

# SOUTHEAST • ASIA CONSTRUCTION

JANUARY - FEBRUARY 2022

## Cover Story:

**Anji Khad Bridge project in India**

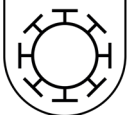
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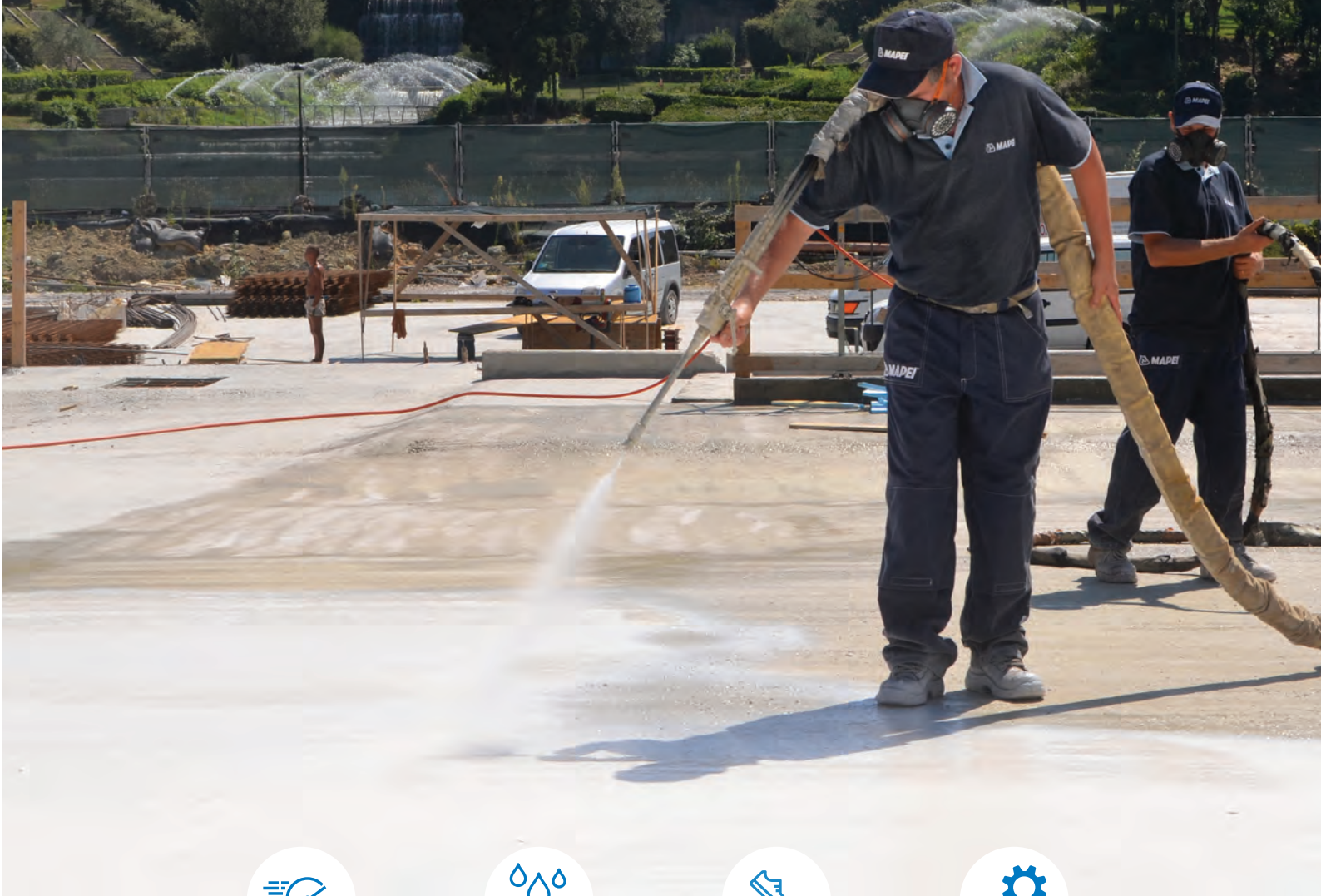
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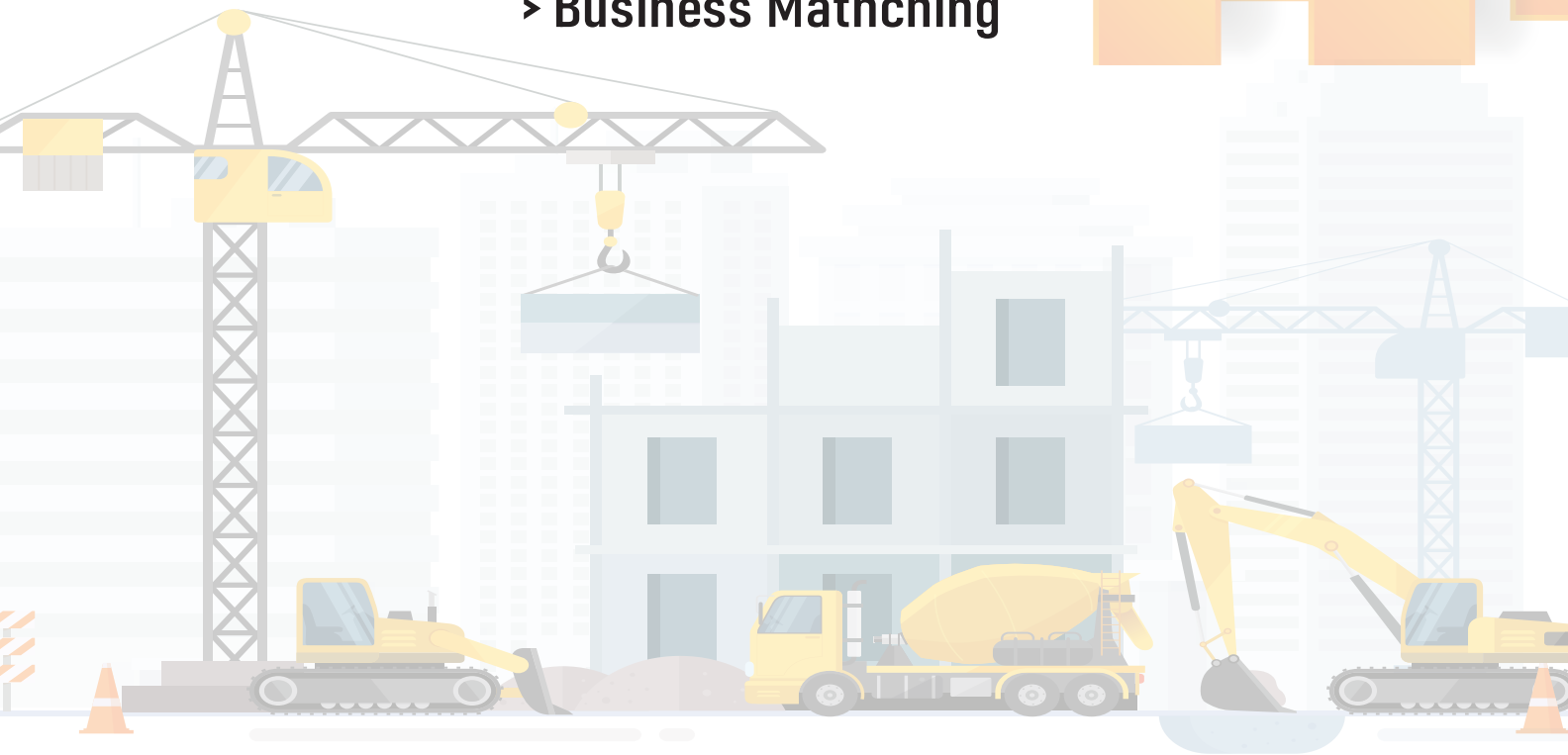
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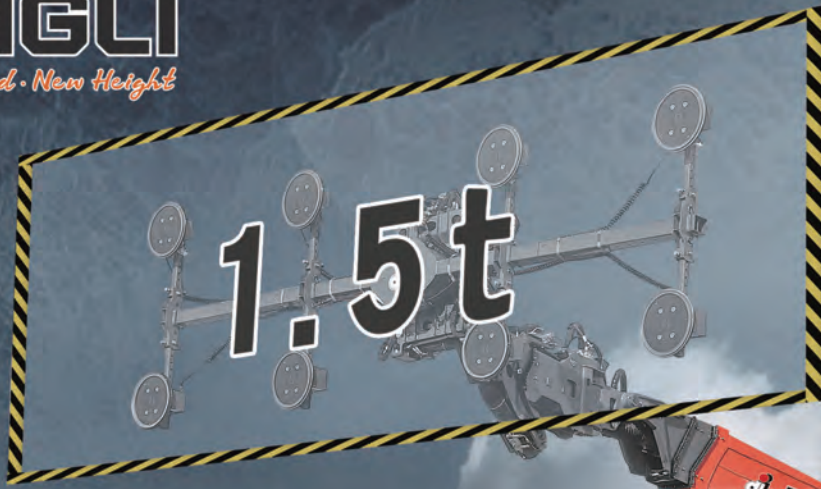
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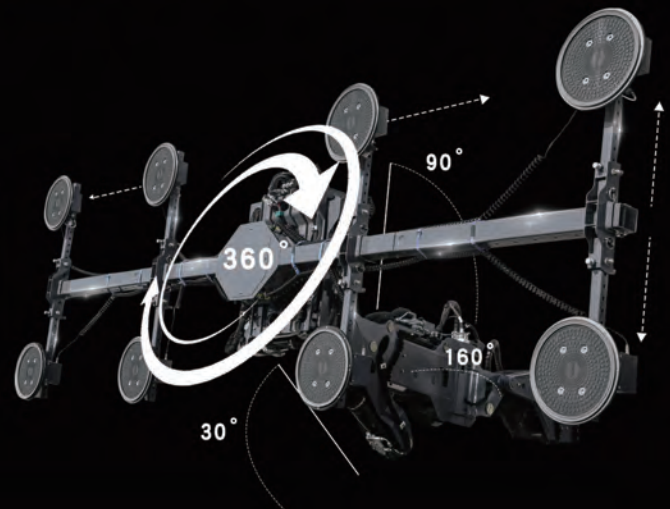
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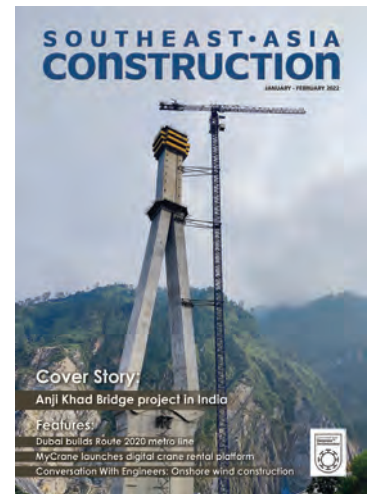
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### On the cover:

The Anji Khad Bridge project in India  
(page 54)

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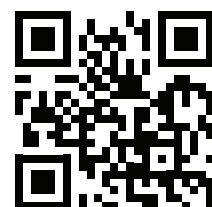
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# CapitaLand to develop residential project in Vietnam

CapitaLand Development (CLD), the development arm of CapitaLand Group, has announced its first large-scale residential project in Vietnam, located in Binh Duong New City within the Binh Duong province, about 30 km from Ho Chi Minh City.

With a total area of 18.9 ha, the project is expected to offer more than 3,700 residential units across a mix of low-, mid- and high-rise residential developments, providing homes for about 13,000 residents. The total gross development value is estimated to be S\$1.12 billion (VND18,330 billion).

The project is planned to be launched in phases, and the first phase consisting of about 1,300 landed houses and apartments is scheduled to start in 2022. Completion of the first phase is slated for 2024, while the rest of the project is due for completion in 2027.

According to CLD, sustainability features will be integrated across the residential development and within each of the residential communities. To encourage green mobility, sustainable transport infrastructure such as outdoor electric vehicle charging points will be incorporated. Bicycle lanes and pedestrian-friendly pavements will be available as well, and there will be electric vehicle buggies shuttling across the two low-rise residential developments.

A 10,000-sq-m central park will also be created within the mid-rise development. Plus, rainwater or grey water will be collected and recycled for irrigation of the park and other green spaces.

The new residential development is one of the first projects in Binh Duong New City to face the city's scenic central lake, said CLD. It is located next to the city's green lung, a sprawling 700,000-sq-m central public park. Vietnam's largest trade centre,



CLD's first large-scale residential project in Vietnam is strategically located in Binh Duong New City.

the 70,000-sq-m World Trade Centre complex comprising an international exhibition centre, a shopping centre, offices, hotels, and a metro station linked to the Ho Chi Minh City Metro Line 1, is within a five-minute drive away.

"In addition to residential projects, we continue to explore investment opportunities in new economy assets such as logistics facilities, data centres and business parks," said Jason Leow, CEO of CLD. "We are also working with local partners and government authorities to seek more large-scale residential projects, master planning and urban development opportunities to expand our real estate portfolio in Vietnam." ■

## New hotel in India being built by all-women team

In an effort towards driving women empowerment and creating an equitable workplace across industries, Indian Hotels Company Limited (IHCL) has collaborated with Tata Projects for the construction of a new Ginger hotel in Santacruz, Mumbai by an all-women engineering team.

"This project is a significant step forward in promoting varied opportunities for women in otherwise traditionally male-dominated industries such as construction," said IHCL.

Ginger is a hotel brand under the IHCL umbrella. The new 371-room hotel development with a built-up area of over 19,000 sq m will be constructed over a course of 19 months. The building process will incorporate the latest construction techniques and technologies, according to IHCL.

Puneet Chhatwal, managing director and CEO of IHCL, said, "At IHCL, we are committed to providing equal opportunities for all. Today, the world is marching towards a future where women are continuing to push the boundaries across sectors. This partnership with Tata Projects reiterates this belief. We are proud of the all-women team helming the construction of the all-new Ginger Santacruz."

"The Ginger hotel project is progressing well under the leadership of an all-women team. This is reflective of the culture of the company, which encourages women to embrace diverse roles in the workplace," said Vinayak Deshpande, managing director of Tata Projects, one of India's leading construction companies.



The all-women team at the Ginger Hotel site in Santacruz, along with Puneet Chhatwal, MD & CEO of IHCL and Vinayak Deshpande, MD of Tata Projects.

He added, "The success of this team is important for motivating more women to build their careers in the construction and engineering sector. Another key feature is that new technologies such as BIM and 3D are also being deployed to ensure on-time and quality construction."

IHCL further highlighted that this project will be a flagship Ginger hotel, located at a prime site in close proximity to Mumbai Airport and Western Express Highway. ■

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## Studio City Phase 2 in Macau tops out

Studio City Phase 2 by Melco Resorts & Entertainment recently topped out, and it is on track for completion before the end of 2022. With a total gross floor area of approximately 250,000 sq m, this new development is located in the Cotai area of Macau, featuring two luxury hotel towers with 900 rooms and suites, a retail complex of over 21,000 sq m, and gaming space of over 2,300 sq m.

Designed by Zaha Hadid Architects, the US\$1.3 billion project further complements the integrated resort's existing Phase 1. The new entertainment and leisure destination will offer one of Asia's largest indoor and outdoor water parks, a six-screen Cineplex comprising two regular houses and four VIP suites, as well as a state-of-the-art MICE space.

"Melco has a strong track record of contributing to Macau's ongoing development as a world centre of leisure tourism. Studio City Phase 2 reaffirms our ongoing commitment to the city and contributes to reinforcing Macau's non-gaming proposition in Asia and internationally. We are grateful for the support of the Central and Macau governments during the project construction," said Lawrence Ho, chairman and CEO of Melco Resorts & Entertainment.

"Since opening in 2015, Studio City has become a destination landmark in Macau with its unique entertainment theme and experience," added David Sisk, chief operating officer of Macau Resorts at Melco. "The extension project will complement our existing offering of 'next-generation' world-class entertainment and further enhance the distinctive Studio City experience." ■



Both images © Melco



ABOVE: Studio City Phase 2 is on track for completion before the end of 2022.

LEFT: The topping out ceremony for the project was held in November 2021.

## Large-scale integrated solar and energy storage project in Indonesia

Sembcorp Industries, Batam's utility company PT PLN Batam and Indonesian renewable energy developer PT Trisurya Mitra Bersama (Suryagen) have signed an exclusive joint development agreement (JDA) to develop a large-scale integrated solar and energy storage project in Indonesia's Batam, Bintan and Karimun (BBK) region.

The project consists of an approximately 1 GWp of solar power generation capability and a large-scale energy storage system in BBK to support managing the intermittency for clean energy deployment and export. The renewable power generated onsite will supply the clean energy needs of the local communities and is proposed to be transmitted via subsea cables into Singapore.

