolySoft is justifiably proud of the company's first major project in China, "An internationally renowned designer and a respected local theme-park construction company agreed on PolySoft as the most pleasing and appropriate surface for a major tourist attraction. I like to think of all those families having fun in a beautiful, low-risk environment – never mind the giant squid!"



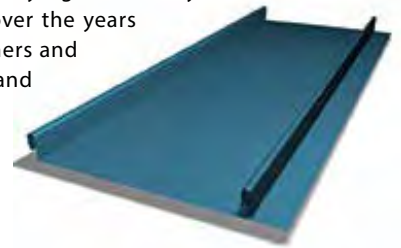
Teacups at Jin Fang Spa. Photo: © PolySoft

Lysaght® Locked Seam® - Seamless Simplicity For Limitless Design Flexibility

Since ancient times until modern day, building designs have been constantly transforming. From complex structures to minimalist architectures, each changing era introduces new concepts and ideas, treating both our eyes and senses to ever more pleasing construction styles.

While we are undoubtedly impressed by what we see, it is often the efforts to overcome construction challenges that are truly worthy of our praise. Technological advances in roofing and facades that provide greater flexibility to suit designs had played a major role in the evolution of building aesthetics. It is in this field that BlueScope Lysaght famously excelled in. BlueScope Lysaght's innovative products have not only exceeded expectations over the years in terms of exceptional functionality, they have empowered the world's most visionary designers and construction experts, placing in their hands ever greater freedom to think outside the box, and bring extraordinary new ideas to life.

One of BlueScope's products that is setting high standards in flexibility across the industry is the acclaimed Lysaght® Locked Seam® standing seam profile. Specially engineered to be superior to conventional roof profiles in the market, it is unparalleled in its build quality and offers advantages that truly stand out when used as a fully supported roof and wall cladding.



Discreetly attractive

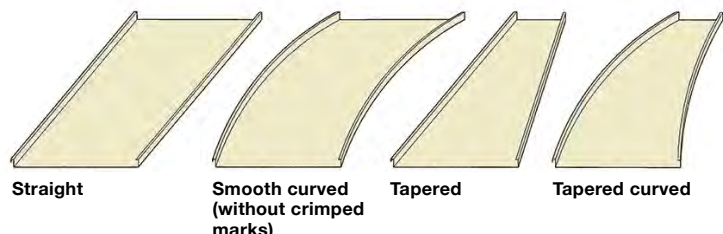
Among the many features of the Lysaght® Locked Seam® roof profile, the most outstanding also happens to be its most discreet. With a seam height that measure only 32mm tall, the profile allows for unobtrusive joining to form a seamless appearance of uniformity and regularity, two qualities that are often used to achieve modern contemporary designs.

Strength without the weight

Being made from technologically advanced steel substrate coated with zinc/aluminium alloy, Lysaght® Locked Seam® is strong yet exceptionally lightweight. This greatly enhances construction versatility as they offer the advantage of class-leading performance without adding stress or burden on building structures.

Shaped to form your vision

Designed with ultimate flexibility in mind, Lysaght® Locked Seam® comes in four unique shapes that combine in ingenious ways to offer vast possibilities in design and construction. Besides their ability to enhance design freedom, the choices of shapes also help to address common installation challenges by being suitable for curved, pitched and even tapered structures.



Weather performance

Every BlueScope Lysaght product is designed to perform at the highest level day-in day-out, year after year. That is why Lysaght® Locked Seam® is made with structurally strong and rainproof joints, which are achieved by folding the panel edges 180° or 360° to form angled or double seams. This feature, along with an exclusive seaming process that integrates both fixed and sliding non-penetrating clips to accommodate expansion and contraction, makes it possible to achieve the most watertight seal. In fact, Lysaght® Locked Seam® can even be designed and configured to withstand high wind pressure and cyclonic loads, thus further enhancing the weather resistant properties of building structures.

Economical and durable

At BlueScope Lysaght, the company's belief is that great performance doesn't have to come at a price. In fact, Lysaght® Locked Seam® is a highly economical choice for builders and is often the perfect solution for those who are constrained by budget yet unwilling to compromise on quality. Best of all, its impressive durability reduces maintenance costs, thus making the decision to choose Lysaght® Locked Seam® a financially sensible one for today and for the long term.

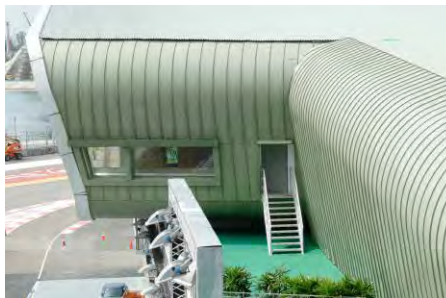
Proven to perform: Esplanade Theatres on The Bay

As the iconic centre of the arts in Singapore, the Esplanade Theatres is synonymous with spectacular performance both in the artistic and the construction sense. It boasts some of the most technically demanding structures in building design, and naturally builders turned to Lysaght® Locked Seam® to help bring the magnificent architecture from concept to fruition. It is a glorious testimony to the product's ability to meet the highest expectations in aesthetics, durability, performance and design flexibility.



