SOUTHEAST·ASIA CONSTRUCTION

MARCH - APRIL 2021

Cover Story:

Atal Tunnel in the Himalayas

Features:

Construction of Suzhou Cultural Centre

The Golden Bridge in Vietnam

Lessons learnt from MeyGen Phase 1A project

KOBELCO CONSTRUCTION MACHINERY SOUTHEAST ASIA CO., LT
https://www.kobelco-sea.com/

KOBELCO CONSTRUCTION MACHINERY CO., LTD.
https://www.kobelcocm-global.com/

Performance X Design

Challenge the future with a new level of performance

The evolution of excavators continues with the new SK75.
Honed and refined technologies deliver an 11% increase in digging volume per hour, with unmatched operability and interior comfort.

Digging Volume
Increased by
11%
Compared to H-mode on previous models

D.

SK75

GEO CONNECT Asia 2021

Wednesday 24th - Thursday 25th March

Suntec Singapore Convention & Exhibition Centre

Global Solutions for Asia's Geospatial & Location Intelligence Markets

From remote sensing imagery and drones to connected ground surveying, **mark your calendar** to meet industry experts face to face. What to expect on the show floor:

- Augmented Reality / Virtual Reality
- Aerial Photography & Surveying
- BIM/ Digital Construction
- Cartography
- Data & Cloud Management
- Digital Terrain Analysis
- Earth Observation & Satellite
- GIS Software & Services
- Ground Penetrating Radar
- Indoor Mapping
- Instrumentation & Automation
- Light Detection and Ranging (LiDAR)
- Mobile Mapping
- Modelling & Visualisation
- Photogrammetry & Remote Surveys
- PropTech Solutions
- Remote Sensing
- Surveying Instruments & Services
- Synthetic Aperture Radar
- Topographic Surveys
- Unmanned Aerial Vehicles (UAVs)

Scan the QR Code to join our mailing list and keep up to date with the latest news on the much anticipated **Geo Connect Asia 2021** taking place on **24th & 25th March 2021** in Singapore.

Keen to exhibit with us?

For further discussions, please email:
Rupert.Owen@montgomeryasia.com

Platinum Sponsor

Trimble

Knowledge Partners

Ordnance Survey · SLA Singapore Land Authority · The ASIA Miner · position

Media Partners

SEAB · Southeast Asia Construction · Spatial Source

Supporting Partners

aseanFLAG · AsiaPropTech · ASTI · GeoWorks · OGC Making location count. · REDAS · RICS · SECA Singapore Electrical Contractors & Licensed Electrical Workers Association · Singapore Institute of Building Limited · Singapore Institute of Surveyors and Valuers · SGTECH · TEMCA

Featuring

Digital Construction Asia 2021 · UAV Asia 2021

Held In

Singapore Passion Made Possible

Supported By

Singapore Exhibition & Convention Bureau

Official Airline

Singapore Airlines

Organised By

Montgomery Group Asia

AN EXTENSIVE RANGE OF TOWER CRANES, SUITABLE FOR ALL TYPES OF CONSTRUCTION PROJECTS

OVER 50 YEARS
of experience designing, manufacturing, supplying and offering support services for tower cranes for construction.

+20,000 CRANES
manufactured by COMANSA

COMMITTED TO LIFTING EVOLUTION

COMANSA.COM

ASIA
Hangzhou - P.R. China
+86 571 8299 5555
sales@comansa.cn

INTERNATIONAL HQ
Huarte - Spain
+34 948 33 50 20
sales@comansa.com

NORTH AMERICA
Pineville (NC) - USA
+1 800 589 7980
sales@lcacranes.com

COMANSA

www.thebicshow.com

The BIC Show
Building Infrastructure Construction

The BIC Show 2021

11-13 November 2021 - NICE Pattaya, Thailand

A year-round hybrid event for Thailand and ASEAN building, infrastructure and construction industry.

- Physical exhibition
- Focus group discussion
- C-level conference
- Virtual exhibition
- Webinar

For more information, please contact

Tel: +662 077 5668 or Email: info@thebicshow.com

organized by

SMART 360

supported By

TSA
THAI SECURITY ASSOCIATION

facebook/thebicshow

DINGLI

Exceed · New Height

THE WHOLE SERIES OF DINGLI HAS BEEN ELECTRIFIED

Boom Lifts: 16m - 30.3m

Scissor Lifts: 5.9m - 22m

Vertical Lifts: 4.7m - 14m

ZHEJIANG DINGLI MACHINERY CO.,LTD. TEL:+86-572-8681688 FAX:+86-572-8681690 E-MAIL:EXPORT@CNDINGLI.COM HTTP://WWW.CNDINGLI.COM

WORLDBEX SERVICES INTERNATIONAL

THE 25TH PHILIPPINE WORLD BUILDING AND CONSTRUCTION EXPOSITION

WORLDBEX

SEPTEMBER 23-26,2021

WORLD TRADE CENTER®
METRO MANILA

worldbex.com

inquire@worldbexevents.com

Link-Belt RTs
Your Safety Director's Best Ally

PULSE 2.0
- New operator aids with kickout
- Free swing modes
- Simple interface with large touchscreen
- Wi-Fi enabled to update and service remotely

SMARTFLY
- Guided, sequential, fail-safe fly erection
- Control fly assist and boom hoist cylinder from the ground
- One person operation
- Minimal ladder climbs
- Swing around at 0°
- Pivot-point & boom head speed screws

V-CALC
- Calculate outrigger positioning
- Real-time 360°charts
- Live preview mode
- Incorporated swing arrest

SITE VISION
- Heated back-up, winch and right-side cameras with night vision
- LED working lights
- Outrigger lights
- 20 degree tilting cab

FLAT DECK
- Anti-skid paint on allowable walking surfaces
- No trip points
- Large walking area

MOVE ABILITY
- No helper crane needed to install counterweight
- Transport weight of 95,000 lbs

EASY ACCESS
- 6 Points of Access
- Large grab handles
- Deep, sturdy steps and ladders
- Working platform with guardrails

AUTHORIZED LINK-BELT DEALERS

AUSTRALIA
The Baden Davis Crane Connection Pty Ltd
Arndell Park
+02-9679-8333

INDONESIA
PT Traktor Nusantara
Jakarta
+62-21-460-8836

PAKISTAN
Nasser Brothers (Pvt.) Ltd
Karachi
+92 215874533

PHILIPPINES
Macro Construction Equipment
Quezon City
+632 740 2019

SINGAPORE
Tat Hong Heavy Equipment (PTE) Ltd.
Singapore
+65-6269-0022

SOUTH KOREA
Kilwoo Corporation
Seoul
+ 82-2-728-6800

We work hard to make your job easy.

SMARTFLY · PULSE 2.0 · MOVE ABILITY · SITE VISION · FLAT DECK · V-CALC · EASY ACCESS

Contact your local dealer for more information.