Indonesia has recently reaffirmed its commitment to achieving a renewable energy mix of 23% by 2025, up from 11% currently. Up to 4.7 GW of new solar capacity by 2030 has been announced under the recently published 2021-2030 PLN Electricity Procurement Plan.

This new project is expected to support about 1,000 direct and indirect jobs in Indonesia and Singapore during the construction phase. It is also expected to enhance the skills of local engineers in Indonesia to operate large-scale renewable energy infrastructure projects.

Wong Kim Yin, group president and CEO of Sembcorp Industries, said, "Together with our Indonesian partners, PT PLN Batam and Suryagen, we are breaking new ground as we co-develop large-scale renewable energy projects to advance clean energy goals. This project will mark yet another step in Sembcorp's transition from brown to green, while contributing to the region's energy transition."

Nyoman S. Astawa, president director of PT PLN Batam, said, "As PT PLN Batam begins our own transition journey, this joint development will enable us to build our know-how in developing a large-scale renewable power plant, so that we can continue to contribute to more such clean energy projects in Indonesia."

Benjamin Subrata, president director of PT Trisurya Mitra Bersama (Suryagen), said, "Sembcorp and PT PLN Batam are our great positive enablers in realising our major undertakings in the renewable energy space in Batam and possibly throughout Indonesia. Together we are enjoying the journey in this interesting time of our two nations' energy transition."

The project is an example of the regional collaboration needed to enhance energy resilience and sustainability. It is also in line with Singapore's plan to harness regional clean energy sources, and could potentially contribute significantly to Singapore's transition to a clean energy future. ■


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# LTA and SIT set up Centre for Infrastructure and Tunnel Engineering in Singapore

The Land Transport Authority (LTA) and Singapore Institute of Technology (SIT) have signed a Memorandum of Understanding (MOU) to establish a Centre for Infrastructure and Tunnel Engineering (CITE) in Singapore. The partnership seeks to foster greater collaboration in research & development, as well as educational and training programmes in this highly-specialised field of infrastructure and tunnelling engineering.

“As cities around the world become more urbanised, many mega-infrastructure projects for land transport, waste management and other utility services such as transmission cable tunnels for power services are increasingly being built underground. In land-scarce Singapore, expertise for tunnel engineering and infrastructural development will continue to be in demand,” said LTA and SIT in their joint statement.

The CITE will serve as a platform for the civil engineering community to exchange and deepen their knowledge and skill sets in this field. The centre will also conduct and facilitate applied research to augment safety standards in the design, construction, operation and maintenance of tunnels and other civil engineering infrastructure.

According to both partners, this initiative will be beneficial for Singapore’s major underground projects in the next few decades, which include the Cross Island Line, North-South Corridor and Deep Tunnel Sewerage Systems. To build up manpower capabilities, the CITE will develop and offer customised training courses to reskill and upskill local professionals in infrastructure and tunnel engineering.

“Our rail lines and road projects are going deeper underground to allow for better use of above ground spaces and to preserve our natural environment. This requires specialised domain knowledge, and the CITE can help build a steady pool of tunnel engineers with a mix of civil engineering and geotechnical knowledge to support our efforts,” said LTA’s chief executive Ng Lang.

Professor Tan Thiam Soon, president of SIT explained that the CITE will “leverage SIT’s strengths in applied learning and industry collaboration to promote innovation and groom talent. We envision the centre to be at the forefront of cutting-edge applied research and training in Singapore, readying future graduates and workforce to meet the challenges of ever-evolving infrastructure and tunnel developments.”

## Certification course in tunnel engineering

To uplift industry standards, the CITE has collaborated with Singapore’s Professional Engineers Board (PEB) to develop a customised certification course in tunnel engineering. It will upskill professionals specialising in bored and mined tunnelling projects and supports Professional Engineers (Civil) in attaining accreditation as Specialist Professional Engineer in Tunnel Engineering.

Conducted by SIT faculty members as well as LTA’s tunnel engineers and industry experts, the course’s modules are specifically tailored to provide participants with information and case studies in the local context, such as the geology of Singapore and tunnel design, tunnelling construction, and tunnelling operation and impact assessment.



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ABOVE: The MOU signing between LTA and SIT.



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LEFT: In land-scarce Singapore, expertise for tunnel engineering and infrastructural development will continue to be in demand.

The partners said a pilot run of the course in March 2021 attracted 30 industry professionals who will be completing the programme in the first quarter of 2022.

The CITE will also serve as a platform to build a pipeline of qualified young professionals looking to join the industry, added the partners. Through the Integrated Work Study Programme (IWSP) attachment to the centre, civil engineering undergraduates at SIT will have the opportunity to acquire in-depth knowledge and work experience in infrastructure and tunnel engineering.

The IWSP is a distinctive feature of SIT’s degree programmes, where students undertake six to 12 months of paid employment relevant to their programmes during the course of their studies. Postgraduate students can also engage with the industry through collaboration with the centre for their Industrial Master and Doctorate projects.

The two partners further mentioned that to keep pace with emerging trends and promote state-of-the-art industry practices, the CITE will conduct and facilitate applied research in infrastructure and tunnel engineering to create industry-specific solutions. Areas of research include digitalisation and sustainability in civil engineering. For example, an ongoing project which LTA and SIT are jointly carrying out looks into the design, detailing, and specification of reinforced concrete cut-and-cover tunnels for crack control, water tightness, and durability.

By engaging government agencies and industry players, the centre aims to improve companies’ productivity, expertise and technology in infrastructure and tunnel engineering. Beyond applied research, the centre will also grow industry knowledge through the sharing of best practices via technical seminars, workshops and by providing consultancy services. ■

# Hyundai makes major investment in South Korean plant

Hyundai Construction Equipment (HCE) is investing US\$170 million in its Ulsan manufacturing plant in South Korea, strengthening the company's competitiveness in the rapidly expanding construction equipment business. The investment, to be delivered over the next four years, aims to increase production at the plant by 4,800 units a year, bringing annual capacity to 15,000 excavators, wheeled loaders and other construction models.

The production and assembly functions currently in Factory 1 and Factory 2 will be merged into a single facility, simplifying the flow of processes and increasing savings by maximising efficiency, said HCE. This will reduce the working hours involved in machine production and cut logistics costs throughout the supply chain. The move will also reflect the company's environmental, social and governance factors, using eco-friendly sub-materials when conducting interior and exterior finish work.

HCE is increasing its market share in every region of the business, by responding to current market trends in the global construction equipment market and by looking ahead to the customer requirements of tomorrow's infrastructure and construction projects. The company also intends to benefit from the recent US launch of the 'Build Back Better World (B3W)' initiative for developing countries.

In 2020, HCE announced that it plans to bring to market a range of excavators powered by hydrogen fuel cells, produced in cooperation with Hyundai Motors, which has its largest automotive plant in Ulsan. The company has already unveiled a range of hydrogen-powered industrial forklifts that are due to launch in 2023, as it continues to develop the low and

zero-carbon emissions equipment that will be demanded by the customer of the future.

"Strengthening the competitiveness of the Ulsan factory is the first challenge that needs to be addressed to reach the global top five, the goal of the construction equipment division of the Hyundai Heavy Industries group," said HCE CEO Choi Cheol-gon. "With this investment, we will further raise our brand competitiveness by producing and delivering construction equipment with increased efficiency."

In November 2020, HCE completed the construction of a technology innovation centre, investing US\$65 million. The new centre includes 16 laboratories, employing more than 100 researchers. It is involved in research and development projects focused on eco-friendly technologies, high efficiency and noise reduction technologies, and a virtual verification system. The site also performs quality research and verification of components and completed equipment.

In June 2021, HCE completed a quality assurance centre for verifying the reliability of components and remodelled its global training centre for developing excellent human resources. Now the focus is on increasing production efficiency and building the infrastructure for the rapid growth that is planned for the coming years. ■



ABOVE AND LEFT: HCE's new investment in its Ulsan plant will increase production by 4,800 units a year, bringing annual capacity to 15,000 excavators, wheeled loaders and other construction models.



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## Aurecon-WSP JV to lead Hung Shui Kiu Station design

Hong Kong's MTR Corporation has awarded a design consultancy contract to Aurecon-WSP Joint Venture for the Hung Shui Kiu Station on the Tuen Ma Line. This new station will serve the future transport needs of the Hung Shui Kiu/Ha Tsuen New Development Area, bringing convenience to residents and reducing travelling time.

The scope of the consultancy work includes development of the scheme into an engineering design, preparation of the construction programme, gazette plans and project cost estimate, as well as liaison with government departments and other stakeholders. The Aurecon-WSP Joint Venture will work closely with the MTR Corporation's Capital Works team to deliver these services.

According to MTR Corporation, the award of this contract marks a major milestone for the Hung Shui Kiu Station project. It will be situated at the future town centre of the Hung Shui Kiu/Ha Tsuen New Development Area and will provide residents with railway connection to other areas in Hong Kong.

The new station will not only serve the future transport needs of the Hung Shui Kiu/Ha Tsuen New Development Area, but also release the development potential in the vicinity. The team will maintain ongoing dialogue with the community during the design and construction of the project.

Other works relating to the Hung Shui Kiu Station project, including ground investigation and survey of existing utilities, will also commence soon.

In May this year, the Hong Kong Government invited MTR



Hong Kong's new Hung Shui Kiu Station will serve the future transport needs of the Hung Shui Kiu/Ha Tsuen New Development Area.

Corporation to proceed with the detailed planning and design of the project. It consists of a new Hung Shui Kiu Station, located on the Tuen Ma Line between the existing Tin Shui Wai and Siu Hong stations. The main construction works are expected to commence in 2024 for completion in 2030. ■

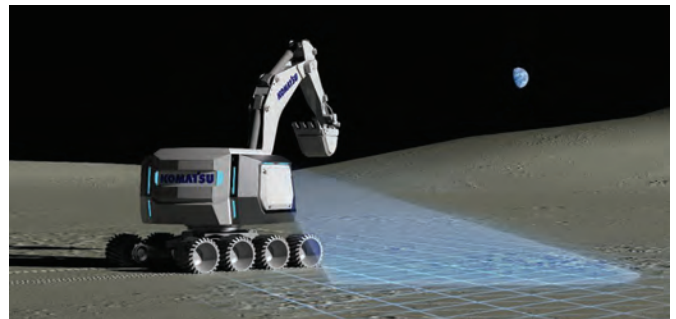
## Komatsu developing technology for lunar construction equipment

Komatsu has announced its participation in a project that promotes the development of innovative technologies for outer space autonomous construction, which is managed by Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in collaboration with Japan's Ministry of Education, Culture, Sports, Science and Technology.

The project is part of MLIT's strategic programme for accelerating research, development and utilisation of space technology (Stardust Programme). Komatsu's proposal on the development of digital twin technology for lunar construction equipment has been chosen as an "eligible target" of technology related to autonomous construction (automation and remote control).

All selected companies and organisations will conduct research and development of their individual technologies, under the leadership of the Council of Promoting the Development of Innovative Technologies for Autonomous Construction, an inter-ministry collaboration body. With this initiative, Komatsu expects to contribute towards Japan's achievement of advanced construction and research and development of outer space construction activities, such as on the Moon.

In the ongoing three-year, mid-term management plan, to be completed in the fiscal year ending on 31 March 2022, Komatsu is working to achieve "safe, highly productive, smart and clean workplaces of the future" by advancing products (automation and autonomy of machines) and processes (optimisation of construction operations). The company will utilise the technologies in these products and processes for the development of digital



Komatsu's concept of lunar construction equipment using digital twin.

twin technology for lunar construction equipment.

According to Komatsu, because it is complicated to approach actual objects on the Moon's surface, the digital twin technology is essential in this case as it can precisely recreate site conditions and machines. The company will conduct a feasibility study to verify the possibility of developing high-precision digital twin technology, which is considered "the basic technology of lunar construction equipment."

Specifically, Komatsu plans to create and operate a hydraulic excavator in cyberspace and compare its movements with actual equipment on the Earth to verify the simulator's precision. The company will also set the surface conditions of the Moon as cyberspace, and check the movements of the excavator in the simulator in order to identify the issues facing its lunar equipment. ■

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# S. Arabia to build world's largest floating industrial city

Saudi Arabia has announced its plan to develop the world's largest floating industrial city, named Oxagon, forming the next phase of Neom's masterplan and representing a radical new model for future manufacturing centre.

Comprising a large area in the southwest corner of Neom, the core urban environment of Oxagon is centred around the integrated port and logistics hub that will house the majority of the city's anticipated residents.

According to Neom, the octagonal design of Oxagon minimises impact on the environment and provides optimal land usage, with the remainder open to preserve 95% of the natural environment. A defining feature of the city is the world's largest floating structure, which will become a centre for Neom's Blue Economy and achieve sustainable growth.

"Oxagon will be the catalyst for economic growth and diversity in Neom and the Kingdom, further meeting our ambitions under Vision 2030," said His Royal Highness Mohammed bin Salman, Crown Prince and chairman of the Neom Company board of directors.

"Oxagon will contribute to redefining the world's approach to industrial development in the future, protecting the environment while creating jobs and growth for Neom. It will contribute to Saudi Arabia's regional trade and commerce, and support creating a new focal point for global trade flows. I am pleased to see that business and development have started on the ground and we look forward to the city's rapid expansion."

Neom is a new region being built in northwestern Saudi Arabia on the Red Sea. It will include research centre, sports and entertainment venues, and tourist destinations. As a hub for innovation and living laboratory, Neom is expected to attract entrepreneurs, business leaders and companies from around the world to research, incubate, and commercialise new technologies and enterprises in "groundbreaking ways."

Oxagon will establish the world's first fully integrated port and supply chain ecosystem for Neom. The port, logistics and rail delivery facility will be unified, providing world-class productivity levels with net-zero carbon emissions, setting global benchmarks in the adoption of technology and environmental sustainability, revealed Neom.

The agile and integrated physical and digital supply chain and logistics system will allow for real-time planning, resulting in secure on-time delivery, efficiency and cost-effectiveness for industry partners.

At Oxagon's core will be the adoption of the most advanced technologies such as the Internet of Things (IoT), human-machine fusion, artificial and predictive intelligence, and robotics, all of which are coupled to a network of fully automated distribution centre and autonomous last-mile delivery assets to drive Neom's ambitions of creating a seamless integrated, intelligent and efficient supply chain.

Nadhmi Al-Nasr, CEO of Neom, said, "Through Oxagon, there will be a fundamental shift in how the world views manufacturing centre. What encourages us is to see the enthusiasm of a number of our partners who have shown eagerness to start their projects in Oxagon. These pioneers of change will establish factories, developed with the latest technologies in artificial intelligence, to achieve a significant leap for this era into the fourth industrial revolution."

The "net-zero" city will be powered by 100% clean energy, said Neom. Seven sectors form the nucleus of Oxagon's industrial



**TOP AND ABOVE:** Oxagon will form the next phase of Neom's masterplan and represent a radical new model for future manufacturing centre. It is set to become the world's largest floating industrial city.

development, with innovation and new technology creating a vital base for them.

These seven sectors are: sustainable energy; autonomous mobility; water innovation; sustainable food production; health and well-being; technology and digital manufacturing (including telecommunications, space technology and robotics); and modern methods of construction. All of them will be powered by 100% renewable energy.

Neom also shared that the urban landscape of Oxagon will incorporate many features of The Line (another urban development in Neom). Communities will be walkable, or via hydrogen-powered mobility. Sustainable industry will be built around the communities, minimising commute time and providing excellent liveability with nature seamlessly integrated into the urban environment.

In addition, Oxagon will create a truly circular economy with a collaborative environment built around research and innovation. Its innovation campus will host the education, research and innovation (ERI) ecosystem to rival established global centres.

Neom said the development of Oxagon is well underway and designs are in progress for the large manufacturing facilities. These facilities consist of the world's largest green hydrogen project involving Air Products, ACWA Power and Neom in a tripartite venture; the world's largest and most advanced modular building construction factory with Gulf Modular International; and the largest hyperscale data centre in the region, a joint venture between FAS Energy and Neom.

Oxagon is scheduled to welcome its first manufacturing tenants at the beginning of 2022. ■

# Hyundai and Doosan to compete under Genuine tie-up

Following the purchase of Doosan Infracore by Hyundai Heavy Industries Group in August 2021, a new intermediary holding company, Hyundai Genuine, has now been established. Doosan Infracore has also been renamed Hyundai-Doosan Infracore.

Hyundai Construction Equipment and Hyundai-Doosan Infracore will continue to operate under their own management systems, competing as sister companies within the global equipment market. Hyundai Genuine will provide support to both businesses, while maximising the available synergies between the two.

Hyundai Genuine's intention is to rank among the global top five construction equipment manufacturers, capturing 5% of global markets by 2025. This will initially be achieved through the development of integrated excavator and wheeled loader platforms, by 2025, that will be utilised by both companies. The two manufacturing businesses will also combine their research and development efforts to increase technological competitiveness, while sales strengths will be increased through mutually complementary ranges of machinery.