Lysaght® Locked Seam® is widely used across Singapore and can be seen on buildings such as:

- Pit Building
- Outram MRT Station
- Residential at Hong Guan Avenue
- West Spring Secondary School
- Residential at Ooi Tiong Nam
- Singapore Flyer Outdoor Retail
- Condominium at Riviera Drive
- Frontier Prima School
- Tiong Bahru Market and Food Centre
- Woodleigh MRT
- Linkway at Kranji Race Course
- Lakeside Primary School
- Tampines Swimming Complex



F1 Pit Building



Outram MRT Station

Choose BlueScope Lysaght® Locked Seam®

Advantages in one innovative product

- Design Flexibility • Durability • Security • High-Tech Production
- Recyclable • Colour Choices • Thermal Efficiency • Warranty

Quick facts

- Base Metal Thickness (BMT): 0.55mm
- Total Coated Thickness (TCT): 0.61mm / 0.60mm
- Cover Width: 315mm / 515mm
- Seam Height: 32mm
- Grade of Steel: G300 (300N/mm² yield strength)
- Coating Class: AZ200 / AZ150
- Minimum Roof Pitch: 3° (without end-lap) / 5° (with end-lap)
- Maximum Length: Depends on mode of transportation



Lakeside Primary School

Give yourself the benefit of ultimate flexibility by making Lysaght® Locked Seam® your material of choice. Ask for custom-cut lengths to suit your requirements. Or find out more at our website www.lysaght.com.sg or enquire from a BlueScope Lysaght representative today at tel +65 6264 1577.



The entrance to the Rewe supermarket along the Opernpassagen. The rubber tiles were bonded with ULTRABOND ECO V4 SP.

Rewe Market in Cologne

Mapei just took a few months to transform an old warehouse into a supermarket.

As soon as you walk into the market you can see an old, flame-red tractor that has been turned into a market stall selling fruits and vegetables. We are in the new Rewe supermarket situated in one of the covered shopping arcades in Cologne, the Opernpassagen.

In just six months, a large warehouse has been transformed into a supermarket; 2,200 square metres arranged over two storeys offering its clients around 20,000 different items from all over the world.

Special care has been taken over the interior of the supermarket, with made-to-measure wooden shelves, brick-dressed walls and a bespoke lighting system and colour scheme.

Rewe, an important German group which has been operating in the large distribution sector for a number of years, also decided to add their "Made by Rewe" space alongside the supermarket, a smaller area of around 200 square metres with special dishes prepared on site to be cooked later at home, or directly in the shop using one of the open cookers available. An innovative twist to the supermarket theme, which the owners and designers hope to turn into a commercial franchise to be exported all over Germany.

PROJECT DATA

Project: Rewe Opernpassagen Supermarket

Location: Cologne, Germany

Year of Construction: 2014

Period of Intervention: 2014

Intervention by Mapei: supply of products to make floors and install rubber tiles

Client: Rewe Markt GmbH

Flooring Contractor: Blome Bodenbelagkonzepte

Mapei Coordinators: Tim Woltering and Tom Schlag (Mapei GmbH)



1



2

Photo 1: The surface was broadcast with QUARTZ 1.2 on fresh PRIMER SN.

Photo 2: ULTRATOP self-levelling mortar was applied with a pump.

Photos 3 and 4: Images of the interior of the supermarket once work had been completed.



3



4

Style and functionality

The complete renovation of the internal areas had to be carried out according to a very tight, non-negotiable schedule (six months) so that the fitters had enough time to install all the stalls and shops. For the floors, Rewe did not want the usual type normally used in supermarkets; they were looking for something different.

Mapei Technical Services proposed a line developed specifically for showrooms, supermarkets, shopping centres and industrial areas in general: the ULTRATOP system, a highly decorative solution particularly resistant to abrasion. The ULTRATOP coating system ensures that surfaces remain level and free of cracks over the years and gives even large surface areas a sense of materic and visual continuity.

Once the substrate was cured and dry, the surface was treated with a coat of PRIMER SN two-component, solvent-free epoxy primer. It was applied using the wet-on-wet technique and then broadcast with QUARTZ 1.2 to create a surface with better grip so that the ULTRATOP system would adhere perfectly.

The next step was to apply a layer of anthracite ULTRATOP self-levelling mortar.

The floors along the corridors were decorated with small, coloured rubber tiles (160 square metres), which were installed using eco-compatible products, as specified by the client: Mapei Technical Services recommended using ULTRABOND ECO V4 SP multi-purpose adhesive in water dispersion with very low emission of volatile organic compounds (VOC).

The Rewe chain was highly satisfied with the results: in fact, visiting managers from other supermarkets in the chain often ask for information on the coating system used!

Mapei Products

Coating floors: Primer SN, Quartz 1.2 and Ultratop

Bonding rubber tiles: Ultrabond Eco V4 SP

Article source: Realtà Mapei International no. 63/2017

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

GREEN ROOFS AND GREEN WALLS GROWING IN POPULARITY

With major environmental and economic benefits, green roofs and green walls are becoming increasingly common in many cities around the world. In this special issue, we look at green roof and green wall designs, their implementation and their maintenance.