Link-Belt Cranes

Link-Belt CRANES
Lexington, Kentucky, USA | www.linkbelt.com

MBAM ONEBUILD

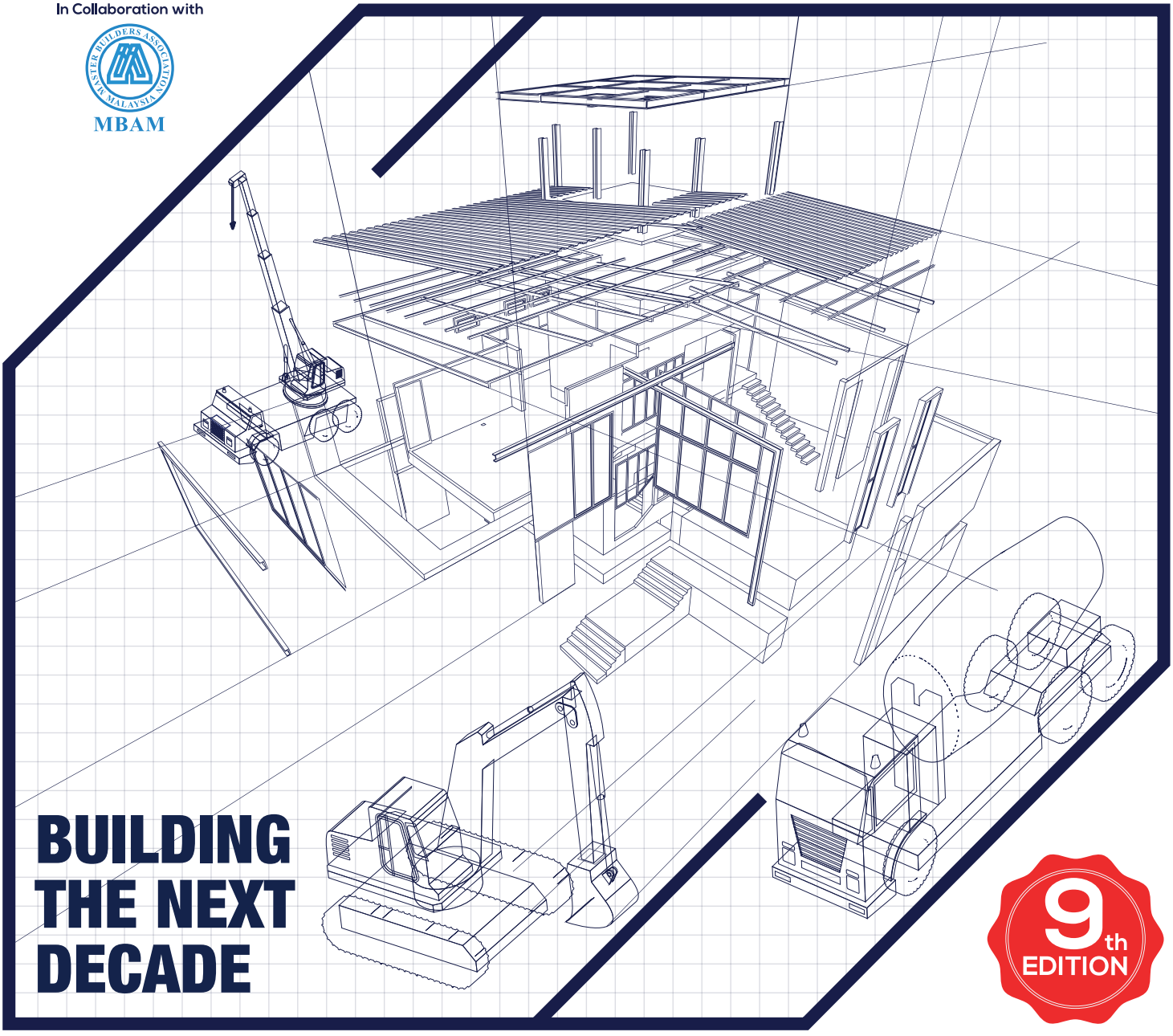
20 ▸ 22 OCT 2021

KUALA LUMPUR CONVENTION CENTRE

MALAYSIA INTERNATIONAL CONSTRUCTION & INFRASTRUCTURE TECHNOLOGY EXHIBITION

In Collaboration with

MBAM



BUILDING THE NEXT DECADE

9th EDITION

MALAYSIA'S ONLY TRADE EXHIBITION EXCLUSIVELY DEDICATED TO THE CONSTRUCTION & INFRASTRUCTURE SECTOR

Organised by

MBAM ONEBUILD

MBAM OneBuild Sdn Bhd 201701035635 (1249806-U)

No. 2-2, Jalan 2/109E, Desa Business Park, 58100 Wilayah Persekutuan, Kuala Lumpur, Malaysia.

Tel: **+603-7981 0288 / +603-7987 1668** | Fax: **+603-7982 6811 / +603-7987 2668**

Website: **www.mbamonebuild.com** | Email: **info@mbamonebuild.com**

Facebook: **MBAM OneBuild** | YouTube: **MBAM OneBuild** | LinkedIn: **MBAM OneBuild**

TRENCH CUTTER
SC40+HDS80

■ Base Machine (HDS80 CARRIER)

- Diesel Engine : CUMMINS QSK23 760BHP
- Max. Hydraulic pressure : 320bar
- Cutting Depth : Max. 80meter

■ Trench Cutter (SC40)

- Gear Box Torque : 100kNm
- Delivery flow of Mud pump : 450 m3/h

SAMBO C.M.C
HEAD OFFICE

65, Mieumsandan 4ro, Gangseogu, Busan, SOUTH KOREA
Tel : +82-51-717-0581 **Fax** : +82-51-717-0582
E-mail : sambo@sambocmc.com
Web Site : www.sambocmc.com

CONTENTS

NEWS

EVENTS

PRODUCTS

On the cover:
Atal Tunnel in the Himalayas
(page 66)

Cover designed by
Fawzeeah Yamin

Publisher
Steven Ooi (steven.ooi@tradelinkmedia.com.sg)

Associate Publisher
Eric Ooi (eric.ooi@tradelinkmedia.com.sg)

Editor
Fabia Sugandy (seac@tradelinkmedia.com.sg)

Marketing Manager
Felix Ooi (felix.ooi@tradelinkmedia.com.sg)

Head of Graphics Department/ Advertisement Coordinator
Fawzeeah Yamin (fawzeeah@tradelinkmedia.com.sg)

Circulation
Yvonne Ooi (yvonne.ooi@tradelinkmedia.com.sg)

Any other matters : info@tradelinkmedia.com.sg
Website: http://seac.tradelinkmedia.biz

ISSN 2345-7082

Scan to visit our website

THE NEW CAT® D6 GC DOZER.

YOUR BUSINESS DESERVES IT. YOU CAN AFFORD IT.

PUSH YOUR PROFITS FORWARD

The Cat GC range offers everything your business needs to get the job done, at an affordable price. Familiar components on a robust machine that is easy to maintain, productive and economical to own and operate.

Contact your local Cat Dealer now.

FULLY MECHANICAL

DURABLE AND RELIABLE

SIMPLE AND ECONOMICAL

CAT®
LET'S DO THE WORK.™

CONTENTS

PROJECTS & SPECIAL FEATURES

SOUTHEAST ASIA CONSTRUCTION is published six times a year by:
Trade Link Media Pte Ltd. RCB Registration no: 199204277K
Address: 101 Lorong 23, #06-04 Prosper House, Singapore 388399
Tel: +65 6842 2580, Fax: +65 6842 2581 /+65 6745 9517
Website: http://seac.tradelinkmedia.biz Email: info@tradelinkmedia.com.sg

The magazine is available free-of-charge to applicants in the building and construction industries who meet the publication's terms of control. For those applicants who do not qualify for free subscription, copies will be made available, subject to the acceptance by the publisher, of a subscription fee which varies according to the country of residence of the potential subscriber. Airmail (per year): Singapore - S$45; Malaysia and Brunei - S$90; Rest of Asia - S$140; Japan, Australia, New Zealand, Middle East, Europe and USA - S$170 (Incl. 7% GST Reg: M2-0108708-2).

Printed in Singapore by Fuisland Offset Printing (S) Pte Ltd.
MCI (P) 028/06/2020 • ISSN 2345-7082 (Print) and ISSN 2345-7090 (E-Periodical) • KDN No: 1560 (1271)-(6)

INTERNATIONAL SALES OFFICE:
T. Asoshina/Shizuka Kondo, ECHO Japan Corporation
Grande Maison Rm 303, 2-2, Kudan-Kita 1-Chome, Chiyoda-ku, Tokyo 102, Japan
Tel: +813 3263 5065, Fax: +813 3234 2064
Email: aso@echo-japan.co.jp

Quality you can rely on

Better, tough, and "wow"

Hydraulic Excavator PC1250-11

Wheel Loader WA900-8

Models shown may include optional equipment. Available models may vary by region or country. Materials and specification are subject to change without notice.

The new WA900 and PC1250, with their revolutionary features,
will mark a new chapter for your business.
No doubt they will be gamechangers in your jobsite.
Yes, the days struggling with operational distress are numbered.
Guided by your voice, we present to you, our best.

WA900-8

Automatic dig, semi-automatic dump approach and push-button unload function
KomVision* (networked cameras) and KomVision Rader* (obstacle detection)
First-class comfort with a VIEW

PC1250-11

Power Plus (P+) mode for a horsepower boost
KomVision (networked cameras) Hydraulically operated stairway*

*optional

KOMATSU

https://home.komatsu/en/

Masterplan for Ream City project in Cambodia unveiled

Cambodian conglomerate Canopy Sands Development, a member of Prince Holding Group, has revealed the masterplan for Ream City in Sihanoukville. Delivered by Singapore-based Surbana Jurong Group, the masterplan features a land use plan for the 834-ha project requiring total investments estimated at US$16 billion, and will be developed on reclaimed land conveniently located within a 10 minute-drive from Sihanoukville International Airport.

According to the developer, Ream City is set to transform Sihanoukville by introducing a sustainable ecosystem of tourism, commercial and residential activity that has the potential to house up to 130,000 residents. Upon completion, the masterplan envisions the construction of family attractions, condominiums, landed and beachfront homes and affordable housing estates, themed shopping malls, business hubs, beach resorts, hotels, condotels, yacht and marina club.

Surbana Jurong was appointed to undertake the masterplanning, urban design and coastal engineering works for Ream City. This large-scale development is expected to act as a catalyst for the growth prospects of the entire Sihanoukville region, Cambodia's third-largest city and home to the country's deep-water port.

"The proposal prioritises the integration of nature to enhance the built environment," explained Yeo Choon Chong, CEO, ASEAN at Surbana Jurong. "A major part of the plan includes an extensive beachfront that stretches beyond 6 km. This will support a wide range of waterfront activities and inject vibrancy to the community.

"The plan also includes infrastructure enhancements to the community to support civic and community facilities such as schools, parks and open spaces, sports complexes, polyclinics and neighbourhood-level amenities. Once fully developed, Ream City will be an exciting destination for dining, retail, work, recreation and living."

Located between Thailand and Vietnam, Cambodia has positioned itself to be an attractive investment destination for businesses looking to expand in the ASEAN region. Mr Yeo noted, "Cambodia continues to attract a steady flow of foreign direct investments. With our partners, we see immense potential to drive growth in this key market through our participation in iconic infrastructure projects."

Both images © Surbana Jurong / Prince Group

ABOVE AND LEFT: **The Ream City development is set to transform Sihanoukville, featuring a sustainable ecosystem of residential and commercial activity that has the potential to house up to 130,000 residents.**

"We have liaised with Surbana Jurong for more than a year and are very happy with the masterplan they have proposed for Ream City," said Khong Weng Fook, managing director of Canopy Sands Development. "Surbana Jurong has consistently impressed clients around the world and are well-known for their extensive experience in urban development, deep and global talent pool, and comprehensive global coverage as they have developed masterplans for a wide variety of projects in more than 30 countries.

"We are looking forward to working together to convert their proposed land use plan into reality and create a sustainable solution for living for the betterment of Sihanoukville and Cambodians."

Beyond tourism, Sihanoukville province is reportedly also diversifying economically with a growing base of entertainment, manufacturing, logistics, electricity production and agriculture businesses. It is situated at the crossroads of major infrastructure initiatives like the Belt and Road Initiative and the Greater Mekong Subregion Economic Corridors southern route. In addition, the airport is undergoing expansion and will initially see its capacity increase to accommodate 3.6 million passengers annually with further plans expected to deal with a potential passenger load of 10 million by 2030.