In addition, new investment will be increased to secure next-generation business activities. The plans include the development of hydrogen engines for construction equipment, further mergers and acquisitions, investment in start-up businesses and closer industry-university cooperation, to develop market-leading expertise in automation and electrification.

Chairperson of Hyundai Heavy Industries Group, Kwon Oh-gap, has vowed to develop the construction equipment business as a core sector of the group, a decision that will be backed by further investment at group level. ■



Hyundai Construction Equipment's wheel loader (top right) and crawler excavator (above).



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# SMEC commences detailed design of North East Link

SMEC has commenced work on the detailed design of North East Link in Australia; as the project moves into the delivery phase, led by Spark consortium who has signed an A\$11.1 billion public-private partnership (PPP) contract to deliver, finance, operate and maintain the Primary Package.

The new North East Link freeway will connect an upgraded Eastern Freeway to the M80 Ring Road in Melbourne's north-east, significantly reducing travel times, increasing freight reliability, and removing over 15,000 trucks from local roads every day.

SMEC, together with its joint venture partner Mott Macdonald, delivered the design for the Spark consortium during the pandemic. The innovative design has now been announced by the Victorian government, which features a longer tunnel to Watsonia, a new tree-lined boulevard for Greensborough Road, and new, revived and reconnected parklands that cover more area than 50 Melbourne Cricket Grounds.

"The North East Link project will change the face of Melbourne and have a huge impact on the future growth of the city. Our team of highly skilled specialists are excited to be a part of the positive impact this project will create for so many people," said James Phillis, CEO, Australia & New Zealand at SMEC.

The project includes Victoria's longest road tunnels, three-lane twin tunnels that run for 6 km under Melbourne. North East Link is a once-in-a-generation project aimed to facilitate better connections for businesses, increase efficiencies for freight transport and make neighbourhoods in the north-eastern suburbs of Melbourne safer and more enjoyable places to live. The new tunnels will help protect homes and sensitive environmental areas including the Yarra River, Banyule Flats and Warringal Parklands.

"SMEC has brought together a truly talented local team supplemented by internationally recognised specialists to support this successful tender. We are all excited at the opportunity to step into the delivery phase of this landmark project," said Mr Phillis. "We bring a wealth of experience in tunnelling and major freeway design which will be invaluable to this project and its success."



Both images © SMEC

TOP AND ABOVE: The new North East Link freeway will connect an upgraded Eastern Freeway to the M80 Ring Road in Melbourne's north-east, significantly reducing travel times and increasing freight reliability.

The Spark consortium comprises Webuild, GS Engineering and Construction, CPB Contractors, China Construction Oceania, Ventia, Capella Capital, John Laing Investments, DIF and Pacific Partnerships. ■

## Michel Denis continues to lead Manitou Group

The board of directors at Manitou BF, the Ancenis, France-based global manufacturer of material handling, aerial platform and earthmoving equipment, has decided unanimously to renew the mandate of Michel Denis (right) as president and CEO of Manitou Group for another four years. He will remain in the position until the annual general meeting in 2026 that will approve the financial statements of 2025.

"We would like to thank Michel Denis for the work achieved since his arrival and in particular during the last four years. Over this period, the group has experienced remarkable growth, demonstrated a very strong resilience and a very sharp rebound from the end



of 2020," said Jacqueline Himsforth, chairman of the board of directors.

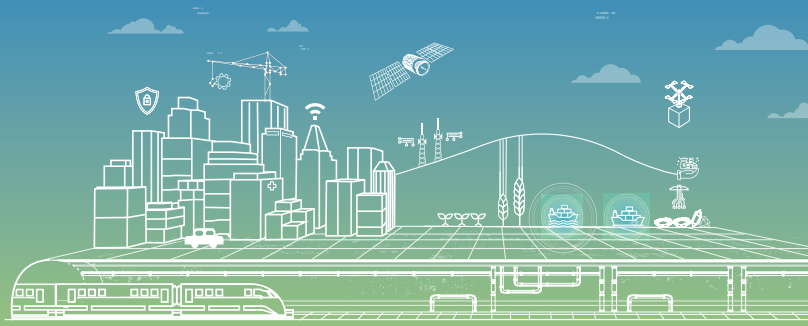
"On the strength of its improved profitability, its innovations and the acceleration of its ecological transition, the group is looking at the future with confidence and ambition," she added.

Mr Denis said, "I would like to thank the board of directors for their confidence. It is a pride and an honour to continue to lead the development of this finest international company. Together with the men and women of Manitou Group, we are strongly committed to

meeting the challenges that lie ahead and to pursuing our mission: to improve working conditions, safety and performance worldwide, while protecting people and their environment." ■

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Website: [www.buildtechasia.com](http://www.buildtechasia.com)

### **Worldbex 2022**

**16 to 20 Mar 2022**

World Trade Centre Metro Manila  
Metro Manila, The Philippines  
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### **Geo Connect Asia 2022**

**23 to 24 Mar 2022**

Sands Expo & Convention Centre  
Marina Bay Sands, Singapore  
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### **BICES 2022**

**24 to 27 Mar 2022**

National Convention and Exhibition Centre  
(Tianjin)  
Tianjin, China  
Website: [www.e-bices.org](http://www.e-bices.org)

### **Natural Disasters Expo Asia**

**18 to 19 Apr 2022**

Singapore Expo  
Singapore  
Website: [www.naturaldisastersshowasia.com](http://www.naturaldisastersshowasia.com)

### **Trenchless Asia 2022**

**27 to 28 Jul 2022**

Kuala Lumpur Convention Centre  
Kuala Lumpur, Malaysia  
Website: [www.trenchlessasia.com](http://www.trenchlessasia.com)

### **Cambuild 2022**

**6 to 8 Sept 2022**

Diamond Island Exhibition &  
Convention Centre  
Phnom Penh, Cambodia  
Website: [www.cambuildexpo.com](http://www.cambuildexpo.com)

### **ConsBuild Asia 2022**

**28 to 30 Sept 2022**

Show DC Hall  
Bangkok, Thailand  
Website: [www.consbuild-asia.com](http://www.consbuild-asia.com)

### **bauma China 2022**

**22 to 25 Nov 2022**

Shanghai New International Expo Centre  
Shanghai, China  
Website: [www.bauma-china.com](http://www.bauma-china.com)

### **bauma Conexpo India**

**31 Jan to 3 Feb 2023**

India Expo Centre (IEC)  
Greater Noida, Uttar Pradesh, India  
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## // Events outside Asia

### **World of Concrete 2022**

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Las Vegas Convention Centre  
Las Vegas, Nevada, USA  
Website: [www.worldofconcrete.com](http://www.worldofconcrete.com)

### **Hillhead 2022**

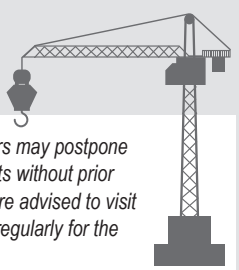
**21 to 23 Jun 2022**

Hillhead Quarry  
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**24 to 30 Oct 2022**

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# MEWP rental markets recover ‘stronger than predicted’

Mobile elevating work platform (MEWP) rental markets have recovered better than was predicted to be the case in 2020, with most countries seeing markets and wider economies on course to recover to 2019 levels by the end of 2021 or early in 2022, according to the latest analysis conducted for the International Powered Access Federation (IPAF) by Ducker.

Overall, most markets in Europe, the US and the Middle East have recovered more quickly than was forecast in the 2020 rental reports, though fears of a fifth wave of Covid-19 and accompanying lockdowns and restrictions in some western European countries may temper optimism.

The newly published Global Powered Access Rental Market Report 2021 shows that the pandemic has not left permanent scarring or caused companies to shed staff and reduce fleet size; rather that most consolidated and shelved investment with a view to scaling up operations in line with rebounding demand, restoring utilisation rates (which had fallen to just 58% on average for the 10 European countries under study at the end of 2020), while keeping rental rates stable and planning for modest growth in 2022.

Most companies responding to Ducker’s survey planned to resume investment in fleet expansion and green power sources in 2022 and beyond, and nearly all countries had seen a rebound in activity that had all but cancelled out the effects of the pandemic and successive lockdowns by the end of 2021. While the overall drop in revenue was less drastic than expected and forecast in last year’s report, European markets were still hit hard by the pandemic.

The report indicates that Denmark (0%), Sweden (-2%) and Germany (-4%) suffered the smallest hit to overall rental revenue during 2020, owing to their respective approaches to the pandemic, which were either short sharp lockdowns or no enforced national lockdown at all, in Sweden’s case.

On the other hand, Spain (-13%), Italy and France (both -12%), along with the UK (-10%) all suffered double-digit contractions in overall rental market revenue across 2020. Together, European countries under study contracted by an average of 8%, compared to a 7% contraction in the US.

Germany crept ahead of France and the UK to stand at the end of 2020 as the country in Europe with the largest MEWP fleet, with the UK, in particular, seeing slight defleeting during the peak part of the pandemic; all have fleets of just under 60,000 units. France is predicted to increase fleet size in 2021 and could once again re-establish itself as the country in Europe with the largest fleet. The overall shift towards greener power sources has not been significantly derailed by the pandemic, though much investment was put on hold in 2020-2021.

Only the UK (-2%) and Netherlands (-1%) saw overall fleet size shrink during 2020, with mostly older or more specialist machines sold into the used equipment market. This allowed both countries to mitigate a fall-off in utilisation rate.

Spain (-14%), Italy (-13%) and France (-12%) were among those worst hit in Europe when it comes to revenue per unit, due to the impact of the pandemic and sustained national lockdowns, coupled with other underlying factors contributing to economic uncertainty, including the ongoing impacts of Brexit on Anglo-European relations.

Spain and Italy also both maintained modest fleet expansion across 2020 as a whole, helping suppress overall utilisation rate and revenue per unit. France, Spain, the Netherlands and Germany all



## 2021 IPAF Rental Market Reports

saw an overall drop in rental rates of between 2% and 7%.

After being stable for three years up to and including 2019, the average retention period in Europe dropped slightly due to the defleeting in some rental companies and an increase in the market value of used machines owing to increased prices and lead times from OEMs in late 2020, a trend that continues in 2021.

Overall, outlooks for 2021 saw those countries that were hit hardest during 2020 rebound most strongly, as construction and wider society opened up and economic recovery was sustained.

In the US, despite overall optimism at the end of 2019 with a change in presidency and some investment in the early months of 2020, companies drastically reduced their spending on new machines in 2020 once the pandemic took hold, leading to a static fleet size across the year, at just over 650,000 units.

As in the UK and Netherlands, some companies discarded some of their older or less versatile machines to maintain profitability levels. These machines were usually sold on to other rental companies as used equipment, which in turn allowed small to medium-sized companies to save money on buying new machines or allowing them to meet specific customer demand in terms of volumes or machine specialisms.

Investment fell across 2020 by around 67% and is projected to have recovered 45% by the end of 2021. Utilisation rate slumped to 64% during 2020, but is projected to recover to and indeed exceed the average pre-pandemic rate in the US to stand at around 74% at end 2021.

### China and Middle East

As in 2020, the report also contains a special market focus on China and adds a report focusing on the Middle East Gulf Cooperation Council (GCC) countries of Saudi Arabia, UAE and Qatar. The China report paints a picture of an MEWP rental market still growing at unprecedented speed, only marginally impacted by the coronavirus pandemic, and set to keep surging in terms of fleet size and market penetration.

Overall utilisation rate decreased slightly, while rental rates dropped significantly in China across 2020, but total fleet size continued to rise, predicted to increase from just over 200,000 units at the end of 2020 to around 300,000 at the end of 2021.

This expansion is also reflected in the continued rise in rental revenue, up from €703 million at end 2019 to €974 million in 2020 and forecast to exceed €1.15 billion by the end of 2021. Despite such phenomenal expansion, the Chinese MEWP rental market has much capacity for growth and is far from saturated. Rental companies expect to keep expanding fleets in the next few

years, and the total volume of rental units is anticipated to keep increasing at rates in excess of 20% annual growth.

The picture is a little more mixed in the Middle East, and much more aligned with the market situation in Europe. As with pretty much everywhere in the world, most Middle Eastern countries were significantly impacted by the pandemic, seeing a drastic drop in revenue between 2019 and 2020, owing largely to the postponement of major construction projects.

This fall in revenue was a product of slides in average utilisation rate, fleet size and rental rates, which all decreased significantly due to end-use demand falling during the peak months of the pandemic. The report indicates that in 2021, the 14% fall in rental revenue will recover by around 9% to leave the overall market 5%

down on the 2019 year-end position.

The pandemic saw utilisation rates fall from 2019's level of 75% to just 65% in 2020, and this is expected to recover to around 70% by the end of 2021, leaving the metric much more in line with what is the pre-pandemic norm in most European countries and the US.

As in Europe and the US, investment is expected to recover after an 86% drop-off in 2020 – investment in 2021 remains below where it might have been expected to be had the pandemic not happened in Saudi Arabia but is growing slightly more vigorously in the UAE and Qatar, as catch-up on delayed construction projects including the Expo 2020 in the UAE and the FIFA World Cup 2022 in Qatar has reinvigorated demand. ■

Website: [www.ipaf.org/reports](http://www.ipaf.org/reports)

## IPAF expands safety & technical team to increase global reach



IPAF has announced that Mike Ashton (left) is to take up post as international safety & technical advisor, bringing to the role considerable expertise from his more than 25 years in industry business management, safety, engineering and training positions in the UK, Middle East and Australia. He will report to Brian Parker, IPAF head of safety & technical.

“The primary responsibilities of Mike’s role will be to use his skills and commercial expertise to advise, support and develop the safety and technical aspects of IPAF’s business around the world. Key functions will be to summarise complex safety and technical ideas, prepare how-to guides, white papers and manuals, create and edit content for internal or external documents, and to assist in identifying strategies and opportunities for safety and technical initiatives,” explained Mr Parker.

“We’re delighted to appoint Mike following a rigorous search process and are confident he’s a perfect fit with the IPAF team and culture. He has valuable experience in the UK, Middle East, Australia and New Zealand powered access markets, and he will bring his obvious diligence and expertise to the role.”

Mr Ashton joins IPAF from Lift Industries – which is the Australian distributor for Terex insulated travel towers and crane borers located on the Gold Coast, Queensland – where he was

business development manager. Prior to that, he had a similar role with AWD, capital equipment specialists in Perth, Western Australia.

Mr Ashton was also resources manager at the Elevating Work Platform Association (EWPA) of Australia, and held business development and training manager positions at Access Service Australia either side of a spell as HSEQ & training manager at Rapid Access in the UAE. Before that, he served in both instructor and service engineer roles at AFI-Uplift, Nationwide and PTP Aerial Platforms in the UK.

“I have a long a varied career in powered access, covering engineering, training and business development roles here in Australia, the Middle East and the UK. I am passionate about safety and about demystifying the technical side of our industry, whether that is in disseminating sometimes complex technical guidance, leading on training and skills development, or winning and communicating with clients,” said Mr Ashton, who is based in Queensland, Australia.

“When I saw this role advertised, I felt it was an ideal opportunity for me. I hope to be able to lend my knowledge and expertise to assist IPAF in delivering important projects, in terms of standards development and implementation, safety awareness and guidance, the global incident reporting project or the IPAF ePAL app for operators of MEWP and MCWP equipment. I’m looking forward to this new challenge immensely.” ■

## IPAF ePAL operator app rolls out in additional languages

The ePAL mobile app for operators of MEWPs (mobile elevating work platforms) and MCWPs (mast climbing work platforms) is now available in six additional languages, following its launch in English earlier this year.

IPAF’s ePAL app is free to use and features a digital IPAF PAL Card, operator log book and operator safety guide. It allows operators to receive best practice tips and safety information and lets them share qualifications with site managers quickly and easily. It is now available for all new and existing IPAF licence and qualifications holders in Argentina, Belgium, Chile, Colombia,



Ecuador, France, Liechtenstein, Mexico, Morocco, Netherlands, Peru, Portugal, Spain, Switzerland and Uruguay. January 2022 will see the final part of the rollout in North America, Austria, Brazil, Germany and Italy.

The ePAL app is a major step forward in IPAF’s ongoing drive to boost sustainability, as it shifts away from issuing plastic PAL Cards and paper certification to every person successfully completing or renewing an IPAF operator course. The app also cuts the processing time and resources required to issue physical PAL Cards and certification. ■

# bauma Conexpo India set to return in January 2023

bauma Conexpo India is now scheduled to take place from 31 January to 3 February 2023 at the India Expo Centre (IEC) in Greater Noida, Uttar Pradesh. The show will focus on future trends, latest innovations and new projects in the construction, building materials and mining machinery industries.