An Interview with Lush Eco Sdn Bhd



Ken Lim, Managing Director of Lush Eco Sdn Bhd, shares his views.

Photos supplied by Lush Eco Sdn Bhd

Q: Green walls can generally be used indoors and outdoors on the facade of a building. What are the key benefits of both types of green walls?

A: The key benefit is that Green Wall promotes environmental health apart from all the other Green Building Benefits. Generally, studies has shown that Green Wall improves aesthetic, air quality, absorbs noise, reduce heat, reduces stress and the list is getting more with more research carried out in this relatively new area of study.

Q: What types of facade systems are usually used to install green walls on building facades?

A: Soil-less Synthetic Felt/Mat System or Modular Pot System are systems whereby plants can be grown anywhere on a vertical surface. These Green Walls typically consist of many different species of plants grown on a vertical surface with patterns created out of the different plant's colours and shapes to create unique work of living art.

There are also mesh or cable rope system whereby climbing plants are grown on the ground and is trained to creep up the mesh or cable rope system. As these systems rely on climbing plants to cover a façade, typically only few species are grown on these systems.

Q: Are green walls easy to maintain and how long do they survive?

A: Most of the Green Walls require little attention as fertigation is made automatic and with proper plants selection. A green wall can be evergreen with proper care and maintenance routine. Simple routine maintenance such as pruning of green wall plants, prevention of disease/pest, replenish fertilizer to irrigation system, ensuring irrigation system is operating as desired.



EcoSky in Kuala Lumpur, Malaysia – A project by Lush Eco Sdn Bhd.



Hotel Stripes Kuala Lumpur in Malaysia – A project by Lush Eco Sdn Bhd.

An Interview with Greenology Pte Ltd



Mr Veera Sekaran, Managing Director of Greenology Pte Ltd, shares his views.

Photos supplied by Greenology Pte Ltd

Q: Green walls can generally be used indoors and outdoors on the facade of a building. What are the key benefits of both types of green walls?

A: Plants promote health and well-being as they purify the air, support local biodiversity, reduce the Urban Island Heat effect and act as natural sound barriers in densely packed cities. How greenwalls relate to the benefits of plants is that they add exponentially to these effects by having a high plant volume to base area ration, given their vertical nature in design and installation.



Factory building at Tagore Lane clad with 1500 square metres of Greenology Vertical Greenery panels.

Q: What types of facade systems are usually used to install green walls on building facades?

A: All façade systems consist of modular units. In more recent years, these modules are mostly either made of plastic pots, other plastic-container equivalents, felt panels or substrate-panels. When choosing a greenwall system, I would encourage developers to consider along the following line of thoughts, amongst others:

How has the greenwall's modular unit been designed to support plant growth? An effective greenwall system is designed to mimic the natural growing environment of plants, and would provide the conditions for healthy plant growth to significantly reduce plant mortality. One clear indication of such systems would be to question how it supports root development. The Greenology Vertical Greenery™ (GVG) substrate-panel was designed with this in mind: while each plant is inserted into individual pockets, their roots are allowed to spread across the entire panel. To promote root-clinging, extra thought was put into engineering the micro-surfaces of the water-retaining GNanofibre™ and the GFabric™ that wraps around the panel. This is from the knowledge that a lot of plant species used on greenwalls are epiphytes, which use their roots to adhere onto above-ground surfaces such as tree barks or other plants, as observed in their natural habitats. In contrast, systems with modules installed in isolation from other modular units confine rootballs to a finite space, which eventually leads to root girdling and eventual plant death.



DCA Architects greenwall by Greenology, supported with LED Greenology Grow Lights.

How water and energy efficient is the system? Most vertical greening systems are integrated with automated-irrigation and dosing systems to deliver nutrient solution to the greenwall. The GVG system uses approximately 0.8 to 1.0 litres of water per square metre of greenwall, which is one of the most water-efficient in the world. The moisture-retaining inorganic GNanofibre™ within the substrate-panel allows time for roots to absorb water and nutrients before gravity has its effect on the greenwall. Felt systems, while also thin, are more hydrophobic and tend to require more water. Some pot systems are designed to have water dripping from one pot to the one directly below, which exponentially increases the number of irrigation points required for troubleshooting during situations of clogging or water ponding.

Q: Are green walls easy to maintain and how long do they survive?

A: All living greenwalls would require maintenance in the form of trimming back, since plants would develop foliage over time and also shed old leaves as part of their natural growth cycle. Having said that, the maintenance of a greenwall would be relatively straightforward if provisions of water, nutrients, light and space are in place.

With technology advancing, it is now easier for most contractors to get the basic provisions for irrigation right. Besides having that, the GVG system can also be fitted with proprietary LED Greenology Grow Lights researched to emit specific wavelengths from the visible light spectrum that would promote photosynthesis in environments with low or zero natural light. I would also encourage developers to work with greenwall contractors who are well-versed in botany so that the right selection and combination of species can be recommended for each site condition. In the next few years to come, as greenwall projects scale to greater heights (literally), it is expected for maintenance equipment and technology to advance as part of the wider development for vertical greening.