Together, Prince Group and Surbana Jurong aim to bring a holistic and meticulously planned approach to the coastal development that leverages the strengths of both parties. Prince Group, which also counts Prince Real Estate Group, Prince Bank, Cambodia Airways and Prince Huan Yu Real Estate among its group of companies, has completed numerous projects in Phnom Penh and Sihanoukville and has invested more than US$2 billion in local projects with a view to 'Build a Better Life' for Cambodians. ■

A JOHN DEERE COMPANY

WIRTGEN GROUP

The sustainable path.

www.wirtgen-group.com/sustainability

CLOSE TO OUR CUSTOMERS

The WIRTGEN GROUP anchors the topic of sustainability in all corporate processes. Already in the development phase of products, the environmental idea takes on a high priority and runs like a red thread through all stages of the production chain – right up to the use of the machines in worldwide projects. We know: The future belongs to climate-friendly products. We are already producing them today.

www.wirtgen-group.com

WIRTGEN / VÖGELE / HAMM / KLEEMANN / BENNINGHOVEN

Singapore's construction demand 'to reach S$23-28 bil'

Singapore's Building and Construction Authority (BCA) projects the local construction demand to reach between S$23 and S$28 billion in 2021, an improvement from the S$21.3 billion (preliminary estimate) in 2020 during the ongoing Covid-19 pandemic.

The public sector is expected to contribute about 65% of this year's total demand, ranging from S$15 to S$18 billion, with an anticipated stronger demand for public housing and infrastructure projects. Among the upcoming developments planned to be awarded in 2021 include various contracts under the Jurong Region MRT Line, the Cross Island MRT Line Phase 1, and the Deep Tunnel Sewerage System Phase 2.

"There will also be around S$6 billion worth of smaller public sector projects which are less than S$100 million in contract value, such as cycling paths, parks, and upgrading works," revealed Desmond Lee, Singapore's Minister for National Development. "This is comparable with the annual average pre-Covid, and will benefit our smaller and mid-sized contractors."

The private sector construction demand is projected to vary between S$8 and S$10 billion. BCA forecasts that the bulk of the demand in 2021 will comprise development of the remaining en-bloc residential sites, major retrofitting of commercial developments, and also construction of high-specification industrial buildings to meet business needs.

Furthermore, based on the contracts awarded in the past few years and considering the construction demand forecast for 2021, the total nominal construction output in 2021 is projected to increase to between S$24 and S$27 billion - from the estimated S$19.5 billion in 2020. According to BCA, an anticipated improvement in construction demand in 2021 and the backlog of remaining workloads impacted by the Covid-19 during 2020 will support the projected pickup in total construction output.

BCA also explained that due to the impact of the Covid-19 pandemic, which disrupted project implementation schedules, the preliminary figure for construction demand in 2020 indicated a decline of 36.5% to S$21.3 billion. This was still within the Authority's revised forecast of S$18 to $23 billion.

The public sector construction demand dropped from S$19.0 billion in 2019 to S$13.2 billion in 2020, as some major infrastructure projects that required more time to assess the pandemic's impact on resource management and project schedules, were postponed. "For example, the construction of Changi Airport Terminal 5 has been put on hold for two years, until we have more clarity on the future of air travel," said Mr Lee.

Meanwhile, the private sector construction demand decreased from S$14.5 billion in 2019 to S$8.1 billion in 2020, due to market uncertainties amid the Covid-induced economic recession, stated BCA.

Forecast for 2022 to 2025

BCA expects a steady improvement in local construction demand over the medium term. It is projected to reach between S$25 and S$32 billion per year from 2022 to 2025. According to Mr Lee, this forecast "has not taken into consideration potential new contracts for Changi Airport Terminal 5 and the expansion of the two Integrated Resorts, as these project timelines are still under review due to disruptions from Covid-19."

The public sector is expected to lead the demand and contributes S$14 to S$18 billion per year from 2022 to 2025, with similar proportions of demand coming from building projects and civil engineering works. These consist of public residential developments as well as large infrastructure and institutional projects such as the Cross Island MRT Line (Phases 2 and 3), the Downtown Line Extension to Sungei Kadut, the cycling path networks, the relocation of Singapore Science Centre, the Toa Payoh Integrated Development, the Alexandra Hospital redevelopment, and a new integrated hospital at Bedok.

Singapore's construction industry is expected to improve in 2021.

The private sector construction demand is expected to improve steadily in the medium term, added BCA, reaching between S$11 and S$14 billion per year from 2022 to 2025. "This is in anticipation of a gradual recovery of the global economy, contingent on the successful deployment and effectiveness of Covid-19 treatment and vaccines, as well as easing of lockdown restrictions."

Industry transformation

Although 2020 was particularly challenging for the built environment sector, the industry has shown great resilience, said BCA. "The Covid-19 pandemic has necessitated the industry to rethink the way we build to overcome the challenges. BCA will continue to work with our industry partners, led by the trade associations and chambers (TACs), to accelerate industry transformation."

BCA further pointed out that the Alliance for Action (AfA) on Digitalising Built Environment, an industry-led and government-supported coalition, has identified digitalisation as an important enabler to help the industry build smarter. One of the initiatives introduced by the AfA is the introduction of a set of data standards for the Common Data Environment, which facilitates more seamless information flow for building projects across digital platforms shared by various building professionals and companies along the value chain.

"The AfA targets to invite 300 leading firms in the industry to start adopting digital platforms based on the set of data standards," said Mr Lee. "Firms can take advantage of funding from the Productivity Solutions Grant to do so. This will have a multiplier effect, as these firms will in turn bring the companies in their supply chains on board the digitalisation journey."

SMEs can tap on the Productivity Solutions Grant (PSG) to defray the costs of adopting digital solutions pre-approved by the Infocomm Media Development Authority (IMDA) for the construction and facilities management sector, explained BCA. The funding will cover up to 80% of the qualifying cost until 30 September 2021, and subsequently, up to 70% until January 2023. SMEs can make multiple applications for use of different digital solutions subject to a firm level cap of S$30,000. ■

HG6800TX HORIZONTAL GRINDER

Built for land clearing and wood recycling, obtain high output and efficiency with the HG6800TX Horizontal Grinder from Vermeer. Featuring 950 hp (708 kW) in a 92,000-lb (41,730.5-kg) class, it has an infeed design designed specifically for feeding whole trees and large stumps, thus enabling it to power through tough materials with less operator interaction.

Vermeer Asia Pacific | vapinfo@vermeer.com | www.vermeer.com

Vermeer

Hong Kong's first high-rise MiC building completed

Hong Kong Science and Technology Parks Corporation (HKSTP) has announced the completion of InnoCell, a new smart living and co-creation space for the innovation and technology community at Hong Kong Science Park, which is scheduled for operation in the first quarter of 2021.

The Construction Industry Council (CIC) recently presented commemorative plaques to HKSTP to mark the completion of the project as Hong Kong's first high-rise building constructed with the modular integrated construction (MiC) technology. Apart from HKSTP, the plaques were also given to engineering design consultant Leigh & Orange (L&O), main contractor Hip Hing Engineering Co Ltd, and component supplier China International Marine Containers (Group) Ltd, to commemorate the project team in reaching this milestone.

"The successful completion of InnoCell is a major achievement and a testament to the Hong Kong construction sector's vision and ambition to break new ground, and is also one of HKSTP's commitments to creating the ideal environment for nurturing innovation," said Simon Wong, chief project development officer of HKSTP.

"InnoCell will be an industry-leading showcase for modern smart living and co-creation for the innovation and technology community in Hong Kong, where like-minded talent can work, live, play and learn, all within one location."

According to the joint statement from the CIC and HKSTP, the 17-storey InnoCell development is Hong Kong's first high-rise building adopting steel MiC. It is also a key infrastructure component for the Science Park, creating innovative working space and accommodation for both local and international entrepreneurs, scientists, and researchers. This project, incorporating 418 modules with high-performance materials, provides 392 rooms and 509 bed spaces in total.

"The CIC has spared no effort in promoting the MiC, which is of great importance to the development of Hong Kong's construction industry. Compared to traditional building methods, MiC has clear advantages in terms of safety, environmental protection, quality, and speed," said Chan Ka-kui, chairman of the CIC.

"We are excited to see major projects adopting this technology, and we believe this pilot development can inspire more projects to be constructed using this technology in the future. We have also introduced relevant guidelines on statutory requirements for the industry's reference to improve the productivity, safety and environmental standards."

InnoCell is the first high-rise building in Hong Kong constructed with the modular integrated construction (MiC) technology.

The InnoCell project has received an accolade from Rethinking the Future Awards 2020, an international recognition that acknowledges talent and great work in the field of architecture and design. Trial operation and admissions of InnoCell are expected to start in the first quarter of 2021, with full operation by June 2021. ■

All images © CIC/HKSTP

LEFT: **Hong Kong's Construction Industry Council (CIC) presents commemorative plaques to mark the completion of the project.**
RIGHT: **Following the plaque unveiling ceremony, guests visit the new facilities and units.**

The new AC 450-7

Benchmark on 7 Axles.

The new Demag AC 450-7 is in a class of its own: With a carrier length of 15.99 m and an outrigger base of 8.45 m, it is as compact as a six-axle crane, and yet is as powerful as some eight-axle cranes. In fact, the Demag AC 450-7 can reach lifting capacities of up to 23.7 tonnes when its 80 m main boom is fully extended, and that is without even using the SSL system. Bring in SSL, and the lifting capacity goes up to an unbeatable 37.3 tonnes.
In addition, Demag is using a new Sideways Superlift design for the first time ever in the AC 450-7 – one that makes handling and setup easier. The system can be extended with an 81 m luffing jib, and the sections of this jib can also be used to assemble fixed extensions.

Above. Ahead. Always.

DEMAG®
TADANO GROUP

Lintec & Linnhoff plans new collaboration in India

Lintec & Linnhoff has ended its partnership with Ardent Maschinenfabrik Pvt Ltd (formerly known as Linnhoff India Pvt Ltd) as of 7 January 2021. All previous manufacturing and distribution of the company's products through Ardent has ceased, and the company is no longer representing Lintec & Linnhoff. Plans are currently underway to finalise a new manufacturing partnership in India.