Bhupinder Singh, CEO of bC Expo India Pvt Ltd, the organiser of the event, said, “We have arrived at the dates of bauma Conexpo India after thorough market assessment and consultation with our key stakeholders. The pandemic has showed our industry a lot of potential for alternative digital communication, business innovations and collaboration, but at the same time also confirmed the huge importance of personal contact and dialogue with the clients, partners and business professionals.”

On the event venue, Mr Singh said, “Greater Noida Industrial Area is located at the intersection of the western and eastern dedicated freight corridors and is the gateway to the Delhi-Mumbai Industrial Corridor (DMIC). It lies within the National Capital Region of India’s capital – New Delhi – and is adjacent to Noida, one of the largest industrial townships in Asia. The integrated township is shaping up as India’s smartest city.”

“At a time when the industry’s mood is gradually lifting, the event at the new venue on new dates will allow the industry to participate whole heartedly and put their best foot forward,” said Arvind Garg, chairman of bauma Conexpo India – task force and EVP and head of construction and mining machinery at Larsen & Toubro Ltd. “The India Expo Centre & Mart is emerging as the centre for world trade with a modern, large, integrated and multipurpose exhibition and convention centre. We look forward to supporting the event and participating in the upcoming edition of bauma Conexpo India 2023.”

Dimitrov Krishnan, president of ICEMA and managing director of Volvo CE India, added, “ICEMA is pleased to continue its partnership and long-standing cooperation with bauma Conexpo India, aimed at bringing industry stakeholders together to network, explore business opportunities and showcase latest innovations.”

Mr Krishnan pointed out that the event will enable the industry to exchange insights and best practices with their counterparts. “An exposure to the vast product offerings from the Indian CE industry will encourage higher mechanisation levels in the Indian construction sector and will also help develop a robust manufacturing ecosystem in the country. This initiative will strengthen India’s position as a major potential exporter of construction equipment to global markets.”

R.N. Gupta, president of Builders Association of India (BAI), further highlighted that bauma Conexpo India “has been playing a pivotal role in the inculcation of new construction technologies. Our association with bauma Conexpo India will further encourage mechanisation of construction processes across India especially in states like Arunachal Pradesh and Sikkim in the north-east, where BAI is establishing itself more strongly. BAI National Members Meet can be planned alongside bauma Conexpo India 2023 with maximum participation from pan India.”

bauma Conexpo India is held every two years, covering an exhibition area of 195,000 sq m. Due to the pandemic, the 2020 edition was cancelled. The last event took place in December 2018, drawing 668 exhibitors from 26 countries and 39,173 visitors from India and neighbouring states. ■

Website: [www.bcindia.com](http://www.bcindia.com)



ALL IMAGES: The last event took place in December 2018, drawing 668 exhibitors from 26 countries and 39,173 visitors from India and neighbouring states.





# Next Geo Connect Asia to take place in March 2022

International events organiser Montgomery Asia has announced that flagship geospatial and location intelligence industry trade show and conference for Southeast Asia, Geo Connect Asia (GCA), is set to return for its second edition in a largely in-person format. It is expected to double in size in terms of participants and floor space, bringing together the latest innovations in surveying and monitoring equipment, sensors, robotics and mapping solutions, among others.

Scheduled for 23 to 24 March 2022, GCA 2022 and its two complementary industry profiles – Digital Construction Asia (DCA) and Unmanned Aerial Vehicle (UAV) Asia – will see the geospatial community converge at the Marina Bay Sands Expo & Convention Centre in Singapore. Like the 2021 edition, the event will once again incorporate a virtual component.

Themed ‘Geospatial & Location Intelligence Solutions for Asia – Underground, Land & Sea to Sky’, GCA 2022 seeks to address the increasing interplay between ground and satellite technologies, and artificial intelligence (AI) and data analytics, amid growing momentum towards a Geospatial 4.0 world. Visitors can look forward to a comprehensive showcase of the latest technologies and solutions for government and non-for-profit markets, and multiple industry verticals.

According to Montgomery Asia, GCA 2022 is expected to host more than 80 international exhibitors and 2,500 professional visitors, alongside 100 enterprises, associations and agencies featuring all aspects of geospatial technologies, digital construction and UAV solutions. Over 30% of participating companies are new, including drone and aerial providers AECA Solutions, Amuse Oneself Inc, Viscoy and YellowScan; image capture experts PhaseOne; and inspection tech pioneers Screening Eagle.

The event will be graced by guest-of-honour Edwin Tong SC, Singapore’s Minister for Culture, Community and Youth and Second Minister for Law, who will deliver the opening address. Also in attendance will be Colin Low, chief executive of Singapore Land Authority (SLA), and Dr Nadine Alameh, CEO of Open Geospatial Consortium (OGC).

## GCA Conference

The GCA Conference 2022 will facilitate knowledge transfer among industry players to address some of the world’s leading challenges. By encouraging interoperability, open sourcing and the sharing of key learnings from the pandemic, there is increased opportunity for improving productivity in predominantly traditional industries and accelerating rapid change in others.

Packed into two full days, the conference will comprise over 10 fireside chats featuring over 50 prominent industry speakers, panellists and moderators. Preview of the conference topics include:

- Digital twins for the built environment & climate-resilient communities
- Recycle, renew, refresh – repurposing the urban landscape
- Managing the future of city data – structure, sovereignty & sustainability
- Coastal resource protection and flood planning, recovery & resilience
- Building biodiversity & the greening of communities
- Information mapping for sustainable information exchange
- Earth observation & satellite innovations – microscopic analysis from the sky



TOP AND ABOVE: Geo Connect Asia 2021 was organised in a hybrid format.

- Drones for good & goods
- Geo AI & robotics
- Women in geospatial technology
- Geo-entrepreneurship: creating a new wave of start-ups
- What’s new in Maptech?

Thought leaders and industry experts from the geospatial sector will be present, sharing insights, trends and challenges from around the region. They include: Argoon Chuang, digital consulting lead, Asia, at AECOM; Gerry Ong, president of ASEAN Federation of Land Surveying & Geomatics; John Whitehead, senior director of sales and distribution, APAC, at Trimble; Lanita Idrus, publisher at The Asia Miner; Dr Matt Benson, senior director of Think City; and Ng Siau Yong, director of geospatial & data division and chief data officer at SLA.

Concurrently, GCA 2022 is curating four expert stage programmes, namely Smart Agriculture, Digital Construction Asia, UAV Asia, and Digital Underground Connect. Several free-to-attend programmes include the Tech Talk and PropTech stage.

The event is supported by numerous Singapore government agencies, including the Economic Development Board (EDB), Government Technology Agency (GovTech), Infocomm Media Development Authority (IMDA), National Parks Board (NParks) and Singapore Tourism Board (STB), with SLA and GeoWorks (SLA’s geospatial industry centre) as its strategic partners. ■

Website: [www.geoconnectasia.com](http://www.geoconnectasia.com)

## BICES to be held in March 2022 in Tianjin

The 16th edition of BICES, China's global exhibition for the construction machinery, building material machines and mining machinery sectors, is now planned to be held at the National Convention and Exhibition Centre (Tianjin) from 24 to 27 March 2022. The show is expected to occupy four indoor halls and an outdoor area.

Taking place every two years, BICES is organised by the China Construction Machinery Association (CCMA), China Construction Machinery Co Ltd (CNCMC) and China Council for the Promotion of International Trade - Machinery Sub-Council (CCPIT - MSC). The last event was held in September 2019 in Beijing, while the 2021 edition has been postponed to 2022 due to the pandemic.

According to the organisers, March is a peak sales season for the construction machinery industry, and many exhibitors are already planning to make use of BICES to launch "vigorous" publicity and marketing activities. The show will continue to feature 14 exhibit categories as well as an exhibition zone for the industry science and technology innovation achievements.

A special area will be set up to display the latest scientific and technological achievements in "carbon peak and neutrality strategy," added the organisers. There will also be a large number of visitor delegations at the show.

In addition, CCMA said it will organise the first global green and low-carbon technology and equipment innovation development conference for the construction machinery industry, plus many other important programmes to focus on "the industrial hot spots." Currently more than 30 conferences and events have been confirmed, with details to be released at a later date.

The organisers further highlighted that the National Convention and Exhibition Centre (Tianjin) is equipped with "green, low-carbon and smart technology and facilities." The venue also provides convenient transportation for visitors, directly connected to a metro station, and is only about 13 km from the Tianjin Airport. ■

Website: [www.e-bices.org](http://www.e-bices.org)



The National Convention and Exhibition Centre (Tianjin) will be home to the upcoming BICES exhibition.

## Registration for Hillhead 2022 now opens

Registration to attend Hillhead 2022, the global quarrying, construction and recycling exhibition, is now open. The show will take place from 21 to 23 June 2022 at the Hillhead Quarry, near Buxton, Derbyshire, in the UK.

According to the organiser, the 2022 edition will see the return of all the major industry players, including SMT GB (Volvo), Wirtgen, JCB, Powerscreen, Kubota, Marubeni-Komatsu, Rubble Master, Finning, Sandvik, Liebherr, Bomag, Yanmar, Doosan, McCloskey International, Metso Outotec, Hyundai, Terex Finlay, Bell Equipment, Hitachi, CDE, and Telestack, among others.

Alongside them will be many other Hillhead regulars and a host of new companies, added the organiser, such as LiuGong, Sany, Hidromek, Sunward Europe, and Global Recycling. The show is expected to attract more than 550 exhibitors. ■

Website: [www.hillhead.com](http://www.hillhead.com)



ALL IMAGES: The next Hillhead exhibition will take place from 21 to 23 June 2022 at the Hillhead Quarry, near Buxton, Derbyshire, in the UK.



# New LR 1400 SX crawler crane from Liebherr

Liebherr-Werk Nenzing has extended its range of crawler cranes to include lifting capacities of up to 400 t. The first units of the new LR 1400 SX have already been delivered to customers.

“This is a big step for our location,” said Gerhard Frainer, managing director for sales at Liebherr-Werk Nenzing. “The request for a larger crane came from the market.”

With a compact transport weight of 46 t, the Liebherr LR 1400 SX can be easily relocated between jobsites. Platform and railings remain attached to the uppercarriage during transportation and only need to be folded down.

The self-assembly system enables quick set-up. “You can operate the whole crane with the remote control,” said Paul Belcher, owner and managing director of Mountain Crane Service (USA), one of Liebherr customers. This allows for a better overview and increases safety on site.

Despite its size, the LR 1400 SX has a wide range of applications. “For barge operation, the available barge load charts for any configuration and any possible counterweight combination are crucial. The modular counterweight system is very good. If a smaller counterweight is sufficient, the unit can also be used on a correspondingly smaller barge. This makes the use of the LR 1400 SX very flexible,” explained Andreas Handel, head of mechanical engineering hydro construction at Depenbrock (Germany), another Liebherr customer.

The flexibility and mobility of the LR 1400 SX can be seen when space is restricted. The four crawler drives make it easier to manoeuvre the crane on jobsites where space is tight. Thanks to the track width adjustment, access on narrow roads is also simplified.

For excellent safety, the Gradient Travel Aid assistance system helps to negotiate slopes and inclines. It displays the crane’s centre of gravity and warns the operator before the machine leaves the safe area.

The Ground Pressure Visualization calculates the current ground pressure of the crane in real time and compares it with



ALL IMAGES: The new Liebherr LR 1400 SX crawler crane has a wide range of applications. With a compact transport weight of 46 t, the machine can be easily relocated between jobsites.



the specified safety limits of the relevant position. The system is displayed in the operator’s cab and the operator is always aware of whether the machine is situated in, or is approaching, a critical area. “This is a super feature. We have to constantly observe and monitor the ground conditions,” said Mr Belcher.

The ground pressure of the crane can also be decreased using the ground pressure reduction plates. “Specifically, the wide crawlers and the ground pressure reduction plates convinced us,” said Ludger Holtmann, technical director at Depenbrock. He added that “the free-fall winches, which are required for some applications, were also decisive for the purchase.” ■

Website: [www.liebherr.com](http://www.liebherr.com)

# Sandvik unveils new mobile impact crusher

Sandvik Mobile Crushers and Screens has launched the new QI353 mid-size impactor, the first of its new third-generation 3-series products. The machine features a ground-up new mid-size track platform and custom Prisec impact crusher. It is targeted at quarry, recycling and contractor segments.

The QI353 offers a user-friendly mobile solution, with controls and maintenance points located conveniently at ground level. A key highlight is the new automated control system featuring Optik intuitive user experience with colour visual display, easy navigation, and total integration for troubleshooting, diagnostics and support.

The machine can process up to 400 mtp/h, delivering excellent productivity. Its feed arrangement includes a new feed hopper with curved heavy-duty sides for greater capacity, and tapered feed arrangement to reduce blockages and ensure continuous crushing. It also features a new pan feeder with geared drive and a larger pre-screen with improved access to replace media.

At the core of the QI353 is a new mid-size Prisec impact crusher, which boasts the largest feed opening (1,170 mm x 730 mm) and largest rotor diameter (1,150 mm) in its class, for higher capacity and better energy efficiency. Adjustable apron curtains and tip speed ensure that a wide range of product gradations can be achieved. Also, all plant conveyors have larger discharge heights for increased stockpiling capacity.

The QI353 features a free-flowing feed arrangement where all components in the flow path through the machine get wider, for improved material flow. A load sensing system for feeder drive ensures continuous crushing, and a larger pre-screen for effective removal of fines maximises throughput and reduces wear. In addition, the QI353 benefits from extended service intervals and larger onboard fuel storage to extend intervals between refuelling.

The QI353 has been designed to consume less energy. Its double-deck pre-screen ensures maximum scalping capability and prevents any undersize material passing through the impactor. This maximises crusher throughput, reduces wear costs and energy consumption.

According to Sandvik, the machine requires 40% less hydraulic oil per service and benefits from extended hydraulic oil replacement intervals. When combined, this can be up to 64% less hydraulic oil consumed over 10,000 hrs of machine usage (subject to oil sampling). The QI353 is also fitted with the latest emissions-compliant power pack for maximum performance and cost efficiency.

## More flexibility, connectivity and safety

Boasting a high degree of flexibility to suit any application, the QI353 is ideal for contractors who change jobs frequently. The natural fines conveyor can be positioned for right- or left-hand discharge with a three-position by-pass chute under the pre-screen, allowing users to decide where to send their natural fines. The QI353 also comes prepared to accept Sandvik's new enhanced HS323 hanging screen module, offering the flexibility for the crusher to operate in open or closed circuit.

The HS323 enhancements include: ability to accept belt scales for TPH monitoring on fines and stockpile conveyor belts, subframe enhanced for improved screen media access and tensioning, and an updated mid-size stockpile conveyor. The innovative design enables set-up in less than 30 minutes and can be fitted without the use of additional lifting equipment. The hanging screen option delivers multi-functionality as a 1-, 2- or 3-way split screener, as



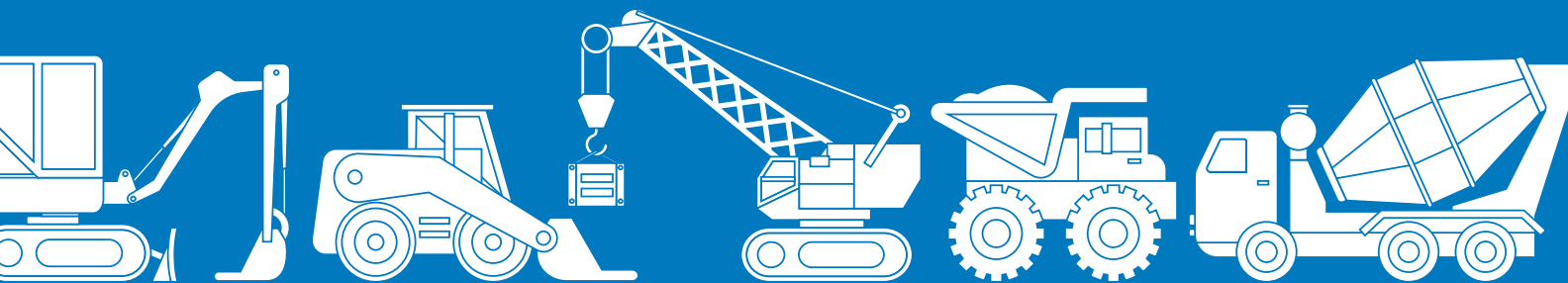
ALL IMAGES: The new Sandvik QI353 mobile crusher is targeted at quarry, recycling and contractor segments.

well as a highly productive and efficient impact crusher.

The new automation system with Optik intuitive user experience includes simplified operation controls and total integration with Sandvik's My Fleet telematics solution. Diagnostic support, pre-installed guides for troubleshooting and real time information allow customers to know exactly how their equipment is being utilised. One of the new additions to the plant is the availability of optional belt scales on the QI353. These are fitted to the product conveyor and will enable productivity data to be displayed on the user interface and via My Fleet for TPH monitoring, enabling full control of the machine's output.