An Interview with **HUMKO Bled**



Tomaz Cufer, Owner and Director of Humko Bled, shares his views.

Photos supplied by HUMKO Bled

Q: What types of facade systems are usually used to install green walls on building facades?

A: First we can divide into soil connected green walls like Hedera, Parthenocisus, Wisteria etc., and facade connected green walls. They can be made of pots hanged on the wall or balconies, it can be different kind of panels made of metal mesh, plastic frames, plastic panels filled with mineral substrate like vulcanic rock, perlite, lecca, or rockwoll or organic-mineral substrate. Many systems are hidroponic on flies mates without any substrate (Patric Blanc system).

Q: Are green walls easy to maintain and how long do they survive?

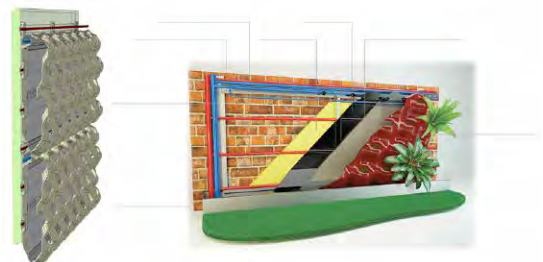
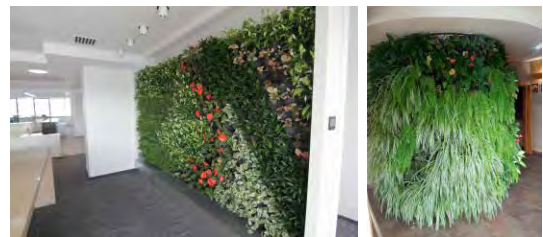
A: Green walls especially outdoor are the most difficult horticulture division for maintaining.

Despite all the technology, automatic control and Internet of Things, there are still many issues to solve. The biggest problem is winter drought in area with under zero temperatures in the winter. Plants have no available water because is frozen and sun dries them out. Because most of the plants must be evergreen to have winter effects, plants are dried out. There are winter droughts with 60-80 percent dried plants on the south and west sunny side of the buildings. East side up to 40 percent, north side very little effect. Then it is difficult to replant the plants on height. Very expensive and some times impossible to reach all green wall places. Another aspect is phytopharmaceutical protection. There are many insects and diseases affects plants in green wall and it is mostly not allowed to use proper insecticides or fungicides in the cities. With biological protection is still difficult to solve all the problems. Most effective is to use pesticides in irrigation systems.

Plants can survive years long even 20 years in good conditions. In outdoor green walls in cold winters area surviving depends on sun exposure. Green walls exposed to the sun with minus temperatures for more than a week is critical for evergreen plants. Deciduous plants are mostly not affected if they are winterhard. Indoor green walls can survive on average 3-6 years, some exotic plants also survive much longer, especially compact and climbing plants.

Q: What kind of trends can we expect to see in green roofs and green walls in the next 5 years?

A: My opinion is that we need to accelerate the raising of vegetables, herbs and fruits on green roofs and green walls. Vegetables can be easily grown that way, people will have some more hobby and more confidence in their own grown vegetables without pesticides. We must teach the kids to grow part of their food that they can appreciate it. By technical side there will be most important Internet of things with good sensoric and UV-IR cameras for growth control and green wall systems for air purifying. There will be coming new panels and systems with even water distribution, easier to replant plants and longer durability of the panels.



Cross section of a double layer green wall system.

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An Interview with Architects

The addition of green roofs and green walls can make buildings, home and work spaces more sustainable and greener. Here we ask architects to share with us the benefits of designing with green roofs and green walls and the challenges of implementing them.

Firm: Richard Meier & Partners Architects LLP
Architect: Bernhard Karpf
Designation: Associate Partner
Location: New York, New York, USA



Photo courtesy of Richard Meier & Partners Architects

Q: More and more buildings are being designed with eco-friendly features and one of them is the addition of green roofs and green walls. Can you comment on environmental and aesthetic benefits of designing with green roofs and green walls?

A: Green roofs have become a standard

detail on buildings, especially in urban environments due to the fact that they help insulate the building from solar heat gain, help retain rainwater, and help with cleaning the air. As so-called extensive green roofs they require little maintenance once installed. Given the increasing densities in our cities and the economic pressure on ground-level areas roofs have also become a valuable accessible outdoor space, which can be utilised as an intensive green roof whether as playgrounds or roof-top parks or gardens. For large-scale residential and commercial buildings, a green roof is a great outdoor asset away from the noise of the city streets.

Green walls or vertical gardens transform the character of any indoor and outdoor space. It is the architectural response to our human desire to be in touch with the natural environment.

Q: What are the challenges that architects face when they have to include a green wall or a green wall in their designs?

A: We understand a green roof or a green wall as an opportunity rather than a challenge to define a space differently. Plants are a living building material as opposed to a 'dead' material such as concrete or steel. If done properly, a green feature in a building will change over time and with the seasons. Key to the long-term success of any green planting feature is the integration of a supply system for water and light, which is especially critical for vertical gardens.

Q: Can you name me some of your favourite green roofs and green walls projects around the world?