The wide range of asphalt and concrete plants from Lintec & Linnhoff has proved popular in India over the past three decades, through direct import as well as local production. With Lintec & Linnhoff announcing the end of the Ardent partnership, the company is now planning a major collaboration in 2021 to push its presence in the country to the next level.

The new partner will be announced soon, said Lintec & Linnhoff. "It is a long-established Indian company with the experience, strength, capability and resources to meet Lintec & Linnhoff's high standards in manufacturing and distribution."

Daniel Chan, chairman of Lintec & Linnhoff Holdings explained why this is a good time for the company to pursue a new path. "At the end of 2019, it was clear to us that we needed to make a significant change in resources to advance our position in India. We want to use this opportunity to create a new, state-of-the-art manufacturing site and continue our commitment to the government's 'Make in India' initiative.

"We will be announcing our new partnership soon and are excited to start a new era of investment in India. Our company is committed to supporting our local clients, not only in managing their existing fleets of plants, but also in meeting their future project needs."

Today there are more than 500 of the company's plants spread across the country and with construction output in India expected to rebound 7.7% in 2021, Lintec & Linnhoff is positioning itself to better serve the needs of a growing market. Once the new venture begins, the plan is to manufacture specific models carrying the Linnhoff and Eurotec brands to suit the market needs in India.

"The Linnhoff brand is one of the best-known names in asphalt production in India, synonymous with quality and reliability,"

Lintec & Linnhoff's machinery has helped deliver some of the world's most prominent construction projects.

said Mr Chan. "Our success has been down to harnessing world-leading German engineering know-how and combining that with the Indian manufacture and expertise to create unique machines that are perfectly suited to Indian customers, and other markets. As we move into the next stage of our history in India, we will continue to build on the qualities that have established our strong presence here, but also look to push forward in terms of capacity and capability."

The new proposed venture will also support sales and customer service activities across India's vast territory.

Lintec & Linnhoff is a global manufacturer and distributor of leading-edge solutions for the concrete and asphalt industries. Its products include asphalt batching plants, concrete batching plants, pavement related technologies and machinery, and specialist concrete cooling solutions. All its machines are engineered to the highest levels and exceed global standards for environmental impact, recyclability and reusability. ■

World Bank approves US$500 mil to improve roads in Bangladesh

The Government of Bangladesh has signed a US$500 million financing agreement with the World Bank to help upgrade the Jashore-Jhenaidah highway and improve the connecting rural roads and markets, which will benefit over 20 million people living in the western region.

The Western Economic Corridor and Regional Enhancement (WeCARE) Program Phase I project will help upgrade the 48 km two-lane Jashore-Jhenaidah road to a modern four-lane highway. The project will also help rehabilitate about 600 km connecting rural roads, and build new or develop existing rural markets. It will also install fibre-optic cables along the highway to ensure fast and reliable Internet service.

"The economic corridor will create new opportunities for people and stimulate the local economy. Moreover, this will help Bangladesh become a regional hub for trade, transit and logistics," said Mercy Tembon, World Bank's country director for Bangladesh and Bhutan.

A 'safe system approach' will be piloted along the highway to reduce fatalities and injuries due to road crashes, said the World Bank. The project will set up separate lanes for slow-moving vehicles, road crash barriers, signage, and safe crossing facilities for pedestrians.

According to the World Bank, the project is the first of a multi-phased US$1.4 billion 10-year programme to upgrade the existing 110 km two-lane highway, Bhomra-Satkhira-Navaron and Jashore-Jhenaidah. In the current phase, the project will be implemented in four districts: Jashore, Jhenaidah, Magura, and Chuadanga. In the first two years, the project will create about 1.3 million day works for local rural people in civil works. ■

JP Nelson

SINGAPORE · MALAYSIA · THAILAND · TAIWAN · HONG KONG · VIETNAM

Your Reliable Partner in Equipment Solutions

Leasing, sales and services of equipment for engineering, construction, shipyard/ ship building, oil & gas, and offshore industries.

Singapore HQ address: 30 Benoi Road Singapore 629900

TEL: +65 6368 9991 FAX: +65 6367 9991

Sole Distributor PVE

Hydraulic Vibro Hammer

Sole Distributor SUNWARD

Boring Rigs

Sole Distributor SUNWARD

Excavators

Sole Distributor ICE

Excavator Vibro Hammer

Sole Distributor ICE

Hydraulic Vibro Hammer

Sole Distributor Junttan

Hydraulic Pilling Hammer

Atlas Copco

Air Compressor

MAIT

Boring Rigs

ANTAR

Subsidiary of JP Nelson Group

ANTAR CRANES SERVICES PTE LTD

安達起重機服務私人有限公司

Address: 30 Benoi Road Singapore 629900 TEL: +65 6755 8821 FAX: +65 6754 8821 EMAIL: antarcs@singnet.com.sg

Sole Distributor MAEDA Mini Cranes

Mini Crawler Crane

ZOOMLION

Crawler Crane

ZOOMLION

Crawler Telescopic Crane

Genie

Aerial Work Platforms

Sole Distributor MAEDA Mini Cranes

Mini Telescopic Crawler Crane

FUWA

Crawler Telescopic Cranes

Smart Lift

Glass Smart Lift

SOCOTEC

ISO 9001
ISO 14001
ISO 45001

SAC Accredited Certification Body

QS-1999-05
ES-2018-07
OSH-2008-01

website: www.jpnelson.com.sg

Sino Group adopts Enertainer for clean energy solution

Hong Kong-based developer Sino Group has announced its commitment to adopt the Enertainer energy storage system to power up its future construction sites, in replacement of traditional diesel generators.

Aligning with the Group's three interconnected pillars under its vision of Creating Better Lifescapes, namely 'green living', 'innovative design' and 'community spirit', the adoption of Enertainers reinforces the Group's commitment to promoting innovative, sustainable and green development in Hong Kong.

The first Enertainer has been in operation at the Group's commercial development site in Yuen Long since Q4 2020, with the next one planned for Q1 2021. The Group aims to deploy Enertainers on all of its upcoming construction projects.

"The Enertainer energy storage system echoes Sino Group's Sustainability Vision 2030, redefining our philosophy for property development through adopting clean and renewable energy for all of our projects," said Andrew Young, associate director (innovation) at Sino Group. "The digitisation of operational procedures allows better planning, enhance accuracy and efficiency of the project's development and reduces potential disruption on-site, thus maximising productivity.

"The Group takes the lead in encouraging our stakeholders along the supply chain to share a sustainable development and digitisation mindset. This initiative also reflects our unending support for home-grown start-ups in the innovation and technology sector, serving another step towards digital transformation across the property development industry."

The Enertainer's data storage capability and Internet of Things (IoT) technology also empower construction teams to make critical decisions based on data, added Sino Group. The ability to view the Enertainer's operation and performance data at a glance allows the Group and its contractors to review the performance of a construction site and its equipment holistically for better planning and operational efficiency.

© Sino Group

Andrew Young of Sino Group (on the left) and Brandon Ng of Ampd Energy visit the first of the Group's projects to adopt the Enertainer energy storage system.

This initiative thus contributes to the digitisation of traditional construction methods from a people-based industry to a people-plus-data driven one, highlighted Sino Group. By doing so, the Group not only leads the way in improving the community's living environment around construction sites and providing a better work environment for staff, but it can also enhance the construction industry with innovation data analytics.

Developed by Hong Kong company Ampd Energy, the Ampd Enertainer blends 'energy' and 'container' and is an advanced energy storage system that provides diesel-free power and safer energy production. "Compared to traditional diesel generators, it is smaller in size, 32 times quieter and produces up to 85% less carbon emissions. It has a zero-charging downtime capability with its auto-recharging ability and its internet enabled design enables next generation features such as software updates and remote telematics," said Sino Group. ■

LTA awards contract for Singapore's Jurong East Integrated Transport Hub

China Communications Construction Company Limited (Singapore Branch) has secured a S$477.4 million contract from Singapore's Land Transport Authority (LTA) to design and build the Jurong East Integrated Transport Hub (JE ITH).

The new transport hub comprises community and civic institutions, an office tower and a bus interchange. With its opening, commuters in the area would be able to enjoy direct connectivity and more convenient transfers between the North-South and East-West MRT lines and the future Jurong Region Line at the Jurong East station. Construction of the project is expected to start in the second quarter of 2021 and complete around 2027.

"Like all our other ITHs, inclusive facilities have been incorporated into JE ITH, including barrier-free alighting areas and toilets, priority queue zones with seats, and a nursing room. This is part of the Government's efforts to create a more caring and inclusive public transport system," said LTA.

Upon completion, the Jurong East Integrated Transport Hub will feature a 27-storey tower block connected by a sky bridge to an eight-storey podium block. The development will have offices, public facilities as well as retail spaces. ■

© LTA

An artist's impression of the Jurong East Integrated Transport Hub (in colour).

SUCOOT
SUperior COmpany Of Taiwan

Sucoot Co., Ltd.

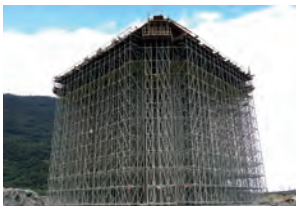
WWW.SUCOOT.COM

EURO CERT

SYSTEM CERTIFICATION ISO 9001:2008 SGS

CERTIFIED ISO 9001:2015 COMPANY

ANSI
American National Standards Institute




SAFETY QUALITY SERVICE EFFICIENCY

Scaffolding & Formwork Expert

No. 1836, Sec. 4, Taiwan Blvd.,Taichung 40764, Taiwan
Tel: +886-4-2359-8338 E-Mail :info.ws@sucoot.com

Singapore's new landmark building tops out

CapitaSpring, Singapore's new 280-m-high landmark building, has achieved full height, with about 75% of the overall construction completed, announced CapitaLand on 19 January 2021. Located in the central business district (CBD) area, the 51-storey integrated development is scheduled to receive its temporary occupation permit (TOP) in the second half of 2021.