For operator safety, Sandvik has incorporated a new access platform under the feeder and pre-screen and a spacious three-sided 270° platform for service and maintenance. A lifting beam, jib and tackle are provided, as well as the rotor turning device, to ensure operator safety when removing, rotating or installing hammers. A height adjustable overband magnet and all conveyors can be conveniently lowered for inspection and servicing purposes. Enhanced safety features are embedded within Optik intuitive user experience, including visual warnings and emergency stop locations. ■

Website: [www.rockprocessing.sandvik](http://www.rockprocessing.sandvik)



# SOUTHEAST • ASIA CONSTRUCTION

Southeast Asia Construction (SEAC) is a trade magazine based in Singapore, published bi-monthly since 1994 and distributed to a qualified readership all over Asia. The magazine features various construction projects in the region and globally. It also covers the latest on construction equipment, materials, technology and management, as well as major regional and international trade shows.



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# Cat loaders with smart technology for more productivity

Caterpillar has unveiled its new Cat 980 and 982 medium wheel loaders (10- to 12-ton class), equipped with a range of technologies to deliver up to 10% more productivity but also lower maintenance costs by up to 12% compared with the previous 980M and 982M models.

Standard Cat Payload with Assist is included on the new wheel loaders, which enables accurate weighing of bucket payloads so operators can manage loading targets first time and every time. This technology was first introduced on the M-series and includes low-lift weigh and manual tip-off functions. Caterpillar also offers the optional Advanced Payload that expands the system functionality with List Management, Multitask and Manual Add modes and auto Tip-Off which all build on the M-series platform.

The new Assist features on the machines – including Cat AutoDig with Auto Set Tyres – promote correct bucket loading techniques and help the operator reduce tyre slip and loading times. The system is capable of automating the bucket loading cycle, leading to consistently high bucket fill factors and that can add up to 10% more productivity.

The Cat 980 and 982 models also introduce Application Profiles to set multiple machine parameters to optimise the settings for the work being done by the operator – and all at the touch of a button. Customised profiles can be easily created as well to fit customer specific cases. Selectable on-screen Job Aids, together with a new streamlined control layout promote ergonomic driven comfort – all of which means operators of all calibres can be more productive.

The new, larger operator's cab has a wide door and stair-like steps with safety handrails for easy access and egress. A newly designed adjustable suspension seat is available in comfort, deluxe and premium levels and has heating and cooling options for year-round performance. The sound suppression, improved seals and viscous cab mounts help lower noise and vibration levels, providing a superior work environment.

The M-series design ride control continues on these new wheel loaders with the same dual accumulator system to provide even better shock absorption. This results in better ride comfort on rough work sites with empty, full or part filled buckets. In the cabin, a new dashboard design features a high-resolution 8-in touchscreen display with intuitive, user-friendly loader controls. Delivering precision control, the seat mounted electro-hydraulic joystick steering system requires minimal arm movement, which in turn reduces operator fatigue and helps ensure shift-long accuracy. A conventional steering wheel is optional on the 980 model.

The cabin itself features a floor-to-ceiling windscreen for excellent forward visibility of the work area, while a standard fitment rear-vision camera together with convex and remote-controlled spot mirrors help enhance visibility around the machine perimeter to improve jobsite safety. Cat Detect radar is available for hazard alert, while a multi-view, 360-degree vision system is offered as an option for next level monitoring around the loader perimeter.

## Maintenance savings and work tools

Designed with reduced maintenance costs in mind, the Cat 980 and 982 models feature extended hydraulic fluid and filter change intervals. Ground level access to the hydraulic and electrical service centres and grouped lubrication points makes for fast and easy servicing.



TOP AND ABOVE: The new Cat 980 and 982 medium wheel loaders feature a range of technologies to deliver up to 10% more productivity.

Remote services technologies on the wheel loaders can save service trips to the jobsite and ensure the machine maintains peak performance. Remote troubleshoot connects the machine to the Cat Dealer's service centre via a mobile network, and thus it is able to assist in diagnosing fault codes without the need for an on-machine cable connection.

Other technology such as Remote Flash ensures the loader is operating with the most up-to-date software. This means update files are pushed to the machine in the background following customer or dealer initiation via the Cat Remote Services web portal, so there is no interruption to production schedules. The web portal connects the owner or fleet manager to the machine and helps to manage the equipment fleet or a single machine's location, watch hours and maintenance schedules and also allows dealer service requests to be made from a mobile device.

Adding to the new loaders' performance capabilities is the range of Cat Performance Series buckets which ideally match the bucket design with the loader's linkage, providing higher bucket fill factors and better material retention than other bucket designs with the same rated capacity. These buckets are integral to a 'complete' machine design and are a significant contributor to the performance and efficiency of the loader. The Cat 980 can also be fitted with the optional Fusion Quick Coupler, allowing rapid bucket changes without leaving the cabin.

What's more, both new wheel loaders are available with several purpose-built special configurations to add durability and further performance in sectors including industrial and waste, forestry, steel mill and block handling. ■

Website: [www.cat.com](http://www.cat.com)

# RM XSMART: New digital solution from Rubble Master

Rubble Master (RM) has introduced a new fleet management and condition monitoring system, called RM XSMART. Developed in-house, this digital technology combines satellite-based location tracking and advanced telemetry with cloud-based software packages and mobile apps for the best possible connectivity.

“When I founded RM 30 years ago, I never imagined that one day the RM team would file a patent to do with artificial intelligence and digitalisation,” said RM founder and CEO Gerald Hanisch. “For us it’s important to keep a 360° view. We take a look at everything directly on-site together with the customer to find potentials for how we can drive the construction site of the future.”

RM XSMART is the abbreviation for NeXt Level Site Management by Advanced Remote Technology. The system features fleet management and condition monitoring in one tool as the next stage in the development of RM Go! SMART.

According to RM, while operators can still display all data and troubleshooting routines directly on their smartphones at any time, in the future the data will not only be available in the machine’s WiFi network, but anytime and anywhere. This makes the daily work of workshop managers, rental fleet managers, dispatchers and owners much easier.

“We don’t want our customers to waste time doing paperwork for their machines. Our aim is to offer the best service and that includes making the maximum profit,” said Mr Hanisch. This is achieved by centralising and automating the flow of information. RM XSMART gives detailed records relating to operating data as well as operating times.

With just a few clicks, the data from RM XSMART can be broken down to the exact day and time. RM highlighted that since the operating hours are recorded automatically, it is no longer necessary to log hours at regular intervals manually. These records replace handwritten logbooks for each machine and are available at any time as a PDF download for presentation to the authorities.

Waiting times are reduced because diesel and AdBlue levels are recorded continuously, and thus tankers can be dispatched in good time without the machine operator having to call. A frequent problem on construction sites – fuel theft – can also be detected at an early stage, added RM.

By using RM XSMART, the machine owner and dispatcher will have an overview of which machines are available, which are currently being serviced and which are already in operation, explained RM. Tags and notes can be used to pass on additional information, so that users always have a comprehensive overview.

RM XSMART also eliminates the time-consuming search for the exact location of a machine by service technicians or transport drivers. RM pointed out that regardless of whether the machine location has an exact postal address or not, the coordinates are noted in the system and can be shared at any time. In addition, the nearest postal address is provided for easier navigation.

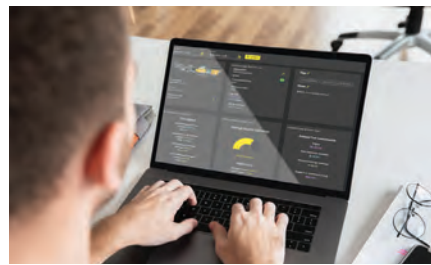
“RM XSMART takes us another step towards the construction site of the future, but much more is still to be implemented, because the potential of the combination of electrification and digitalisation is enormous. That is why RM XSMART will be included with all ‘Next’ machines in the future, and the platform is available as an option on all Go! machines,” revealed Mr Hanisch.

## Energy supply

“Because we take the entire processing chain into consideration,



RM XSMART is available as an option on all RM Go! machines, and will be part of RM Next machines (pictured) in the future.



The RM XSMART system combines satellite-based location tracking and advanced telemetry with cloud-based software packages and mobile apps for the best possible connectivity.



By using RM XSMART, the machine owner and dispatcher can have an overview of which machines are available, which are currently being serviced and which are already in operation.

power management and networking each machine has emerged as a particularly important topic for us,” added RM chief technology officer Markus Gaggl.

Mr Gaggl believes the construction site of the future is electric. “The automotive industry is setting the pace here. Considering that the decision has been made to practically phase out combustion engines by 2030, there will be many more electric construction machines in the foreseeable future.”

RM currently offers its customers the possibility to either connect to the grid or to work completely self-sufficiently. The company can also supply an entire processing line consisting of pre-screen, crusher and post-screen from a single power source. “These machines need to be able to communicate with each other to avoid belts running idle and to save energy,” said Mr Gaggl.

While autonomous crushers and screens are still in the development stage, RM already provides its customers with assistance systems in the form of Performance Indicator and RM XSMART to optimally feed crushers and screens.

“Construction sites will still vary greatly in the future,” explained Mr Hanisch. “Of course, it will be extremely important in urban areas that noise, emissions and dust are kept to a minimum. For construction sites in remote areas such as the jungles of Southeast Asia or desert regions in Central and South America, on the other hand, issues such as energy supply and predictive maintenance are key. That’s why our top priority is to respond flexibly.” ■

Website: [www.rubblemaster.com](http://www.rubblemaster.com)

## Link-Belt introduces 85|RT rough-terrain crane

The new 75-mt (85-Ust) 85|RT rough-terrain crane from Link-Belt is equipped with a full power, five-section formed boom (11.6 – 43.3 m) built to the manufacturer's specific boom profile and tolerances. An available two-piece Link-Belt patented SmartFly (10.7 – 17.7 m) provides greater flexibility and range, and manually offsets at 0, 15, 30 and 45 degrees.

SmartFly's one-person fly erection technology minimises work at height with ground controls for fly assist, and a hydraulic cylinder and ramp releases the fly and returns it to its stowed position. The crane also offers a 2.9-m offset fly that reeves up to four-parts of line and is capable of 22.6-mt lifts. The 2.9-m fly is ideal for applications where two-load lines are necessary for lifting one load, such as precast panels.

"General contractors and fleet owners will appreciate the competitive chart and value this crane delivers, not to mention it transports under 47,627 kg with full counterweight and under 39,008 kg with no counterweight. This 85-Ust (85|RT) was the next logical choice and really an easy decision for introduction following the 120|RT and 100|RT design," said Brian Elkins, Link-Belt's product manager for rough-terrain cranes.

A six-speed transmission on the 85|RT is powered by a 270-hp Cummins Tier 4F QSB 6.7 diesel engine. Matching main and auxiliary winches have 82.8 kN of maximum line pull and a maximum winch speed of 147.8 m/min. The crane includes new drive train and counterweight removal systems.

Durable textured and slip-resistant paint on all walking surfaces improves durability and footing. Centralised electrical locations, remote mounted filters, and easy-access fluid checks simplify routine maintenance and service. Link-Belt said its rough-terrain cranes' flat deck set it apart from others with unobstructed access and egress from the crane's carrier as well as when climbing down from the crane upper. Six points of access, regardless of slew angle, for easy deck access have also been maintained. The operator's cab provides a wide entryway with all the same RT-series features inside (Bluetooth, greater visibility, increased storage, interior lighting, and automotive HVAC).

A 24-V electrical system makes running diagnostics quicker and easier. The wiring is a controller area network (CAN bus) system. This 24-V system yields the ability to multiplex with modules placed near dedicated functions like outrigger beams and winches. In total, there are five modules located throughout the machine that allow crane functions to continue working in instances where other modules are being diagnosed or serviced.

Link-Belt's V-CALC (variable confined area lifting capacities) system features virtually infinite outrigger configurations with real-time 360-degree charts; it has proven itself in general construction and infrastructure applications. Once outriggers are set, the user-friendly Pulse 2.0 system indicates the crane's available capacity. The system then previews the operator's real-time capacities given the crane's current configuration as well as the next five radii for a set boom angle.

Link-Belt's cab design for its rough-terrain cranes offers excellent visibility, operator comfort and intuitive design. All electrical components coming into the cab are bulk headed for 'plug and play' assembly. An ergonomic seat with electronic joystick/single axis controllers provide comfortable operator's station, and cab tilt of 20 degrees keep line of sight easy for any jobsite.



ABOVE AND LEFT: The Link-Belt 85|RT rough-terrain crane is equipped with a full power, five-section formed boom (11.6 – 43.3 m). A two-piece Link-Belt SmartFly (10.7 – 17.7 m) provides greater flexibility and range, and manually offsets at 0, 15, 30 and 45 degrees.

Link-Belt Site Vision includes a lights and cameras package built for extended workdays and cold weather conditions. Cameras on the 85|RT consist of heated rear-view, right-side swing, and winch cameras. A work lighting package is available and offers four high-intensity LED work lights mounted on top of the operator's cab, the right side of the superstructure facing forward, on the upper work platform, and on the left side of the superstructure facing out. Also available are single- and dual-boom floodlights, and remote-control boom floodlights that work in conjunction with other floodlight options.

Other features of the 85|RT include: swing-out engine access doors and centralised electrical locations – keeping them accessible from the ground or near a grab handle or ladder; transmission oil, engine oil, primary and secondary fuel filters, as well as engine oil filter that are mounted for easy reach; telematics in place to give real-time data to better forecast maintenance and service needs of the crane, plus iCraneTrax for better fleet management and maintenance scheduling; and operator programmable function kick outs. ■

Website: [www.linkbelt.com](http://www.linkbelt.com)

# Snorkel upgrades mid-size telescopic boom lifts

Snorkel has improved its mid-size telescopic boom lifts. The machines feature a new dual envelope design as standard, providing higher lifting capacities.

The 400S, 460SJ, 600S, 660SJ, 600S All-Terrain and 660SJ All-Terrain models have been fitted with a newly designed, globally-compliant jib boom. Measuring 1.67 m, this new jib boom reduces the stowed length of the unit for ease of transportation, while enabling higher lifting capacities.

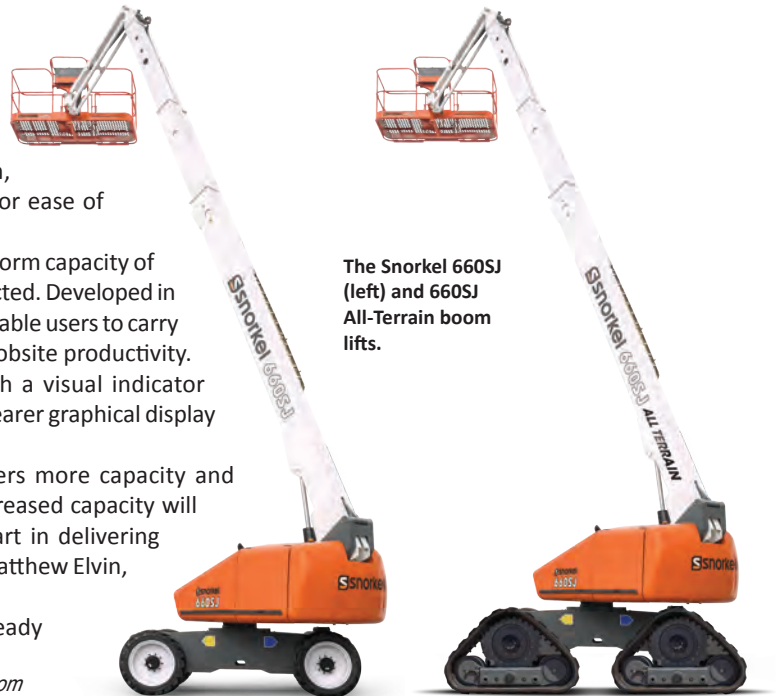
All six upgraded models will now deliver a maximum platform capacity of 454 kg with a restricted working envelope and 272 kg unrestricted. Developed in response to customer demand, the higher lifting capacities enable users to carry additional tools and materials to the work area, increasing jobsite productivity.

The latest models also feature upgraded controls with a visual indicator showing the operator which capacity zone they are in, and clearer graphical display for ease of operation.

“We are very pleased to be able to give our customers more capacity and features on already popular models. We know that the increased capacity will be welcomed by our valued customers, and will play a part in delivering enhanced productivity on jobsites around the world,” said Matthew Elvin, CEO of Snorkel.

The upgraded telescopic boom lifts from Snorkel are already in production and available to order globally. ■

Website: [www.snorkellifts.com](http://www.snorkellifts.com)



## Snorkel Onsite telematics solution now available

Powered by Trackunit, Snorkel OnSite is a full-service telematics solution that is available on most current Snorkel mobile elevating work platforms and telehandlers, many of which are now telematics-ready featuring a compatible connection for the telematics module.