A: Among the best known and successful green walls is the vertical garden at the Caixa Forum in Madrid by Patrick Blanc. But we also like the vertical gardens we designed for two small courtyards of the Leblon Offices in Rio de Janeiro, Brazil. Nestled in the back of the building these courtyards bring natural light and air to the offices in the rear of the building. Instead of looking at concrete party walls, the building inhabitants can enjoy the vertical gardens.

Firm: Goettsch Partners
Architect: Joachim Schuessler
Designation: Principal – Goettsch Partners
Location: Chicago, Illinois, USA

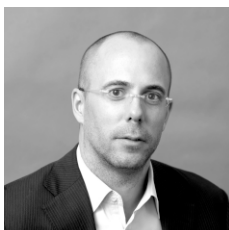


Photo courtesy of Goettsch Partners, Inc.

Q: More and more buildings are being designed with eco-friendly features and one of them is the addition of green roofs and green walls. Can you comment on environmental and aesthetic benefits of designing with green roofs and green walls?

A: We are seeing a significant increase in green roofs and walls in many of our projects throughout the world in different climatic conditions. As we work in increasingly densified cities, public and private green spaces are becoming an ever more important amenity to building users and city inhabitants. Green roofs and living walls have arguably

the most benefits in these urban environments, where there is an excess of hard, impermeable surfaces and not enough vegetation. These spaces will create microclimates that contribute to improved health and wellbeing, to indoor and outdoor air quality, to the reduction of the urban heat-island effect, and other positive environmental effects.

Q: What are the challenges that architects face when they have to include a green wall or a green wall in their designs?

A: These systems are still relatively new, especially in the U.S., which requires architects to educate their clients in

respect to the benefits of these systems. To ensure success of a green wall or roof, maintenance is critical; this effort takes a commitment beyond simply the initial installation to make these elements and projects successful. Typically, it takes significant time for the plants to grow to their full potential, so it is important to

find the balance between plant density and maturity to achieve the desired aesthetic effect from day one.

Q: Can you name me some of your favourite green roofs and green walls projects around the world?

- A:**
- Sky at One Central Park – Sydney, Australia
 - Green Wall at Singapore Changi Airport Terminal 3 – Singapore
 - Bosco Verticale – Milan, Italy
 - Green Wall at SFMOMA – San Francisco, California USA

Firm: Vo Trong Nghia Co., Ltd
Architect: Office members
Location: Ho Chi Minh City, Vietnam

Q: More and more buildings are being designed with eco-friendly features and one of them is the addition of green roofs and green walls. Can you comment on environmental and aesthetic benefits of designing with green roofs and green walls?

A: There are so much benefits of greenery in buildings such as:

1. Greenery improves our living environment, cleans the air and filters noise.
2. In addition, it alleviates the risk of urban flooding and droughts by increasing water storage capacity and slowing down rainwater discharge.
3. Besides, vegetable gardens

increase the amount of arable land and ratio of self-sufficiency in food.

4. Furthermore, by creating another green skin on a building, the interior environment becomes more comfortable for the users without the use of insulation. We call this the 'tropical double-skin system'. It shields buildings from harsh direct sunlight and decreases heat gain within buildings.
5. Also, it rehabilitates urban condition with greenery and reconnects human back to nature.

Q: What are the challenges that architects face when they have to include a green wall or a green wall in their designs?

A: In general, "green architecture" does not mean "building with greenery", albeit plants have great ability of absorbing CO₂. Typical sustainable or environmental architecture is measured by energy efficiency. We doubted the

approach of such green buildings.

The effects of green value, effects of building, by efficiency and moderation in the use of greenery and many discussions about how to reduce energy consumption of buildings.

We are aware of the importance of energy efficiency for sustainable development but it does not contribute directly to the users. We think sustainable architecture is not just limited to tangible numbers or statistics.

It should also consider the intangible aspects, such as our feeling and spatial atmosphere. And our challenge is to connect the nature and people through building design.

Q: Can you name me some of your favourite green roofs and green walls projects around the world?

A: In Vietnam, there are a lot of good examples in the city and also in nature. However, these examples are not related with building space usually.



Vo Trong Nghia staff from the Ho Chi Minh City office. Photo: © Vo Trong Nghia Co., Ltd



CONCRETE TECHNOLOGIES | PAN-UNITED CORPORATION LTD

Working and living within the Central Business District can be stressful. The dense urban environment hums with the activity of ceaseless construction – another new office tower, condominium or underground works...the list goes on. As a global leader in concrete technologies, Pan-United Corporation Ltd (PanU) has created unique solutions to alleviate this uneasy co-existence; in a manner unseen, at literally the foundation of the built environment.

PanU's environmental care is exemplified in its projects. For instance, with GuocoLand's Tanjong Pagar Centre, Singapore's tallest mixed-use development that includes the super-prime Wallich Residence. PanU was commissioned to provide concrete for the mega raft foundation work. Over a continuous 44 hours, its mixer trucks poured a massive 13,500 cubic metres of Self Compacting Concrete (SCC) into the ground, at a rate of one truck every 90 seconds.