The project is jointly owned by CapitaLand Limited, CapitaLand Integrated Commercial Trust (CICT) and Mitsubishi Estate Co Ltd (MEC). To date, about 38% of CapitaSpring's 647,000 sq ft of net lettable area (NLA) have been committed, said CapitaLand. Including leases in advanced negotiations, the development is on track to achieve more than 60% commitments by completion.

"CapitaLand and our partners are pleased to achieve topping out for CapitaSpring. This construction milestone is made possible only with the support of the authorities and our staff, consultants, contractors, suppliers and migrant workforce," said Tan Yew Chin, CEO of CapitaLand Singapore.

"CapitaSpring represents CapitaLand's vision for the future of work with fully integrated core-flex solutions, tech-enabled frictionless user experience and community-centric programming. As Covid-19 changes the norms of work, the forward-looking features of CapitaSpring have strengthened the development's value proposition as a flexible, sustainable and connected workplace ecosystem."

CapitaSpring has been designed to offer integrated workspace solutions that include a full range of hot desks, meeting facilities, private offices, large enterprise suites and bare shell leases. According to CapitaLand, this will enable the development to better support any new, flexible requirements of conventional office tenants as well as the expansion needs of small and medium enterprises in flex spaces.

In line with CapitaSpring's core-flex model, about 68,700 sq ft (10%) of the development's office NLA is set aside for flexible workspace. This is spread across three floors, one at each of the low-rise, mid-rise and high-rise sections of the building on Levels 21, 39 and 40 respectively, so that building occupants could have easy access to these flexible amenities, explained CapitaLand.

CapitaSpring will also be equipped with the latest WiFi 6 technology, plus various building features to safeguard the health and safety of its occupants and the community. Facial recognition access, contactless destination control system and pre-registration for guests via CapitaStar@Work all serve to minimise contact. Ultraviolet Germicidal Irradiation (UVGI) system and high-efficiency MERV-14 filters will be fitted on air handling units to improve indoor air quality and reduce airborne viruses.

ABOVE AND LEFT: **Construction of CapitaSpring is in full swing. Featuring 280 m high, the building is on track for full completion this year.**

BELOW LEFT, BELOW AND BOTTOM: **The project represents CapitaLand's vision for the future of work with fully integrated core-flex solutions, tech-enabled frictionless user experience and community-centric programming.**

All images © CapitaLand

What's more, the developer said CapitaSpring will roll out a long-range wide area network (LoRaWAN) backbone network to enable fuss-free deployment of IoT sensors across the development. There will also be fully automated smart cleaning robots integrated with the lift system, allowing the robots to enter, exit turnstiles and transit between floors. ■

Myanmar's Kha Laing Microgrid pilot project completed

InfraCo Asia and Electricité de France (EDF), through InfraCo Asia's contracted developer team ICM and local partner SolaRiseSys, have successfully delivered the Kha Laing Microgrid project into commercial operations in January 2021 – providing approximately 1,200 people in the rural Kha Laing village of Minhla Township with first-time, 24/7 access to electricity.

The Kha Laing Microgrid project is the first mini-grid in Myanmar to be funded without government subsidies, and aims to demonstrate a commercially viable Anchor-Business-Community (ABC) model of rural electrification in Myanmar. The operating project, comprising a 43 kW hybrid solar-diesel microgrid with battery storage components, supplies energy to a telecommunications tower as the primary customer (Anchor), two local community centres (Businesses), and 276 households (Community). Through a dedicated e-payment system, households are able to monitor and manage their energy use, as well as purchase electricity at an affordable rate via their mobile phones.

U Htay Naing, chairman of the village electrification committee explained, "Kha Laing village is far from the national grid. Before this project, we relied on candles, solar home systems (SHS) and diesel generators and our nights were difficult. With this solar mini-grid system, we can switch on the light whenever we want with less cost, and without having pollution or noise."

U Win Kying, Kha Laing's village administrator added, "With 24/7 access to electricity, living conditions and business opportunities are improved. Women are able to set up grocery shops in their house, and sell goods that require refrigeration. Before this project, villagers had to travel to Yaynanma village, which is 5 miles away."

Following the success of the pilot, the project's joint venture partners said they are exploring plans to replicate the project's success across other sites in rural Myanmar.

"InfraCo Asia aims to serve as a catalyst for future development in Myanmar's rural electrification sector through its involvement in the Kha Laing Microgrid pilot project," revealed Allard Nooy, CEO of InfraCo Asia, a Private Infrastructure Development Group (PIDG) company. "By demonstrating the commercial viability of the Anchor-Business-Community (ABC) model, we hope to inspire greater private sector investment in the provision of sustainable, rural electrification services across Myanmar."

"Myanmar represents many opportunities for the development of microgrid solutions with our local partners," said Jean-Philippe Buisson, senior VP of EDF in Asia. "We are very enthusiastic about this project, which is part of EDF's ambition to support Myanmar in the development of low carbon energy solutions, such as the Shweli 3 hydroelectric power plant project in the country." ■

Gafcon to oversee next phase of Shanghai project

After successfully planning and designing the first two phases of China's Zizhu Hi-Tech Industrial Development Zone, Gafcon is now leading the planning and designing of the third phase of this 3,200-acre, mixed-use waterfront project.

The San Diego, US-based construction and project management firm will oversee Zizhu's third phase, which centres on Orchid Lake Hotel, a five-star business-class resort and conference centre along the Huangpu River, about 29 km south of Shanghai.

The Orchid Lake Hotel will serve visitors to Zizhu, an important technology, science, research and business hub in the Shanghai area. It will feature conference, reception and workspace and an executive lounge, as well as 360 guest rooms, a spa and gymnasium.

The luxury hotel will also incorporate the surrounding natural landscape and beauty of both the river and the newly built Orchid Lake, as well as botanical and sculpture gardens. According to Gafcon, it will be China's first ever 'sail up' hotel with a yacht club providing access from the river.

"China has emerged as a leader in the post Covid-19 pandemic world and has seen hotel occupancy return to its pre-pandemic rates, so we know the time is right to pick up where we left off," said Bryan Benso, chief development officer at Gafcon. "After a delay because of the pandemic, Gafcon is excited to continue working on this visionary development. The Orchid Lake Hotel will be the next feature in Zizhu's forward-thinking strategic planning, which incorporates sustainability, health and safety within the fabric of community connectedness."

Gafcon previously led the planning and development for Zizhu's first two phases: Purple Bay and InnoTown. These two phases have a combined value of US$12 billion.

Purple Bay supports the growing urban centre with schools, homes, an aquarium, an art academy, a botanic garden, retail space, a medical clinic and plenty of outdoor and recreational space. InnoTown will serve as the home to an R&D centre, which is already drawing Global 500 companies, including General Electric and Coca-Cola, as well as two universities and additional housing, retail, entertainment and hospitality space.

© WATG

The third phase of Zizhu Hi-Tech Industrial Development Zone will centre on Orchid Lake Hotel.

Transportation plays a central role in Zizhu, with three planned underground light-rail transit stops connecting Zizhu with the greater region. Zizhu will also include a marina to accommodate personal watercraft and an overhead tram.

Gafcon is partnering with seven shareholders (including Minhang District People's Government, Shanghai Jiao Tong University, Zijiang Holdings and Shanghai Alliance Investment Ltd) on Zizhu. The project promotes urban renewal, reshapes public space, improves the region's economic vitality, enhances culture and repairs the ecological environment. In addition, Gafcon is working closely with the global resort design firm WATG, which is designing the Orchid Lake Hotel. ■

'Infrastructure investments to drive Indonesian construction output in 2021'

The Indonesian construction output declined by 2% in real terms last year due to the large-scale social restrictions (PSBB) imposed by the government to control the Covid-19 infection. However, driven by investments in infrastructure, the industry is expected to stabilise and recover in 2021 with an expected registered growth rate of 7.1%, assuming operations return to a normal level, according to GlobalData, a leading data and analytics company.

The Indonesian construction industry had recorded an annual average growth of 6.8% from 2007-2019. However, the industry was disrupted in 2020 as the government's restrictions on businesses and travel disrupted operations and weakened company earnings and household incomes, thereby affecting private investment, explained GlobalData. On the other hand, public investments have been curtailed due to increasing focus on social expenditure, delays in project implementation and the re-allocation of part of the government's budget towards its fight against Covid-19.

Dhananjay Sharma, analyst at GlobalData said, "The recovery in 2021 will be driven by investments in infrastructure, with the government having announced a planned expenditure of IDR414 trillion (US$25.4 billion) in the 2021 budget. The government hopes that this will have a multiplier effect on the economy and help alleviate the unemployment scenario. Accordingly, the government has allocated US$2.6 billion for the state-owned enterprises in 2021 to help boost their role in supporting the country's economic recovery by creating more jobs and conducting business activities."

Following the rebound in 2021, the Indonesian construction industry is expected to stabilise and grow at an annual average rate of 5.2% during 2022-2025, supported by investments on the development of the country's overall infrastructure, said GlobalData. This includes planned spending under the National Medium-Term Development Plan (2020-2024 RPJMN), wherein the government plans to invest IDR6 quadrillion (US$412 billion) on the development of transport, industrial, energy and housing infrastructure projects by 2024.

Mr Sharma concluded, "Residential construction accounted for 25% of the construction industry's total output in 2020. The government's aim to increase the housing sector's contribution from 2.9% in 2020 to 4% of GDP by 2024 is likely to foster growth a cross the entire construction value chain." ■

Sumitomo acquires equipment rental company Aver Asia

Japan-based Sumitomo Corporation has acquired Aver Asia (S) Pte Ltd, a construction equipment sales and rental company headquartered in Singapore with operations across Southeast Asia.