Available globally, Snorkel OnSite can be optioned at the time of ordering for factory-install, or for field-installation by an authorised Snorkel dealer or service centre. Snorkel offers a choice of telematics subscriptions, including a Direct Data and API package that can feed data from Snorkel lifts directly into a customer's existing telematics dashboard, and also a Data and Dashboard package which includes access to a Trackunit-branded dashboard where a customer can access Snorkel machine data, as well as feed in other products from other brands.

Subscription packages are offered in a choice of either 24-months or 60-months, and an optional access keypad with RFID capabilities is available. The type of data that can be accessed in Snorkel products is based on whether the unit is CAN bus or Non-CAN bus, but generally includes key information such as the machine status (on/off), machine hours, the machine's physical location, and the battery charge level.

Access to real-time information provides opportunity for improved product support. Snorkel has trained its global product support teams and distribution network on the Trackunit solution, enabling them to provide faster and more accurate troubleshooting support remotely.

“Trackunit is one of the leading telematics providers for our industry, and we are very pleased to have partnered with them to develop this solution for our customers,” said Matthew Elvin, CEO of Xtreme Manufacturing and Snorkel. “In line with our ‘keep it simple’ approach, we focused on making it easy for our customers to access all of their fleet data in one place, either through the Trackunit dashboard, or by using API's to feed the data into their existing telematics tools. This maximises the usability of the data to the customer, as they can see everything in one place.”

Jeffrey Cohen, president of Trackunit commented, “We are proud to work with an industry-leading OEM in bringing this technology to the market. Snorkel has taken a truly customer-centric approach to the data that their customers will find value in. Leveraging the Trackunit ecosystem, they enable customers to drive useful insights back into their organisations.”

Trackunit is a provider of fleet management solutions to the global construction equipment industry. The company collects and analyses machine data in real-time to deliver actionable, proactive and predictive information, empowering customers with data-driven foresight.

Headquartered in Denmark. Chicago (USA) and Singapore, along with subsidiaries in Sweden, Norway, France, Holland, Germany, UK, Australia and Japan, Trackunit supports its customers globally. Trackunit was selected as the telematics programme partner for the Ahern Family of Companies in June 2020. ■

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# Bentley's digital solutions help build Indonesian roads

Construction company PT Hutama Karya (Persero) was engaged to build the Surabaya-Gresik toll road interchange in East Java province, Indonesia, in preparation for the country to host the 2022 U-20 Football World Cup.

The project presented complex geological conditions and coordination challenges, compounded by requirements to minimise interference with traffic flow and a one-year construction timeline during a global pandemic. PT Hutama Karya tried implementing BIM software, but the initial technology lacked efficiency and visualisation quality. Instead, the company needed comprehensive, integrated 3D modelling and visualisation applications.

With that in mind, PT Hutama Karya opted for various solutions from Bentley Systems. It selected ContextCapture to generate a contour map of the existing site conditions 400% faster than manual methods. Using OpenRoads and OpenBridge for 3D modelling accelerated drawing production by 30 days and facilitated clash detection, avoiding potential errors to save US\$3 million.

Working in an open, connected data environment saved two months amid the Covid-19 pandemic. PT Hutama Karya plans to use the 3D models as the foundation for creating digital twins to promote the company's digital strategies in the construction sector.

This project has been named a Year in Infrastructure 2021 Founders' Honoree (For Pandemic-proof Execution) by Bentley Systems.

## Trans Sumatera project

PT Hutama Karya is also constructing the Trans Sumatera toll road, spanning 2,800 km across Sumatra Island. The Serbelawan to Pematangsiantar section is a 28-km expressway projected to shorten travel time by 50%. Located in a remote and dense forest, the project presented data acquisition challenges while working with numerous disciplines and software platforms.

Having experience using various BIM platforms, PT Hutama Karya sought interoperable digital modelling technology to accommodate large files and improve project collaboration. The company selected ContextCapture to deliver an accurate reality mesh of the remote project



PT Hutama Karya used various digital solutions from Bentley Systems to build the Surabaya-Gresik toll road interchange project in East Java.



The Serbelawan-Pematangsiantar section of the Trans Sumatera toll road project features 28 km long. Here, PT Hutama Karya also adopted Bentley Systems' digital solutions to improve work efficiency.

area in 28 days, compared to the 120 days it would have taken using conventional survey methods.

Adopting OpenRoads and OpenBridge streamlined data and workflows, shortening coordination and approval time by up to 34 days, while Plaxis helped avoid potential critical failure due to soft soil conditions. Bentley's integrated digital

solution resolved compatibility issues and clashes, provided data continuity, and optimised collaboration to save US\$2.18 million.

This project has been named a winner of Going Digital Awards in Infrastructure 2021 (under the Roads and Highways category) by Bentley Systems. ■

Website: [www.bentley.com](http://www.bentley.com)



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# Lintec & Linnhoff at work on Cambodia's road project

Several batching plants from Lintec & Linnhoff have now produced over 500,000 tons of hot mix asphalt for Cambodia's National Road No. 5 (NR 5) Rehabilitation Project, which is currently halfway to completion. The 366-km route will form the main trade link between Cambodia and Thailand, as part of Asian Highway 1, connecting Phnom Penh in the south with the north-western border via Prek Kdam, Thlea Ma-am, Battenbang and Sri Sophorn.

Work on this crucial improvement scheme began in 2018, following years of neglect which also included a major flood in 2000 that caused substantial damage. With many sections of this primary arterial national road being under 8 m in width, the increasing volume of traffic resulting from the country's recent rapid economic growth called for a drastic upgrade.

According to the original project report from the Japan International Cooperation Agency (JICA), some sections of the road were not even wide enough for two lanes, which causes increased congestion and also impacts road safety. This is also accelerating deterioration, as most sections of Cambodia's arterial roads are made using double bituminous surface treatment (DBST). This does not have sufficient bearing capacity to support the increasing traffic volume, especially that of heavy vehicles.

With the maintenance of these DBST surfaces imposing a heavy burden on the nation's finances, the government took the decision to upgrade the whole route to asphalt, a more durable replacement. In addition to adding the new asphalt surface, new roads are being built in several sections, while other parts of the highway will see expansion of the existing carriageway from two to four lanes, reaching up to 23 m in width.

"Such an ambitious scheme clearly requires a reliable material supply, so three high-capacity asphalt mixing plants from Lintec & Linnhoff were chosen for the project. Chief among these is a Lintec CSD2500B containerised asphalt plant, the second largest in the CSD range with an output of between 140 and 160 tons per hour," said Teo Siang Leong, general manager (sales) at Lintec & Linnhoff Asphalt Pte Ltd.

"This is proving to be a popular choice with contractors and deliver

notable savings in fuel consumption and maintenance, thanks to a design that eliminates the need for a hot elevator and vibrating screens through the unique double screen drum technology. With a modular, fully enclosed structure built in ISO shipping containers for economical transportation, installation and dismantling is also easy."

Also working on the project is a Linnhoff CMX1500 CompactMix asphalt plant. Although classified as stationary models, their modular structure provides high portability and ease of relocation. Each module of these plants is also compatible with transportation in ISO shipping containers, delivering economical shipping, reducing setup and dismantling times, and providing easy maintenance access at all levels. The CMX1500 is able to produce an impressive output of up to 120 tons per hour.

For sections of the project where even greater mobility from the asphalt plants was required, a Linnhoff TSD1500 MobileMix asphalt plant provided the necessary flexibility. Offering a production capacity of up to 120 tons per hour, this mid-range TSD model is configured from just four main mobile modules, featuring a built-in chassis and quick-coupling cables that provide plug-and-play convenience, ensuring rapid mobilisation whenever required.

The Linnhoff TSD1500 asphalt plant is ideal for short-term or remote projects. Setup and dismantling can all be achieved without the need for time-consuming heavy concrete foundations. Its hydraulic self-jacking support system also eliminates the need for high capacity cranes.

Like the Lintec CSD2500B, both the Linnhoff TSD MobileMix and CMX CompactMix asphalt plants share the same highly efficient double screen drum technology that combines the drying and screening of aggregates in a single drum to reduce overheads.

"It is that additional value, reliability and precision to comply with the strict requirements of the project that has ensured Lintec & Linnhoff are the customer's preferred brands," said Mr Teo. "For our part, it is a privilege to provide such crucial support for a project that will reduce traffic accidents and congestion while enhancing trade, tourism and the overall economy of Cambodia."

The NR 5 Rehabilitation Project is scheduled for completion in mid to late 2022. ■

Website: [www.lintec-linnhoff.com](http://www.lintec-linnhoff.com)



Lintec CSD2500B asphalt plant is built in ISO shipping containers, ensuring economical transportation and fast setup.



Linnhoff CMX1500 CompactMix asphalt plant is equipped with the energy-saving double screen drum technology.



Linnhoff TSD1500 MobileMix asphalt plant features fully integrated four basic mobile modules with built-in chassis.

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# Goldhofer delivers record-breaking load in Indonesia

The Indonesian government's refinery development masterplan reportedly has a budget of around US\$17 billion. This is to be spent on upgrading and modernising the five largest oil refineries in the country in line with the latest environmental standards. One of them is the Balikpapan refinery in East Kalimantan.

A main task in this refinery upgrade was the supply of plant components and equipment for residual fluid catalytic crackers (RFCC), which employ catalytic cracking to process crude oil to the highest environmental standards into high-quality oil for the production of gasoline and diesel fuels. So as to be able to handle these processes at the refinery in Balikpapan, the state-owned Indonesian oil company PT Pertamina ordered the necessary components for the plant from the Korean company Hyundai Heavy Industries.

The components were loaded onto the Korean Hanjin Leader heavy lift vessel and shipped to the port of Balikpapan. From there, they were taken over by PT LV Logistics of Indonesia and transported overland to the refinery over a distance of 3 km.

The demands that the project made of the Indonesian freight forwarder were considerable. The contract comprised plant components with a total volume in excess of 24,500 cu m. These included a disengager/stripper weighing 1,031 tons and measuring 37.8 x 12.3 x 13.8 m, as well as two regenerators weighing 1,357 tons and 1,003 tons, and measuring 28.9 x 17 x 16.1 m and 33.6 x 14.1 x 15.2 m respectively.

Transportation of the first regenerator alone is believed to have set a new record as the heaviest and most voluminous load transported in Indonesia to date. On top of that, the gigantic transport – with a total weight of 1,597 tons, an overall length of 34 m and a width of over 11 m – had to be coaxed around several 90-degree bends within the refinery.

Confronted with loads of such a size and weight, PT LV Logistics of Indonesia turned to transportation solutions provided by Goldhofer AG. The decision was taken to use three Goldhofer PST/SL self-propelled modules combined with THP/SL modules with 20 axle lines each.

The mechanically steered PST/SL self-propelled transporters are specially designed for such heavy-duty work, with



The 1,357-ton regenerator being transported on Goldhofer 3x20 PST/SL axle lines to a refinery project in Balikpapan, East Kalimantan.



Thanks to the wide steering angle and remote control for the three self-propelled modules, the loads could be manoeuvred in the most confined spaces.

axle loads of up to 45 tons and a tractive driving force of up to 160 kN per axle line. With a suspension stroke of 600 mm, the heavy-duty combination can be driven completely under the load and pick it up hydraulically. This is considered a major saving in terms of time and money, for one thing because the loads can be picked up without the use of a crane.

In addition, the Goldhofer PST/SL

modules can be combined with other towed and self-propelled heavy-duty modules from the Goldhofer portfolio. This ensures long years of economical working, and also the option to add to the fleet at short notice by renting the relevant vehicles.

Thanks to the use of Goldhofer equipment, the entire project could be completed within just five days. ■

Website: [www.goldhofer.de](http://www.goldhofer.de)



# THE WINDS OF CHANGE

**Black & Veatch shares upcoming trends and technologies for onshore wind construction**

The global engineering, procurement, consulting and construction company, Black & Veatch, has been involved in the design, development and implementation of more than 56 GW of wind energy projects and has reviewed wind resources of sites throughout the world. The company's experience spans from less than 1 MW to large farms of more than 1,000 MW. With onshore wind projects continuing to gain momentum worldwide, Black & Veatch's Sam Scupham talks to Southeast Asia Construction (SEAC) about the state of the industry in Asia, upcoming global trends, and new construction innovations that help advance the industry.

## **The rise of onshore wind farms in Asia**

According to the International Renewable Energy Agency (IRENA) renewable energy statistics 2021, several countries in Asia have increased their onshore wind capacity between 2019 and 2020. More recently, Laos announced its first onshore wind project.

IRENA reported that despite pandemic restrictions, wind expansion in Asia almost doubled in 2020 compared to 2019. China is the leader of the pack with 72 GW of new wind capacity.

Vietnam is another promising market for onshore wind energy, said Sam Scupham, associate vice president, global renewable and distributed energy-power Asia, Black & Veatch. Black & Veatch is currently the owner's engineer for the Ia Pech 1 and Ia Pech 2 wind farms (each with a capacity of 49.5 MW), located in the Ia Grai district of Gia Lai province. The company is responsible for project management, project control, design review, quality assurance, construction monitoring and commissioning support.

In May 2021, the Asian Development Bank (ADB) announced its support for three new 48-MW wind farms in Vietnam's Quang Tri province. This 144-MW project is expected to increase the country's wind power capacity by 30%, helping to meet its growing demand for energy.

"Another Asian economy that has good wind potential is the Philippines," added Mr Scupham. "With the Philippines allowing 100% foreign ownership for large-scale geothermal developments, we anticipate rapid renewable energy market growth in the country."

Among the latest projects in the Philippines is the Aklan wind farm with a total capacity of 75.6 MW, located in Aklan province.

This project is part of a large-scale grid reinforcement and expansion for the islands of Cebu, Negros and Panay, called CNP Backbone Extension.

“We believe the future of Asia’s onshore wind projects will be minimally impacted by the pandemic in the long term. The investment appetite for Asia’s renewable energy market is growing and we believe wind energy will accelerate the decarbonisation of Asia’s electricity sector,” explained Mr Scupham, who is now based in Bangkok, Thailand.

“In the mid-term, some renewable energy projects in the region have been postponed due to pandemic uncertainties and supply chain impacts with respect to commodity prices and fabrication of equipment. However, we see many of our clients taking the opportunity to advance pre-development activities including project planning, designing and permitting for projects that have been confirmed.

“In the face of rapidly evolving pandemic challenges, meticulous planning of resources and logistics will be critical to renewable energy project success.”

### Global trends

Mr Scupham noted that a growth driver of onshore wind capacity is the reduced cost of electricity generation from onshore projects, compared to offshore projects.



LEFT: Sam Scupham, associate vice president, global renewable and distributed energy-power Asia, Black & Veatch.

OPPOSITE, BELOW AND BOTTOM: Black & Veatch has been involved in onshore wind energy projects globally. Among them are the Cardinal Point Wind in the US (pictured) and the Ia Pech 1 and Ia Pech 2 wind farms in Vietnam.





“The infrastructure for transmitting electricity from onshore turbines is less expensive than the infrastructure required for transmitting electricity from offshore turbines.”

“One of the key trends we are seeing is an interest in hybrid power generation systems, which integrate renewable electricity generation with energy storage as a grid asset,” said Mr Scupham. “This pairing helps to address the variability of renewable energy generation.”

“Another key trend is the deployment of higher hub heights and larger rotor diameters to increase generation capacities. Today, rotor diameters of 170 m are available. To accommodate the increased capacities from renewable energy generation, integrated power solutions, including robust transmission and distribution systems, will be required.”

With multiple moving parts in an energy transition, Mr Scupham pointed out that grid management complexities will increase. “From that aspect, digitalisation can be expected to play a key role in optimising power load and supply opportunities to enhance grid reliability.”