Smart technology was employed to coordinate 10 batching plants all over Singapore with an uninterrupted convoy of one truck every 90 seconds delivering the wet mix. The flowable concrete was closely inspected to ensure consistent quality throughout. The project set the record as the largest single pour of concrete in Singapore. The pour was achieved in less than two days what would normally have taken over six days to complete. The total benefit from SCC was savings of 70 percent in manpower costs and improved productivity by over 80 percent, rounding up to a faster construction time. PanU also supplied High-Strength Concrete to build the 290-metre tall complex. As of July 2017, the development is nearing completion.

Significantly, more environmental benefits are derived from using SCC. Behaving like water, this special viscous concrete flows much faster and further than normal concrete, cutting down application time by at least 40 percent. It also does not require any manpower to compact the concrete, thus minimising disturbance to life in the surroundings. The SCC design mix comprises high quality recycled materials that improves its strength performance. This brings it notches up the environmental care spectrum.

Customers may confuse SCC with another product in the market called Self-Levelling Concrete (SLC), which does not have a self-compacting nature. SLC requires manpower to manually vibrate to move the material over the concrete casting area and to remove air bubbles that can weaken its composition. PanU claims to be the first in Singapore to provide SCC and has used this special concrete for projects such as South Beach Lifestyle Quarter, Marina Bay Financial Centre, Parkroyal on Pickering Hotel, Sengkang Hospital and V on Shenton.

As Singapore's largest concrete company, PanU has a dedicated R&D team at its in-house Innovation Centre that develops specialised products for urban applications, often in partnership with customers. For more information, visit www.panunited.com.sg.



PanU was the sole supplier of Self Compacting Concrete to projects including Marina Bay Financial Centre (left) and PARKROYAL on Pickering hotel (right) in Singapore. Photos: © Pan-United Corporation Ltd

ARTIFICIAL TURF | ADVANCE SPORTS TECHNOLOGIES PTE LTD

GreenTurf Cool Earth: A Passive, Sustainable Cooling Solution

GreenTurf Cool Earth system has taken artificial turf one step further by adding cooling functions to it. This is done by adopting the passive design concept which utilises rainwater as the sustainable resource to provide the cooling function. This system leverages on the no-maintenance, lightweight and cost-effective attributes of artificial turf to extend and maximise the benefits in cooling and energy savings to the entire roof of the building.

GreenTurf Cool Earth is a proprietary mix of moisture absorbing materials that are laid on artificial turf to retain moisture after rainfall. This system works in two ways:

(1) Indirect Evaporative Cooling – Moisture retained in GreenTurf Cool Earth evaporates and cools the surface of the GreenTurf artificial grass. The lower surface temperature reduces the temperature gradient across the GreenTurf Cool Earth system and reduces the heat entering the living space below.



GreenTurf Cool Earth System on the rooftop. Photo: © Advance Sports Technologies Pte Ltd



(2) Heat Insulation Layers – GreenTurf Cool Earth System contains a layer of trapped air that increases the thermal resistance of the roof. Higher thermal resistance reduces heat entering the living space below.

Benefits of GreenTurf Cool Earth include:

- Retains moisture for up to 48 hours.
- Sustainable solution. Does not require energy to operate.
- Cost effective solution that allows for quick return on investment (ROI).
- Lightweight. Can be easily incorporated to existing roofs without reinforcing structures.
- Enhance aesthetics of roof and provide pleasant and functional social spaces.
- Can be designed to improve roof drainage and eliminate mosquito breeding risks.
- Low maintenance solution that doesn't add on to building maintenance.
- Long lifespan of more than 10 years.
- Proven green solution for Singapore Green Mark Scheme.

Look no further than GreenTurf Cool Earth System, which greens roofs and saves energy at the same time. GreenTurf Cool Earth System is available in Singapore through Advance Sports Technologies Pte Ltd. For more information, visit www.greenturf.asia.



Cross section of GreenTurf Cool Earth System. Photo: © Advance Sports Technologies Pte Ltd



GreenTurf Cool Earth Dry (left) and GreenTurf Cool Earth Wet (right). Photos: © Advance Sports Technologies Pte Ltd

Contact us at enquiry@greenturf.asia today!

Imagine cooling your room by up to 2 degrees celsius and chopping off up to 15% of your energy bills just by adding Cool Earth to your rooftop artificial grass.

A: Indirect Evaporative Cooling
Moisture retained in GreenTurf Cool Earth evaporates and cools the surface of the GreenTurf artificial grass. The lower surface temperature reduces the temperature gradient across the GreenTurf Cool Earth system and reduces heat entering the living space below.

B: Heat Insulation Layers
GreenTurf Cool Earth System contains a layer of trapped air that increases the thermal resistance of the roof. Higher thermal resistance reduces heat entering the living space below.

What is GreenTurf Cool Earth System?
GreenTurf Cool Earth System adopts the passive design concept which utilizes rainwater as the sustainable resource to provide the cooling function. A proprietary mix of moisture absorbing material is laid on artificial turf to retain moisture after rainfall. The moisture is retained over extended periods and cools buildings down up to 48 hours after rainfall.