"Due to infrastructure improvement and urbanisation, construction demand is expected to grow in Southeast Asia. The amount of construction investment within the region is estimated to be doubled over the next five years," explained Sumitomo. "Construction work has become increasingly mechanised as safety awareness has risen and economic development has brought about higher personnel costs, and an accelerating shift from ownership to rental of construction equipment is forecast."

With this acquisition, Sumitomo aims to expand its business in Southeast Asia, which is likely to enter a period of growth in the construction equipment rental market. The company also intends to help improve safety and productivity in the region's construction industry by offering highly reliable construction equipment and making it more widely available.

Aver Asia, now a wholly-owned subsidiary of Sumitomo Corporation, manages construction equipment distribution and rental business in seven countries, including Singapore, Malaysia, Indonesia and Thailand. The company offers aerial work platforms, compressors and generators as its main products.

"Along with the wide range of rental products, their nature as an equipment distributor enables them to meet a broader range of customers' requirement, such as quick and quality maintenance service, or flexible choice between renting and purchasing the equipment," said Sumitomo of its new subsidiary. "Another distinguishing feature is that they are focusing on locally-rooted services, which adapt business models to the maturity of the market in each country." ■

Aver Asia is now a wholly-owned subsidiary of Sumitomo Corporation.

Fecon purchases Vermeer mulching product line

Fecon has purchased the Vermeer forestry mulcher product line and through this arrangement has established a global distribution agreement with the company.

The new distribution agreement with Vermeer, which is planned to be rolled out on a controlled basis throughout 2021, will provide Fecon dealers access to the robust line of mulching equipment that leverages the best of Vermeer and Fecon mulching technology.

"This distribution strategy leverages the scope and size of traditional Vermeer dealerships by focusing on market segments with differentiated product needs. Blending the learnings and engineering expertise of both teams provides dealerships and customers with products that are easy to buy and own," stated Fecon.

"Adding Fecon engineering and technology will make it easier for customers to buy the equipment best suited to their needs," said Bob Dieckman, CEO of Fecon LLC. "With their extensive coverage and high standard of customer support, as well as the professional and strategic Vermeer sales organisation, we are certain that both organisations will benefit from the partnership."

According to Fecon, it will start the process with a select, yet global group of Vermeer dealers in 2021, as well as strategically specify products and methodically expand from there. The company will assume production and support of the Vermeer model FT100 and FT300 forestry mulching tractors, and has begun moving these functions to its Lebanon, Ohio factory.

"Fecon's forestry innovation and product lineup is a great complement to our equipment portfolio," said Doug Hundt, president of industrial solutions at Vermeer. "With a lineup of products that support the land clearing, utility right-of-way and fire mitigation markets, their mulching attachments and tractors will give our dealers a broader portfolio to support those customers we are already working with in those markets."

Fecon FTX200 mulching tractor.

Established in 1992 near Cincinnati, Ohio, the US, Fecon manufactures the Bull Hog forestry mulcher. The company also produces tracked carriers and tractors, plus a full range of attachments and other equipment for vegetation management. Fecon's products are sold through equipment dealers and distributors worldwide. ■

Global TBM Company acquires Robbins

Global TBM Company, newly established by industry veteran Lok Home (left), has announced the purchase of substantially all the assets of The Robbins Company, a global manufacturer of underground construction machinery. The company will operate as Robbins, with Mr Home as president and CEO.

Mr Home said the company has a bright future as a result of the transaction. "We are starting off the new year with a respectable backlog of orders. In 2021 and beyond, our clients can depend on Robbins to deliver high quality machines, and technically superior machines for very difficult projects."

According to Mr Home, Robbins is starting 2021 with no significant bank or institutional debt. "We have many projects to look forward to. Robbins is currently delivering Crossover machines and TBMs equipped for challenging geological conditions in many countries including the US, Norway, India, China and Canada." The company's conveyor and small boring machine divisions will also continue to deliver equipment worldwide.

Mr Home emphasised that Robbins has always been focused on building the best and strongest machines. He pledged that the company will continue to do that. "We still have our strong engineering team and we plan to continue our many industry involvements including the International Tunnelling Association (ITA) and its associate member organisations. We're glad to be a part of this community and this industry."

The acquisition will result in a seamless transition for a number of ongoing projects throughout the world, said Robbins. The company also expects to continue with exciting new developments, including a soon-to-be-unveiled non-circular rock boring machine.

Headquartered in Solon, Ohio, the US, Robbins has been an active industry participant and innovator for nearly 70 years. The company offers customised tunnel boring machines (TBMs), conveyors, cutters, and more, as well as knowledgeable field service personnel and technical support. ■

Kobelco suspends production at US excavator plant

Kobelco Construction Machinery Co Ltd (KCM) has decided to temporarily suspend the production of its hydraulic excavators at the US plant from 1 May 2021. The facility is based at the company's local subsidiary, Kobelco Construction Machinery U.S.A. Inc. (KCMU) in Spartanburg County, South Carolina, USA.

KCM explained that in January 2021, it was told by Hino Motors that there has been a delay in the acquisition of certification for new model year engines to be supplied for KCMU's hydraulic excavators for the North American market, due to a problem in the process of achieving EPA emission certifications, with no clear outlook on future supply schedule.

"After receiving this notice, we have been examining the impact on production and alternate solutions, but we have judged that the production of hydraulic excavators equipped with the relevant engines (the J05E, J08E, P11C and E13C models) would be difficult and decided to suspend the production at the KCMU's Spartanburg plant," said KCM.

Seven hydraulic excavator models are affected by the upcoming suspension, namely the SK170LC, SK210LC, SK260LC, SK300LC, SK350LC, SK390LC and SK500LC. "For hydraulic excavators equipped with certified engines, sales will be suspended once the present stock has run out," added KCM.

The engines that are undergoing the certification process are also used in some models manufactured in Japan and supplied to the North American market. These include: the SK210HLC, SK230SRLC, SK270SRLC, SK380SRLC, SK500LC and SK850LC hydraulic excavators (produced at the Itsukaichi factory), as well as the CK850G, CK1100G, CK1200G, CK1600G and CK2750G crawler cranes (produced at the Okubo factory). According to KCM, the production of these machines will also have to be temporarily suspended once the present stock of certified engines has run out.

KCM said it will suspend the production at the KCMU's Spartanburg plant until the supply of the engines is resumed, which is currently undetermined. "We are currently scrutinising the impact of the suspension of the production and sale on our business results. We will promptly make an announcement when any matters to be disclosed arise in the future," said the company.

"During the suspension of the production, we will continue the business in the North America, including the sales of models other than those subject to this suspension (various mini excavators, 7-ton/13-ton-class hydraulic excavators and the CK3300G crawler crane) and after-sales service for machines already delivered. We are considering installing an alternative engine for the models affected by this supply disruption. We strive to resolve this issue as soon as possible." ■

CALENDAR OF EVENTS

// Events in Asia

Geo Connect Asia 2021
24 to 25 Mar 2021
Suntec Convention & Exhibition Centre
Singapore
Email: rupert.owen@montgomeryasia.com
Website: www.geoconnectasia.com

CICEE 2021
19 to 22 May 2021
Changsha International Convention & Exhibition Centre
Changsha, China
Tel: +86 731 8696 9961
Email: csgcjxz@cicee.vip
Website: www.chinacicee.com

BuildTech Asia 2021
(Digital Series)
7 to 8 Jul 2021
10 am -6 pm (Singapore Time, GMT 8+)
Tel: +65 6319 4024
Website: www.buildtechasia.com

OS+H Asia 2021
28 to 30 Jul 2021
Marina Bay Sands
Singapore
Tel: +65 6332 9620
Email: osha@mda.com.sg
Website: www.osha-singapore.com

BCT Expo 2021
1 to 3 Sept 2021
Impact Exhibition and Convention Centre
Bangkok, Thailand
Tel: +662 833 5315
Email: info@bct-construction.com
Website: www.bct-construction.com

Cambuild 2021
16 to 18 Sept 2021
Diamond Island Exhibition & Convention Centre
Phnom Penh, Cambodia
Tel: +855 023 901 579
Email: somaly@ambtarsus.com
Website: www.cambuildexpo.com

Worldbex 2021
23 to 26 Sept 2021
World Trade Centre Metro Manila
Metro Manila, The Philippines
Tel: +632 8656 9239
Email: inquire@worldbexevents.com
Website: www.worldbex.com

MBAM Onebuild 2021
20 to 22 Oct 2021
Kuala Lumpur Convention Centre
Kuala Lumpur, Malaysia
Tel: +603 7981 0288
Email: info@mbamonebuild.com
Website: www.mbamonebuild.com

ASEAN Super 8
9 to 11 Nov 2021
Malaysia International Trade & Exhibition Centre
Kuala Lumpur, Malaysia
Tel: +603 9771 2688
Website: www.super8asean.com

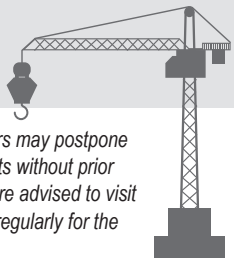
Trenchless Asia 2021
16 to 17 Nov 2021
Kuala Lumpur Convention Centre
Kuala Lumpur, Malaysia
Tel: +44 1923 723990
Email: pharwood@westrade.co.uk
Website: www.trenchlessasia.com

// Events outside Asia

World of Concrete 2021
8 to 10 Jun 2021
Las Vegas Convention Centre
Las Vegas, Nevada, USA
Tel: +1 972 536 6368
Email: contactus@worldofconcrete.com
Website: www.worldofconcrete.com

Hillhead 2021
22 to 24 Jun 2021
Hillhead Quarry
Derbyshire, England, United Kingdom
Tel: +44 115 945 4367
Email: hillhead@qmj.co.uk
Website: www.hillhead.com

bauma 2022
4 to 10 Apr 2022
Munich Trade Fair Centre
Munich, Germany
Tel: +49 89 949 11348
Email: info@bauma.de
Website: www.bauma.de



Note: *The organisers may postpone or cancel their events without prior notice, so readers are advised to visit the event websites regularly for the latest updates.*

PASSION for PROGRESS

BAUER MASCHINEN

The BAUER Maschinen Group is the leading supplier of specialist foundation engineering equipment worldwide.