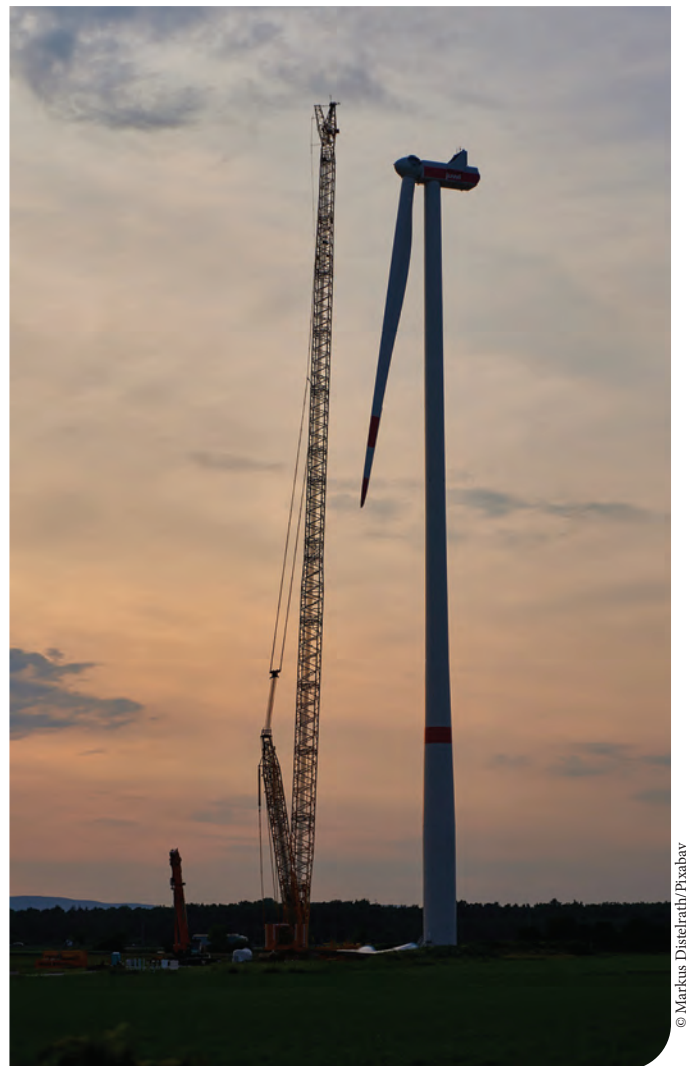
**‘Prefab can be extensively applied’**

Construction methods and technologies to build onshore wind farms have also been developing over the years. “Prefab methods, such as prefabricated prefinished volumetric construction (PPVC), can be extensively applied in onshore wind installations,” explained Mr Scupham.

“A wind farm consists of a substation, a number of wind turbine generators (WTGs), transmission lines and collection circuits. The transmission lines and collection circuits have transmission towers, collection circuit towers and poles. The foundation components can be PPVC modules.”

“The benefits are significant,” he emphasised. “First, PPVC foundations can be produced indoors, so the work is not heavily subjected to weather conditions. This will save time and maintain quality, particularly during the monsoon seasons in Southeast Asia.”

“Second, in projects where the transmission line’s foundations are located in remote areas with limited access, PPVC will help to minimise the access impact and simplify the construction



© Markus Distelrath/Pxabay

TOP AND ABOVE: Some key trends that could shape the onshore wind industry include hybrid power generation systems, as well as higher hub heights and larger rotor diameters to increase generation capacities.



Both images © Built Robotics

LEFT AND RIGHT: Built Robotics develops a system that enables the upgrading of existing machines to be fully autonomous. Black & Veatch has used this technology on solar projects and sees an opportunity to extend it to the wind industry.

process, since there is no need to carry out formwork casting, rebar installations and concrete placement on site. Our Ia Pech project in Vietnam uses precast foundations, a type of PPVC, for the collection circuits, including pad-mount medium voltage (MV) transformers, tower and poles.”

### ‘Drones offer many benefits’

Mr Scupham also mentioned that there are opportunities to use drone-based solutions for site maintenance and inspections of onshore wind projects for erosion and wear.

“The run-time for drones is improving and applications continue to expand rapidly. Beyond reducing cost, easier access and improved employee safety, the unmanned aerial system (UAS) featuring high-definition images or video offers many advantages: increased frequency of inspections with improved vantage points; ability to collect greater levels of data analysed to assess assets; improved system reliability and resiliency; reduced asset management costs; and lower the impact to the landowners.”

Black & Veatch’s project with the US energy company Ameren Corp. and Collins Aerospace has shown that drones can complete a non-stop flight of up to 60 miles (96 km), revealed Mr Scupham. The team proved that Beyond Visual Line of Sight (BVLOS) drone flights can inspect more miles of transmission lines faster and safer than ever envisioned.

“The flight demonstrated the maturing technology’s promise of more efficient monitoring of expansive utility assets, especially in remote rural stretches. This long-range achievement underscores the revolutionary potential of drones in ensuring a resilient power supply, using an eye in the sky and imaging data captured by the Light Detection and Ranging (LiDAR) laser-scanning system.”

He stressed that with wind installations naturally located in areas with strong wind, well-trained pilots will be required to control drones in such environments.

On the topic of digital twin, which is fast becoming a new game changer in engineering and construction, Mr Scupham shared his view. “The digital twin technology can provide the ability to visualise complex information in a simplified way. For instance, it can enable the operation and maintenance teams of onshore wind installations to collaborate using spatial 3D models to visualise performance data and maintenance records for assets.

“This technology benefits asset-intensive industries like utilities. It is essentially an integrated digital representation of physical assets which provides historical, current and predictive analysis in near real-time. What separates digital twin from traditional models is that the twin is in constant dialogue with its physical counterpart through combining information technology (IT) and operations technology (OT), enabling the users to simulate scenarios before actioning them in the real world.”

### The potential of autonomous machines

“Innovations in construction automation and digitalisation are very exciting for Black & Veatch,” continued Mr Scupham, speaking further on advanced technologies for onshore wind construction. “We are early adopters of construction technologies that improve safety, efficiency and effectiveness in project operation and execution. We have been investing in these areas to help our clients meet project scheduling and budget targets.

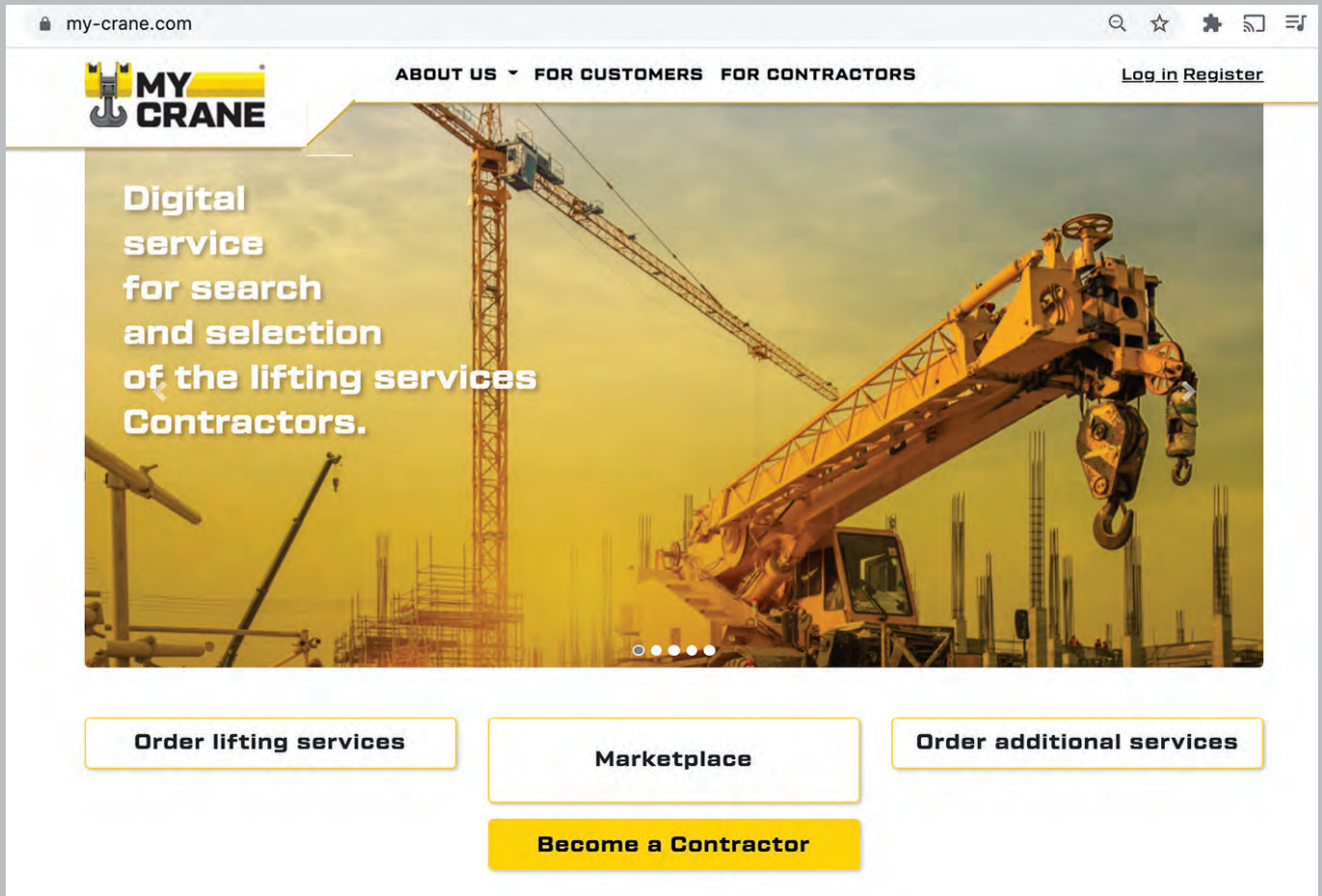
“One example is Built Robotics, which develops a system that enables the upgrading of existing heavy equipment to be fully autonomous. Such equipment would be able to work on job sites without operators inside the cab, and even without operators remote controlling the equipment. Built Robotics has autonomous excavators and bulldozers that have been involved in foundation excavation, trenching and grading.”

Black & Veatch has started using autonomous excavators to dig trenches for buried infrastructure. The company deployed Built Robotics’ autonomous excavator on a solar project and is continuing to use the machine for trenching on utility-scale solar projects. “We see the opportunity to extend these construction technologies to the wind industry,” said Mr Scupham.

“We are optimistic that such advanced technologies will help to reduce costs and optimise construction schedule, while improving safety standards. Ultimately, all these benefits will help us drive greater value for our clients.” ■

Website: [www.bv.com](http://www.bv.com)

# CRANE RENTAL GOES DIGITAL



A new digital platform, MyCrane, has been launched to simplify the process of crane rental procurement. It allows users to submit details of their lifting requirements in order to receive personalised quotes from a range of registered crane providers. Available globally, this B2B platform also offers a number of other tools for the crane industry, including a Marketplace and support services such as engineering and legal consultancy.

## Simpler way of procuring crane services

The new platform (www.my-crane.com) has been developed by entrepreneur and industry professional Andrei Geikalo, a former commercial director at heavy lift specialist Mammoet. Registration is free for both users and equipment rental companies.

“MyCrane was born out of the desire to change the existing outdated and inconvenient methods of procuring crane services, and to make life easier for those who require lifting services,” explained Mr Geikalo.

“At present, crane rental is a manual, old-fashioned process that takes far too much time. In launching the service, we have combined the latest digital technology with our long industry experience. I have personally been involved in countless heavy cargo and lifting projects, so I know only too well how useful our service will prove to be.

“With MyCrane, there are no more phone calls or unclear quotations to decipher – just easy-to-understand quotes delivered direct to your inbox. And when you need to change your quote, simply amend your online request at the MyCrane website and our equipment providers will be back in touch.”

MyCrane, which took over two years to develop, removes the need for users to contact multiple equipment providers. Instead, users are requested to complete an online request form which has been carefully designed to ensure they receive directly comparable quotations.

The platform is suitable for cranes between 6- and 750-tonnes capacity. Crawler, mobile and tower cranes can all be requested on the site. The team is also working on adding new crane types, such as fast assemble tower cranes, gantry cranes, mini cranes and others.

Besides the lifting services search, there is an online Marketplace to advertise used equipment, rigging equipment, spare parts and auxiliaries, plus career vacancies, while a news portal will allow users to stay up-to-date with the latest industry developments. Additional supports include engineering and design services as well as legal consultancy.

The support services, such as engineering for heavy lift projects, are offered on a truly independent basis, meaning clients are presented with a full range of solutions, service providers from the whole of the market, and the most cost-effective solution.

“We believe MyCrane will set a new standard for the lifting business - making crane rental easier, quicker and more transparent,” said Mr Geikalo.

The MyCrane service, which is headquartered in Dubai, UAE (company name MyCrane DMCC), operates on a franchise model, and enquiries are welcomed from industry professionals who may be interested in operating the MyCrane service in their home country.

### Choosing the right cranes with MyCrane Selector

MyCrane has recently commenced the testing of a new, universally accessible crane selection tool which will be offered to the lifting industry at no cost. It is expected to go live in the first half of 2022.

The 'MyCrane Selector' tool will allow users to quickly and easily identify what crane should be used, as well as the crane's capacity and optimum configuration. It will “simplify the life of all those involved in the lifting industry,” highlighted Mr Geikalo.

“The lifting of any cargo begins with defining the right crane and its configuration, based on the cargo characteristics and the position of the crane. Each crane has a manufacturer's crane chart which indicates the capacity of the crane in certain configurations, allowing the user to determine the length of the main boom, the length of the jib, the weight of the ballast and super-lift.

“Engineers at construction and lifting companies often have to make use of these charts and search for the right crane configuration manually, which is why a digital solution will prove to be so useful.”

Mr Geikalo continued, “Our users simply need to insert the radius, the height of the lift, the dimensions and weight of the cargo, and they will get the right crane for their lift. MyCrane can also help if further engineering and method statements are required.

“We know that some companies are already using such a tool for their internal use, while others even charge for it, however we believe that this tool should be available for everybody in the lifting industry as a free cloud solution.”

Following the testing phase of the MyCrane Selector, the next step will be to integrate the lifting charts of as many cranes as possible into the system, so that clients around the world can choose the right cranes for their needs.

MyCrane therefore wishes to invite global crane manufacturers for cooperation by sharing their database of crane charts, both for those manufactured earlier and newly-built cranes.

### Franchisees in Asia and UAE

A new, exclusive pan-India franchisee has been appointed by MyCrane. The agreement for this partnership was signed at Expo 2020, currently taking place in Dubai.

The MyCrane service in India will be operated by Mumbai-based Sahil Freight Express Pvt Ltd. Established in 1986, the company has extensive experience in the freight and logistics sector.



TOP: MyCrane has been developed by entrepreneur and industry professional Andrei Geikalo, a former commercial director at heavy lift specialist Mammoet.

ABOVE: A franchise agreement for the Indian market was recently signed by Mr Geikalo and Suhail Shaikh, chairman and MD of Sahil Freight Express Pvt Ltd.

OPPOSITE: A screenshot of the new MyCrane platform, which allows users to submit details of their lifting requirements in order to receive personalised quotes from a range of registered crane providers.

### MyCrane Selector tool

MyCrane will integrate the lifting charts of as many cranes as possible into the system, so that clients around the world can choose the right cranes for their needs. As such, all crane manufacturers are invited to share their crane charts with MyCrane, both for those manufactured earlier and newly-built cranes.

As an exclusive distributor for Scheuerle in the past, Sahil was responsible for introducing the manufacturer's globally-renowned SPMTs, modular platform trailers and semi-trailers to the Indian market. In addition, Sahil has handled a number of heavy lift projects, and was the pioneer in establishing the concept of NVOCC/ LCL (less-than-container-load) consolidation as a service provided by freight forwarders in India.

Mr Geikalo said, "India has one of the fastest digitising economies in the world, as well as a very positive outlook for the Indian cranes and construction sector, so we are delighted to be opening the MyCrane service in the country.

"In Sahil Freight, we have the right partners who have a proven track record of introducing new products and services to the market. I have no doubt MyCrane will be a big success in India."

The crane market in India is expected to grow strongly in the coming years. The ongoing expansion of roads and metro railways, plus the routine maintenance and upgrading of oil refineries, cement and power plants, are all driving demand for cranes.

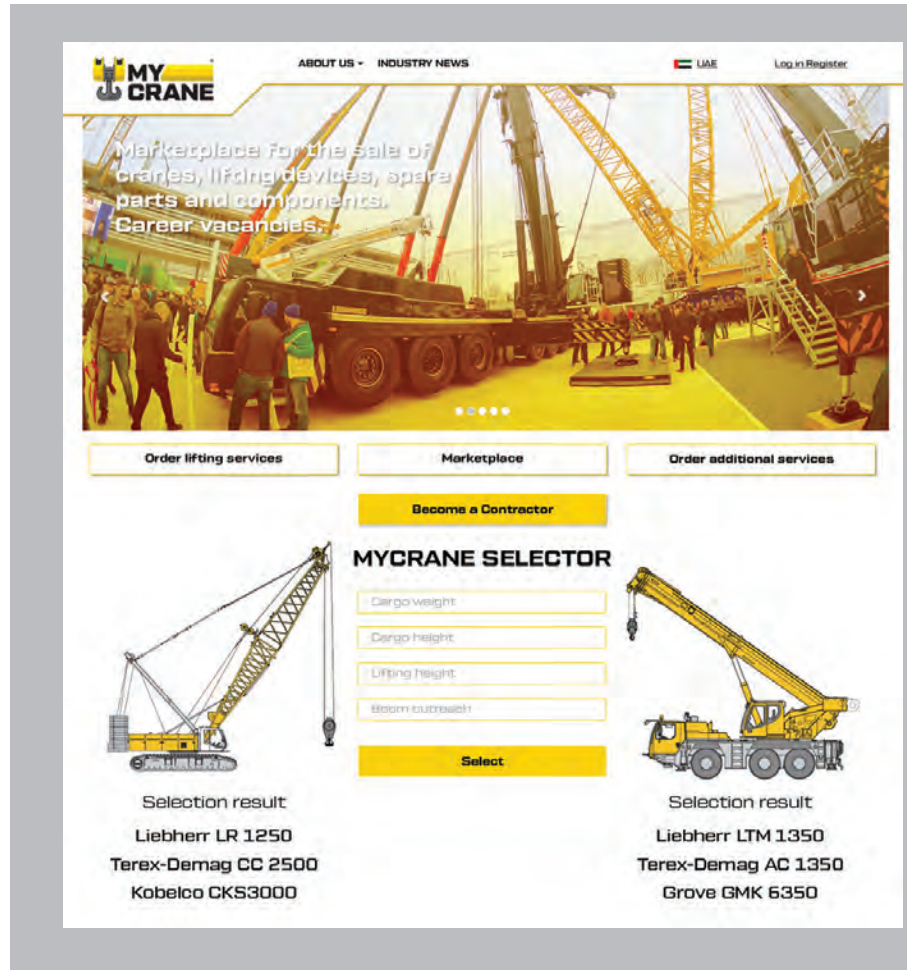
Suhail Shaikh, chairman and managing director of Sahil Freight Express Pvt Ltd, pointed out that "while the crane market is expected to be very strong in the coming years, it remains a fact that the majority of the rental equipment market in India is dominated by smaller, informal players.