Advance Sports Technologies Pte Ltd
53 Ubi Ave 1, #05-16 Paya Ubi Industrial Park, Singapore 408934
Tel: +65 6553 1540 Fax: +65 6747 4471 www.greenturf.asia

Scan this QR Code to watch a video of how GreenTurf Cool Earth works.





ENVIRONMENTALLY-FRIENDLY CAR PARK COATINGS | FLOWCRETE ASIA

The deck coating system chosen for a multi-storey car park can represent a significant amount of material and therefore it is important to ensure that this element of the building minimises the project's overall carbon footprint as much as possible.

Flowcrete Asia has formulated Deckshield ID and Deckcoat EP, two sustainable, Singapore Green Label Certified deck coating options, in order to provide developers with solutions that meet green building standards without sacrificing on functionality.

Deckshield ID is a low VOC, solvent-free deck coating system based on a polyurethane chemistry that has been designed to deal with the unique demands of multi-level parking environments. The system offers enhanced durability and exhibits crack-bridging properties to accommodate thermal cycling as well as any dynamic movement of the structure.

Deckcoat EP is a low VOC, solvent-free epoxy car park deck coating system that provides a colourful, watertight and hardwearing surface for intermediate and basement decks of multi-storey car parking structures as well as other trafficable suspended floors. To meet the high standards of the Singapore Green Label Certification scheme these two systems were rigorously tested by an accredited testing house. Central to this was ensuring that they did not emit environmentally harmful levels of toxic substances such as Volatile Organic Compounds, formaldehyde and heavy metals, a criteria that both products passed with ease.

As well as the product's ingredients, it is equally important to consider how they are made – as to achieve Singapore Green Label Certification the production process must be pollution free. To ensure that its manufacturing site is as sustainable as possible, Flowcrete Asia is currently practising an Environmental Management System in accordance with ISO 14001. This includes Isokinetic Stack Monitoring, which looks into air quality and pollution monitoring as well as Schedule Waste Disposals and online reporting to local Departments of Environment (DOE).

For more information, visit www.flowcreteasia.com.



Green Label certified coatings from Flowcrete. Photo: © Flowcrete

ECOLOGICAL PAINTS & SOLUTIONS | GRAPHENSTONE

Graphenstone ecological paints and solutions have been developed to change the face of sustainable design.

The use of graphene is, today, a reality that will make possible new materials and more sustainable designs. Thanks to the Spanish Company Graphenstone, it says that the coating and paint industry meets for the first time, the only 100 percent natural paint in the world with Graphene technology.

In the words of its President and CTO Antonio León: "Our products are being applied in several projects and reconstructions worldwide, which means that more and more companies, institutions and families, will improve their quality of life and their energy savings in the coming years; a trend that continues growing with us. In short, we are creating more efficient buildings."

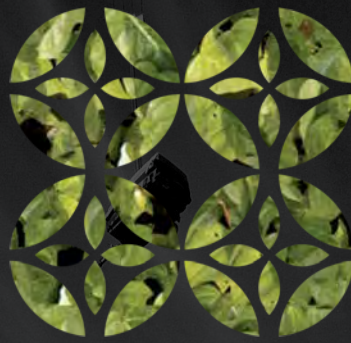
Graphenstone products applied to interior and exterior walls, allow its breathability and absorb CO² thanks to its mineral base (limestone), as well as acting as a thermal and acoustic regulator. Graphenstone coatings are formulated with a high quality lime base, thanks to this purity and its high pH prevents the mould growth and prevents of bacteria reproduction on its surface.

Meanwhile, graphene fibres act to improve flexibility and strength, so Graphenstone paints have a guaranteed life of 10 years. A paint with fantastic properties and now already available to the final consumer through a selected network of distributors in more than 35 countries worldwide.

For more information, visit www.graphenstone.com.



Photo: © Graphenstone



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FULLY AUTOMATIC MOVABLE WALL SYSTEMS

DORMAKABA

Forget about cranking and pushing walls into place – now there is no need to break a sweat: with fully automated, state-of-the-art partition walls, rooms can be effortlessly divided up or resized at the touch of a button.

When a single venue hosts different groups of people for various events and meetings, flexible spaces are a major benefit. Take exhibition halls and conference centers, for example: now, with movable partition walls, these venues are well-equipped to cater to both small and larger groups.

Good sound insulation is essential when it comes to ensuring that a panel discussion in one room is not disrupted by the champagne reception right next door. In offices, automatic, soundproofed partition walls can be used to create the right work environment for every situation, ensuring confidential information does not get out into the world. Outside the office, movable walls can be deployed to make flexible use of the space available in hotels, community centers, and schools.



Rearranging rooms is no sweat

Even just a few years ago, in-house technicians would break a sweat pushing heavy walls into position and soundproofing them using cranks against the floor and ceiling rails – just as we used to crank car windows up and down a few decades ago. But with the latest movable wall systems from dormakaba, users can easily move walls into position. And there is no need to worry about collisions: the systems automatically detect obstacles and immediately come to a halt.



Maximum convenience

The company offers two fully automatic movable wall systems: Variflex 88/100 Comfort-Drive from Dorma Hüppe, and Acousti-Seal Encore Automated with Presto automation from Modernfold. Both systems provide sound insulation and are available in wood, glass and mixed-surface finishes. In particular, the Variflex system allows wall elements to be moved independently for maximum flexibility – for example, they can be spaced out with gaps in between each partition, or with a single passage for cleaning staff to enter and exit through.