BAUER Maschinen GmbH • BAUER-Strasse 1 • 86529 Schrobenhausen, Germany **bma.bauer.de**

IPAF and SAIA sign agreement for safety best practice

The International Powered Access Federation (IPAF) and the Scaffold & Access Industry Association (SAIA) have signed an agreement to work together to promote safety and training in powered access throughout the US, Canada and Mexico.

The agreement will also focus on joint promotion of standards, including the updated A92 Suite of Standards that went into effect in the US in June 2020, as well as sharing knowledge and disseminating best practice, informing and influencing national safety and regulatory bodies with a unified voice, and promoting the need for effective powered access operator and supervisor training.

The SAIA recognises the IPAF PAL Card as proof of appropriate operator training for users of mobile elevating work platforms (MEWPs), mast-climbing work platforms (MCWPs), lifts and hoists. IPAF-approved training centres and SAIA-accredited training institutes (ATIs) will offer IPAF's globally recognised training, developed by leading industry professionals and available in multiple languages to suit local demand.

IPAF's MEWP operator and supervisor theory training are available as either instructor-led or 100% online eLearning courses – a valuable option to suit candidates and training centre alike while the risks from Covid-19 remain. MEWP operators must additionally complete hands-on practical training and assessment, though this can take place outdoors to help to reduce the risk of transmission of the virus considerably.

"Over the years, IPAF and the SAIA have collaborated and worked together very productively many times. This new formal agreement cements the commitment of both associations to leverage their collective effort and expertise for the benefit of all their members and the wider industry," said Tony Groat, IPAF's North America manager.

"By working closely together under this formal agreement, we hope to eliminate duplication of efforts or mixing of messages, and to maximise the strengths of both our associations to intensify and unify focus on the key priorities of our industry and our joint mission to promote the safe and effective use of powered access equipment."

Michael Paladino, SAIA president commented, "While SAIA has made a significant impact in the scaffold industry in the past 50 years, we recognise that there is still a great deal to be done in the access industry. By partnering with IPAF, continuing SAIA's role as the Standard Developing Organization (SDO) for the ASC A92 Committee, and strengthening our relationship with OSHA as Ambassadors, we will help bridge the gap with the access industry." ■

Accident analysis prompts revamp of load and unload training

Information gathered in a worldwide project to report accidents and near-misses has informed a major update to a comprehensive training course on how to load and unload MEWPs and other plant equipment safely from trucks or trailers, announced IPAF.

The latest analysis of global data gathered by IPAF shows most accidents, resulting in lost-time injuries and even on occasion fatalities, during delivery of MEWPs occur during loading or unloading. As a result, IPAF decided to overhaul its existing Load/Unload course, with new training materials being unveiled to instructors in a Professional Development Seminar on 11 November 2020.

Peter Douglas, IPAF CEO and MD said, "Statistically the most likely people to be involved in a MEWP-related incident are those loading and unloading and these operatives are key to our industry. Analysing data has allowed the updated training course to directly address those issues that affect people loading or unloading, and provide knowledge and recommended protocols to help prevent accidents before they happen."

Paul Roddis, IPAF training manager explained, "The IPAF Load/Unload course has been reviewed off the back of the accident statistics showing that the people most likely to be harmed in a MEWP-related incident are delivery drivers. We believed that there was more the course could offer in terms of equipping and protecting operatives loading and unloading MEWPs, and we wanted to do more to help protect them. This updated training course does exactly that.

"We set up a working group formed of members of the IPAF training committee, led by Martin Wraith, an IPAF auditor and qualified training instructor, as he also has significant experience within the haulage industry.

"The revamped training is still an instructor-led theory course,

though it has a completely new look and feel. We were able to incorporate information directly from the incident-reporting portal, to fine-tune the training so that it addresses the most common problems and risk scenarios anyone loading or unloading machines might face.

"In terms of visual enhancements, the new course incorporates a new IPAF fleet of delivery vehicles starting with a 4x4 with trailer, a 3.5 t flat-bed van, a 7.5 t beaver-tail, as well as a 26 t rigid and a 40 t articulated HGV trailer."

All information covered in the course content conforms to EN 12195 'Load-restraining on-road vehicles – Safety' and references both the IPAF best practice guidance 'Load and Unload and Loading And Unloading Mewps on the Public Highway'.

Mr Roddis added, "This is an excellent new course to complement those that IPAF training centres already offer. It is highly recommended learning for anyone operating, hiring, maintaining, delivering or managing MEWPs; there is a great deal in the training course that is applicable to a range of plant machines, including dumpers, diggers, telehandlers, rollers or forklifts." ■

THE NEW 200 ATJ-E

ELECTRIC
ROUGH TERRAIN
CONNECTED MACHINE
2 YEARS WARRANTY
20 METERS WORKING HEIGHT

MANITOU
HANDLING YOUR WORLD

Comansa introduces 21LC600 and 21LC650 models

Comansa has added two new cranes to its successful 21LC series, the 21LC600 and 21LC650, offering two versions: 20 t and 25 t maximum load capacities. These are an evolution of the 21LC550 model.

The jib lengths of the new cranes are between 30 m and 80 m, in increments of 5 m, allowing a maximum tip load of up to 4.95 t. The optional boom configuration enables the total range to be extended to 85 m at the tip.

Both models are suitable for construction of residential and commercial buildings, as well as power plants, bridges, mining and other infrastructure projects. According to Comansa, compared with the 21LC550, load capacities are on average 16% and 23% higher for the 21LC600 and 21LC650 respectively.

The new cranes are designed with a shorter, modular counter jib ranging from 24.4 m to 16.4 m, with five possible configurations - making them ideal for use in restricted jobsites. This feature is also available on the Comansa 21LC750, 21LC1050 and 21C1400 models.

Another highlight of the new cranes is their improved access to the turntable and the rotating part. The cathead has been redesigned to facilitate the passage of lifting cables, including a welded ladder that enables access to the highest part without the need for the cab platform. Access to the cab platform is now direct via the turntable thanks to the folding ladder, preventing falls while working on the upper level and also being easier to transport.

The 21LC600 and 21LC650 feature a double trolley system with automatic changeover (called DT in the data sheets). A single trolley (ST) system is optional. The cranes' height is self-supporting with a built-in base, and can reach up to 85.8 m. The tower sections are 2.5 sq m for the two cranes.

In addition, Comansa has introduced a new climbing cage, the J3A-11. This unit is based on the J3-20, but with greater length and distance between rollers, providing savings in scale recovery time.

The 20-t version of the new cranes is equipped with a 50 kW hoist motor, while the 25-t version with 65 kW. A 110-kW option is available as well, with a speed of up to 290 m/min and maximum capacities of 1,570 m of cable. The Effi-Plus technology, fitted as standard, significantly increases lifting and lowering speeds for light loads, shortening working cycles without increasing power or consumption.

Owing to Comansa cranes' modular design, certain boom sections are interchangeable within the 21LC series – an advantage for rental companies. Both new cranes also come with the L version of the Cube cab, with the XL version available as an option. ■

Website: www.comansa.com

TOP AND ABOVE: **The new Comansa 21LC600 and 21LC650 flat-top models offer two maximum load versions, 20 t and 25 t.**

LEFT: **The new cranes come with the L version of the Cube cab, while the XL version (pictured) is available as an option.**

We may not share the same office, but we do speak the same language. That’s why it’s so easy for us to put ourselves in your shoes and understand how downtime can push back the “handover” date. We provide you with a range of products, services, and digital solutions designed to keep your equipment running 24/7/365 and to help lower your Total Cost of Operations (TCO).

Learn more about our products and services at total.sg.

Skyjack's new vertical mast and enhanced boom lifts

The new Skyjack SJ20 vertical mast, with a 20 ft platform height, features full electric drive and an optional wind rating, offering an excellent choice for rental companies.

"The SJ20 lift features proportional lift and drive controls with full electric drive, the latter in response to the growing demand for vertical masts with increased duty cycle expectations," explained Kristopher Schmidt, product manager at Skyjack. "The higher height also meant a new five-section mast design with a closed multistage cylinder."

The SJ20's consistent torque provides up to 25% gradeability and boasts a platform capacity of 159 kg. Its compact size has been achieved without compromising the work area, said Skyjack. The machine also holds a GVW of 1,170 kg, which results in low ground pressure, making it ideal for standard elevator and mezzanine applications.

"Similar to our next generation DC scissor lifts, our new vertical masts also feature an onboard diagnostic system," added Mr Schmidt. "By providing operators or service technicians with real-time faults in plain simple language, we've eliminated the need for plug-in calibration for day-to-day troubleshooting."

The new SJ20 mast design minimises site debris, buildup, damage to components, and is free from any chains, sheaves, or bushings, which reduces maintenance. According to Skyjack, its existing SJ12 and SJ16 are the only masts in the market to keep the mast to the rear of the control position, and the SJ20 is no exception.

Other commonalities of the SJ20 with its smaller counterparts include: a traversing deck that provides up to 16-in of up-and-over capability; easy-access maintenance hatch, providing unrestricted access to all major components including batteries; and improved ground clearance for pothole protection without components to maintain or potentially snag on cords or debris.

"While designing the SJ20, we kept customer demands in mind, specifically the demand for both indoor and outdoor applications," said Mr Schmidt. "The SJ20 is wind rated for one person up to 3.96 m, which increases the application possibilities and increases the rate of return for rental companies."