"MyCrane therefore has a huge opportunity to make life easier for those seeking crane rental services, by connecting them with a wide range of reliable equipment providers who have been thoroughly vetted by our team. We are excited about the journey ahead and look forward to getting to work in the Indian market."

Last year, MyCrane appointed four other franchisees. These appointments were confirmed at The Big 5 construction trade show in Dubai, which was held in September 2021. It marked the launch of MyCrane operations in the key markets of the UAE, Oman, Kazakhstan and Uzbekistan, and the opening of MyCrane offices in Dubai, Muscat, Nur-Sultan and Tashkent.

### Franchises available in Asia

The MyCrane service operates on a franchise model, and enquiries are welcomed from industry professionals who may be interested in operating the MyCrane service in their home country.



The new MyCrane Selector tool will allow users to quickly and easily identify the ideal crane for their lift.

### Partnership with Pesco Switzerland

In October 2021, MyCrane announced the signing of a Memorandum of Understanding (MOU) with Pesco Switzerland AG, an engineering, procurement and construction management (EPCM) company headquartered in Zug.

A specialist in the energy industry, Pesco is the project management contractor for the gas chemical complex within the world's largest ethane-rich gas processing complex (EGPC), which is being constructed by JSC RusGasDobycha and PJSC Gazprom in Leningrad region.

EGPC products will include LNG (13 million tons per year), polyethylene (up to 3 million tons per year), liquefied hydrocarbon gases and pentane hexane fraction.

The MOU provides for the two companies – MyCrane and Pesco Switzerland – to cooperate in order to: expand their client and partner base, develop common areas of activity, work together on matters of mutual commercial interest, and undertake the joint implementation of projects and innovations.

Both parties have agreed to the sharing of technical and other information, for the purpose of inviting the other party's participation in such activity.

MyCrane will also make available its in-house engineering support services, which are offered on a truly independent basis, with solutions for lifting and transportation not restricted to using specific equipment providers or pre-determined methods.

"We are excited to deepen our cooperation with Pesco,



Mr Geikalo signs a partnership agreement with his new UAE and Oman franchise partner Kirill Vishensky.



Mr Geikalo and Dorus Everwijn, MD of Pesco Switzerland, celebrate the signing of the MOU.

which is a global player and a leading name when it comes to the management of projects for the energy industry,” commented Mr Geikalo. “Our MOU sets the framework for our future cooperation and demonstrates Pesco’s confidence in MyCrane as a trusted partner. It enhances our relationship and reinforces our commitment to sharing knowledge and innovating together.”

Dorus Everwijn, managing director of Pesco Switzerland AG, added, “The MyCrane service is long-overdue. As a leading project management and EPCM services provider active in the oil and gas downstream industry, we welcome the efficiency offered by MyCrane and appreciate the innovative approach to what was previously a very time-consuming process for all parties.

“The most valuable commodity we have is time – MyCrane allows us to save time, while simultaneously accessing a multitude of vendors.” ■

Website: [www.my-crane.com](http://www.my-crane.com) | Email: [info@my-crane.com](mailto:info@my-crane.com)



MyCrane announced the appointment of four franchisees at The Big 5 exhibition in Dubai last year – for the UAE, Oman, Kazakhstan and Uzbekistan markets. Mr Geikalo (centre) is pictured at the event with his new franchise partners.



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# Anji Khad Bridge

IN JANUARY 2017, INDIAN RAILWAYS AWARDED HCC (HINDUSTAN CONSTRUCTION COMPANY) THE CONTRACT TO BUILD A CABLE-STAYED BRIDGE FOR THE UDHAMPUR-SRINAGAR-BARAMULLA RAIL LINK PROJECT (USBRL), WHICH IS BEING DEVELOPED BY KONKAN RAILWAY CORPORATION LIMITED (A PUBLIC COMPANY IN INDIA) TO CONNECT THE KATRA AND REASI STATIONS ON THE JAMMU-BARAMULLA LINE.

INITIALLY, AN ARCH BRIDGE WAS PLANNED IN ANJI KHAD, BUT A TECHNICAL EXPERT COMMITTEE DECIDED THAT THE LOCATION WAS UNSUITABLE FOR THIS TYPE OF BRIDGE. SO, THE DECISION WAS MADE TO BUILD A CABLE-STAYED BRIDGE WITH A SINGLE PYLON STANDING 331 M ABOVE THE RIVERBED.





### Efficient lifting equipment

To respond to the demands of the project and the challenges involved in constructing the pylon at such a remote, complex site, HCC selected a 21CM550 flat-top tower crane (25-ton) from Comansa's 2100 series. This crane model is designed to ensure optimal performance in projects where heavy loads must be moved, like those in bridge construction.

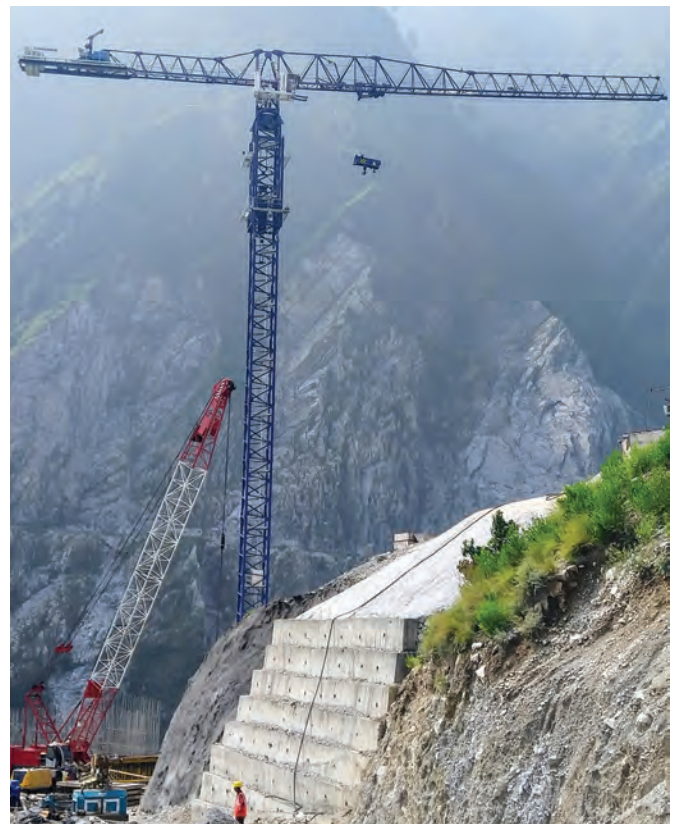
The Anji Khad Bridge has been dubbed the first cable-stayed railway bridge in India. It is also viewed as an engineering wonder due to the difficulties involved in the construction process and the technology used.

Thanks to its easy assembly and smaller space requirements, the flat-top design patented by the crane manufacturer has overcome the logistical challenges linked to the complicated topography in the area. Additionally, the automatic trolley change, along with the Power Lift system, enables variable loads to be dealt with efficiently while ensuring that the crane achieves maximum productivity.

Another challenge is that the Anji Khad Bridge is being built in difficult terrain. Fortunately, Comansa cranes are equipped with a lightning protection system that can prevent damage to electronic devices. Furthermore, the cranes are designed to withstand wind pressure in accordance with European C25 standards.

Comansa is also collaborating with its local partner, M/S Escorts Limited, allowing it to use a technical service and acquire spare parts as quickly as possible in order to meet the project's demanding deadlines. The bridge is expected to be completed by December 2022. ■

Website: [www.comansa.com](http://www.comansa.com)



TOP LEFT, TOP AND ABOVE: The Anji Khad Bridge has been dubbed the first cable-stayed railway bridge in India. It is also viewed as an engineering wonder due to the difficulties involved in the construction process and the technology used.



TOP AND ABOVE: To respond to the demands of the project and the challenges involved in constructing the pylon at such a remote, complex site, HCC selected a 21CM550 flat-top tower crane from Comansa. This crane model is designed to ensure optimal performance in projects where heavy loads must be moved, like those in bridge construction.



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# Route 2020

The new Route 2020 in the UAE extends the Red Line of Dubai Metro, connecting the city to the Expo 2020 site. This 15-km section includes 11.8 km of elevated railway and the remaining 3.2 km underground.

Four of the seven stations - Jabal Ali, The Gardens, Discovery Gardens and Al Furjan - were opened to the public on 1 January 2021, while the entire Route 2020 became operational later in June. The construction work also included three main power supply stations and an additional traction power supply station.

The US\$2.9 billion infrastructure project enables easier access to the exhibition site, located near Al Maktoum International Airport. It also passes through various densely populated areas of the city, making it a fast, safe method of urban transport for many commuters in Dubai.

During the Expo period, from 1 October 2021 to 31 March 2022, the new metro line is expected to accommodate up to 35,000 passengers per day on weekdays and 47,000 on weekends.

## Mapei solutions

Mapei was involved in the construction of Route 2020, providing its underground solutions for the Expolink consortium (comprising Alstom, Acciona and Gülermak) to build a 2.5-km-long, 10-m-diameter tunnel, which was excavated with a tunnel boring machine (TBM).

The Mapei products for the TBM excavation works comprised the grout systems for the backfill of the TBM segment (Mapequick CBS System 1, Mapequick CBS System 2 and Mapebent CBS 2), the Polyfoamer FP foaming agent for the TBM cutterhead, and



**ABOVE: The new Route 2020 is an extension to the Red Line on the Dubai Metro network. It runs for 15 km from the city to the Expo 2020 site.**

**TOP RIGHT: One of the seven stations along Route 2020.**

**RIGHT: Mapei was involved in the project, supplying a variety of solutions for the station buildings as well as for the TBM excavation works.**



the Mapeblox T and Mapeblox H sealants. In addition, Lamposilex and Resfoam 1 KM were used to close the water leakage in the tunnel.

Mapei also supplied materials for the screeds, to prepare substrates and for the installation of stone inside all the stations along the line. To cope with the constantly increasing passenger levels, the stations feature larger access ramps to the platforms compared with those along the existing stations on the Red Line.

The Topcem special hydraulic binder from Mapei was applied to create normal

setting, controlled shrinkage and rapid-drying screeds in all the stations along Route 2020, for a total surface area of 70,000 sq m.

In four of the stations, slabs of engineered stone were installed with Granirapid adhesive, which allowed the site teams to install the material in difficult climatic conditions, at temperatures of more than 30°C. As the stone covering was made up of engineered agglomerate, this adhesive system was specially selected to avoid any stains or moisture-related problems on the final surfaces.





The article courtesy of *Realta Mapei International* no. 83

The new metro line under construction.

The stone was then grouted with Keracolor FF cementitious mortar mixed with Fugolastic admixture. The product chosen to seal the expansion joints was Mapesil LM, which helps prevent the formation of marks and stains on the surface of stone.

In the service areas of the stations, ceramic tiles were installed with Keraflex Maxi S1 adhesive before grouting joints with Kerapoxy. Given the high level of vibration caused by the movements of the trains, Keraflex Maxi S1 was selected due to its high deformability.

For the four buildings that house the electric controls for the trains, the Mapetherm system was used. This external thermal insulation system for facades prevents rooms inside the buildings from heating up excessively, thereby reducing energy consumption, improving the level of comfort and the sustainability of the structures.

Apart from bonding rockwool insulation panels with Mapetherm AR2 mortar, the materials chosen for this work were Mapetherm AR1 adhesive and skimming compound and Mape-net 150 mesh. In all buildings, the insulated surfaces were then treated

with Quarzolite Base Coat coloured acrylic undercoat before applying Quarzolite Tonachino, a textured coating of 1.5-mm grain size. The use of ColorMap automatic tinting systems enabled the right shade of grey to be obtained from amongst the more than 1,000 colours of the Mapei Master Collection.

The Ultraplan Eco 20 levelling compound, which is produced and distributed on the local market by Mapei Construction Chemicals, was applied in several areas to level off the substrates, after treating them with Primer G.

On raised floors, the system used to level any irregularities consisted of Primer SN – mixed with Quartz 1.2 ME (distributed locally by Mapei Construction Chemicals) – and Ultraplan Maxi. In some areas, vinyl floor coverings were installed with Ultrabond Eco 375 adhesive.

Other Mapei systems for the project included Mapegrout ME05, Mapegrout ME06, Mapefill GP-ME and Mapegrout T60 ME. These products are also distributed locally by Mapei Construction Chemicals. ■

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# REBUILDING 'PARADISE'

The Bahamas is one of the world's top tourist destinations, located approximately 160 km off the coast of Florida in the Atlantic Ocean. With a great climate – averaging just over 28°C – and a crystal-clear sea of turquoise waters and pearly white sand beaches, it is often called 'paradise.'

Helping keep commerce and tourists moving in the region is Bahamian construction company BHM Co Ltd, which has more than 30 years of experience in asphalt production. BHM recently purchased an Ammann ACM 140 Prime asphalt batching plant, featuring a production capacity of 140 tons per hour.

BHM used the plant during rebuilding of the Queen's Highway, the island of Eleuthera's main road. The road resurfacing and maintenance work began in February 2021 and encompassed the application of approximately 15,000 tons of asphalt mix.

BHM first considered the ACM 140 Prime because of a recommendation from a partner construction company, according to Eng. Ramdeo Ramdass, operations manager at BHM. "We are pleased with the ACM 140 Prime's high productivity, especially

when considering its reduced size, as well as with the ease of transport and easy assembly," he said.

Ammann ACM Prime series plants are perfectly suited to local Bahamian requirements, said Ricardo Galvis, Ammann's regional manager who oversees the Caribbean. "The region demands sustainability, high quality and transportability."

ACM Prime plants can fit on two trailers, making for easy travel by land or sea. "Fitting on two trailers is essential when moving around an island, and when moving between islands," highlighted Mr Galvis. He also mentioned that the plants "produce high-quality mix."

Gilvan Medeiros Pereira, managing director of Ammann Brasil, added, "We are proud to collaborate with the sustainable development of the Bahamas by integrating in this plant a system for adding up to 20% recycled pavement (RA), enabling high quality mixes and, at the same time, minimising the environmental impact in that paradise." ■

Website: [www.ammann.com](http://www.ammann.com)



BHM Co Ltd was involved in the rebuilding of the Queen's Highway in the Bahamas. The road resurfacing and maintenance work encompassed the application of approximately 15,000 tons of asphalt mix.



ABOVE: For the project, BHM used an Ammann ACM 140 Prime asphalt batching plant. The unit has a production capacity of 140 tons per hour.



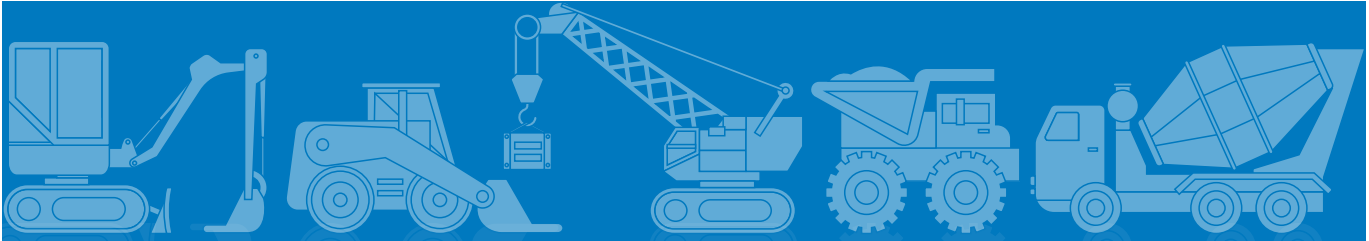
LEFT: Map of the Bahamas.

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