For more information, visit www.dormakaba.com.sg.

FLEXIBLE BUSBAR FOR BUILDING INSTALLATIONS | WIELAND ELECTRIC GMBH

For efficient power distribution, look no further than Wieland Electric's gesis® NRG, a flexible busbar for building installations.

Wieland Electric's gesis® NRG flat cable system is ideal for power distribution and lighting control in spaces such as sales floors. Furthermore, bus application with KNX is also possible. The system combines the advantages of busbars with the benefits of round cables and therefore impresses with its simple assembly and handling as well as its high flexibility.

Thanks to adapters with piercing technology, the flat cables must neither be cut nor stripped. A faster power / signal pick-up is possible. Moreover, the adapters can be flexibly moved and additional adapters can be installed. The 5-pole gesis® NRG BASIC/DIMM flat cable 5G2.5/4 mm² is available for 3-phase power applications or 1-phase power applications in conjunction with DALI/SMI; the 7-pole gesis® NRG BASIC+SIGNAL/SELV combination flat cable system with 5G2.5/4 + 2x1.5 mm² is available for 3-phase power applications in conjunction with SIGNAL/KNX functions.



In addition, Wieland Electric offers two more flat cable variants for alternative applications:

- 5G10 mm² for power applications
- 5G16 mm² for power applications

All flat cable types are also available in halogen-free versions.

The gesis® NRG system has proved its worth not only in practical use, but has also impressed renowned juries. It has been honoured for example with the "German Design Award 2017", the "iF Design Award 2016" and, together with the gesis® FLEX room automation system, has been awarded the "Design Plus powered by Light+Building".

For more information, contact Wieland Electric GmbH at tel (+65) 8799 4273, email info.singapore@wieland-electric.com or visit www.wieland-electric.com.

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NEW GENERATION OF POWERFUL ADHESIVES | BONA

Bona Titan, from Bona, is a new generation of powerful adhesives.

Bona, the wood floor experts, has launched Bona Titan, a new supreme performance, silane-based adhesive for high value projects, very wide or oversized solid wood boards - or any installation where the quality of the bond has to be guaranteed.

Bona Titan contains Titanium Technology - a revolutionary new formula comprising quadruple crosslinking that delivers superior durability and an unbeatable initial bond speed - even under challenging subfloor conditions.

Bona Titan can be specified with confidence to bond all types of wood flooring. Its superb shear strength makes installation easy and keeps even the largest, solid boards securely in place. If the subfloor is sound and dry, no primer is required.

The hard, silane-based formula contains no ingredients that can

migrate after curing, which eliminates all risk of discolouration at the joints. The smooth, thick consistency makes it easy to use and produces stable ribs, an extremely high initial grab and zero risk of hollow spots. The bond strength of Bona Titan will not diminish over time so the stability of the floor is guaranteed for the long term.

Bona Titan meets ISO 17178 standards and, in line with Bona's environmental strategy, is a safe, clean formulation which also carries EC1-R Plus, DIBt, Greenguard and A+ low emission certifications.

Bona Titan is compatible with underfloor heating and can be used directly on metal or tiles. Floors bonded with Bona Titan can be sanded after just 12 hours.

For more information, contact Bona Far East & Pacific Pte Ltd at tel (+65) 6377 1158, email info.apac@bona.com or visit www.bona.com.



Bona Titan specified to bond wide oak boards to metal subfloor. Photo: © Bona AB

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HIGH PRESSURE LAMINATES | PANAPLAST

Panaplast is a high pressure laminates brand under the EDL Group. A collection curated of understated, minimalist decors, the materials are predominately designed and made in Japan. Stepping away from chasing after thematic trends, the collection is made to convey the art of subtlety and simple living. This conscious move towards the philosophy resulted in decors which are elegant, timeless and are able to fit into any design schemes.

The new 2017/2018 collection comprises of 27 timber decors and three stone decors.

Nosimo

A matte finish that is wooden to touch and intricately textured. The Nosimo collection is fingerprint-resistant with anti-bacterial grade that subscribes to the Japanese philosophy of Kohkin. Designed to harmonise with nature, the timber decors reflect the natural trees of Japanese forests. Designed and made in Japan.

Nosimo Paint Wood

Original pastel rustic decors. Soft pastel tones are carefully selected to complement lightly weather wood. A completely new addition, Nosimo Paint Wood serves as the inspiration for concept design story for the collection. Designed and made in Japan.



Photo: © Panaplast

Moku

Its name is taken from the Japanese word 'wood'. Independent timber decors that play with authentic imperfections and stronger grains. Ridged in texture, similar to the texture of original wood. Design and made in Japan.

Stone

The finish is a tribute to the texture of slate, with a three-dimensional effect of great effect. The family of three is available in larger size format of 10 feet, for reduced join lines and enhanced cost savings. Designed and made in Italy.

The new decors are showcased in a visual design story inspired by the Nosimo Paint Wood series. For further information, visit www.panaplast.com.sg.

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