In addition, Skyjack has launched all new 40-ft and 60-ft boom lifts, leveraging its Smartorque technology and data-driven design, to improve its customers' return on investment.

The company recognised that some of the booms had room for further optimisation. "These models were employing larger engines that machines themselves weren't taking full advantage of, and the power they did have available wasn't being fully utilised by operators," explained Skyjack. Taking this information into consideration, the company took a similar approach when it updated both its telehandlers and full-size RT scissor lifts.

"Skyjack's Smartorque optimises the gearing of our axle-based system, along with a simplified, high efficiency hydraulics package," said Corey Connolly, product manager at Skyjack. "So that our new 40- and 60-ft booms are able to employ less than 25 hp engines to deliver the same on-site job performance as higher powered units."

He added, "Engines have become much more complex and with requirements for more emission controlling devices (DOC DPF, and more). These devices and their impact on engine maintenance can quickly drive up the cost of ownership. Moving to a smaller engine avoids all of these associated costs."

According to Skyjack, the new boom models offer increased return on investment through several features. These include: significantly less sensor and emission regulation components, minimising any associated downtime; reduced fuel usage through reduced engine size; no downtime related to after treatment components clogging in colder climates; no dealing with customer issues on active regeneration; no expensive diesel oxidization catalyst (DOC) or diesel particulate filter (DPF) maintenance or replacement; reduced engine OEM intervention and loss of uptime; and no reliance on ultra-low sulfur fuel, reducing costs and improving resale options.

"These features taken individually may not seem significant, but the real benefit is that a combination of these things along with any associated downtime will quickly provide savings to our customers," said Mr Connolly.

The new boom models rolled out by Skyjack are: SJ40T+ (replacing the existing SJ40T+); SJ45T+ (replacing the existing SJ45T+); SJ45AJ+ (replacing the existing SJ46 and SJ46AJ+); and SJ60AJ+ (replacing the existing SJ51/SJ63 and SJ63AJ+).

Skyjack has upgraded its 40-ft and 60-ft boom lifts to offer increased return on investment.

The new SJ20 vertical mast, with a 20 ft platform height, features full electric drive and an optional wind rating.

Skyjack said it gathered detailed telematics data as well as engaged with customers to understand how the machines were being used, and what the impact would be for its customers, as well as the end user, if those changes were made. It was after collecting this data that the company realised these machines had a real opportunity to improve customer return with little to no impact on job site navigation and operation. ■

Website: www.skyjack.com

VMAX

The most powerful model in our range of lighting towers!

POWERFUL MOBILE LIGHTING TOWERS!

Made in Italy

GENERAC® MOBILE

Tel. +39 0382 567011 | gmp.srl@generac.com

generacmobile.com | generacmobileused.com

New Liebherr LiTiU attachment for excavators

Liebherr has developed a tilt unit that can extend the swing angle of various excavator attachments. With this new LiTiU tilt unit, fixed attachments are now able to reach swing angles of up to 2 x 75°. In addition, hydraulic attachments such as sorter grabs, swivel-mounted ditch cleaning buckets and tilt buckets can be combined with the LiTiU unit for an even bigger swing angle.

The new LiTiU unit is available in different versions and sizes, and is also compatible with attachments from other manufacturers, said Liebherr.

The LiTiU attachment is ideal for jobs where the swing angle represents an extension of the working area. It expands the applications of wheeled and crawler excavators. Apart from classic excavation works, the machines can be used for levelling and modelling banks, levelling and ditch cleaning, and also demolition and recycling, without the need to reposition the machine or change the attachment.

Liebherr has equipped the LiTiU attachment with a protected swivel motor. The unit is available as a direct mounting or sandwich attachment in two different sizes. As a direct mounting, LiTiU 12 or LiTiU 18 is mounted directly to the stick end of the excavator. The connection between the bottom of the LiTiU unit and the attachment is realised with either the Liebherr SWA 33 / SWA 48 quick coupling system or the fully automatic Liebherr SWA 33 Likufix / SWA 48 Likufix quick coupling system. Depending on the quick coupling system, swing angles of up to 2 x 75° can be achieved in this version.

With the optional extended hydraulic circuit, the LiTiU 18 unit can also be activated directly. As a result, the high-pressure and medium-pressure circuits are available for the functions of the attachments. There is no need to change over to the joystick control elements and productivity can be increased, said Liebherr.

As a sandwich attachment, the connection between stick end and LiTiU as well as the bottom of the LiTiU and attachment, is achieved for LiTiU 33 or LiTiU 48 via the fully automatic Liebherr SWA 33 Likufix / SWA 48 Likufix quick coupling system. Here, swing angles of up to 2 x 50° are possible. One advantage of this attachment version is the externally routed hydraulic piping, ensuring a uniform and constant oil flow.

The LiTiU 33 and LiTiU 48 units are therefore an excellent complement for attachments with their own slewing drive, such as sorter grabs or vibrating plates. However, the units are also useful for attachments like hammers, milling machines and mulchers that do not have their own slewing drive but still require high oil quantities with low-pressure losses.

According to Liebherr, there are more benefits when the new LiTiU unit is combined with the fully automatic Likufix quick coupling system (the latter is a hydraulic quick coupler with an automatic hydraulic coupling system). Both mechanical and hydraulic attachments on the bottom of the LiTiU can be safely exchanged from the operator's cab in a short time. Besides quick and safe attachment changeover, the LiTiU 33 or LiTiU 48 unit can also be set down fully and the machine can be combined with another attachment.

Fixed buckets are mainly used for traditional earthmoving work, for example, excavation and transport of various materials. A certain swing angle is beneficial for levelling and modelling banks or levelling and ditch cleaning work, and also demolition or recycling. With the new Liebherr LiTiU unit, each fixed attachment becomes a swivel-mounted unit with increased versatility.

ABOVE: **As a direct mounting, the new LiTiU 18 unit is mounted directly to the stick end of the excavator, allowing swing angles of up to 2 x 75°.**

BELOW: **As a sandwich attachment, the connection between stick end and LiTiU, as well as the bottom of the LiTiU and attachment, is realised with a fully automatic quick coupling system. This allows swing angles of up to 2 x 50°.**

Hydraulic attachments can also be combined with the LiTiU unit for an even bigger swing angle, as can attachments from other manufacturers such as vibrating plates or mulchers. Productivity can be increased in the instance where the swing angle provides better access to difficult-to-reach areas without the need to reposition the machine. ■

Website: www.liebherr.com

Wirtgen's new mobile cold recycling mixing plant

Wirtgen's new KMA 240(i) cold recycling mixing plant produces mix/cold mix that can be paved immediately and is ideally suited to producing different types of bound base layers. In addition to cement-treated base layers (CTB) and roller-compacted concrete (RCC), the plant can also produce bituminous bound base layers (with emulsion or foamed bitumen). The different mixes/cold mixes can be used for a wide range of applications, including highway construction, road and path construction, and the construction of parking lots or industrial areas.

The KMA 240(i) cold recycling mixing plant has a capacity of up to 240 t/hr.

The cold recycling mixing plant is mounted on a flatbed semitrailer and has its own engine unit. This mobile design allows the system to be flexibly moved to different locations and set up rapidly. With this new plant, Wirtgen combines the advantages of its earlier model, the KMA 220(i), with improved mixing performance and an innovative cement metering system with automatic self-calibration via static weighing.

The six-cylinder diesel engine is designed for the plant's high mixing capacity of up to 240 t/hr. Thanks to an efficiently insulated housing, it emits little noise and can be operated economically for up to two days on one tankful. Its low emission values also allows it to be used in urban areas.

Providing a maximum capacity of 240 t/hr, the plant produces a full truckload of 20 t of mix every five minutes. As a result, sections of a cement-treated or bituminous bound base layer with a working width of 4 m and a paving thickness of 15 cm can be completed over a length of 1,400 m every day, according to Wirtgen.

The KMA 240(i) plant is capable of processing a large variety of non-cohesive base materials, which wheel loaders feed to the plant's hopper via vibrating grids. This makes it possible to produce mixes/cold mixes from a wide variety of new granular mixtures or various milled materials and binding agents.

Wirtgen added that asphalt milled material, other non-cohesive materials reclaimed from old road surfaces, and materials from RC processing can all be used to build new road surfaces in an environment-friendly manner. The ability to completely reuse the material results in high CO2 and energy savings with minimal construction costs and project periods.

Silos or tank trucks supply the cold recycling mixing plant with binding agents, such as hot bitumen, bitumen emulsion, and cement. The precise metering of the input materials and binding agents, the ratio of which is determined in advance by preliminary tests in the road construction laboratory, is monitored by a microprocessor control system. The KMA 240(i) ideally loads the new, homogeneous mix directly onto trucks or deposits it continuously on a stockpile. Loading or depositing can be carried out flexibly, thanks to the discharge conveyor that can swing 55° to either side.

Cold recycling technology from Wirtgen has been designed as an environment-friendly and cost-effective rehabilitation method that can be carried out either in place – in which case the damaged pavement is removed by a mobile recycling train, processed on site, and immediately repaved – or in plant.

The company said, "If the mixing plant is located too far away or the job site doesn't meet the logistical requirements needed to carry out the entire recycling process in one pass, cold in-plant recycling is often the perfect solution. This method involves setting up the KMA mobile cold recycling mixing plant in the immediate vicinity of the job site, thus saving time, truck capacity, and is also extremely environment-friendly, and in turn making it possible to achieve up to 70% less CO2 emissions through cold processing, a 90% reduction in transport volumes, and up to 40% lower construction costs. Furthermore, the high-quality building materials are completely reused." ■

Website: www.wirtgen.com

Demag unveils new four-axle all terrain crane

The new Demag AC 80-4 rounds out Tadano and Demag all terrain crane portfolio up to 100 t. Designed for the global market, this four-axle 80-t all terrain crane has a maximum main boom length of 60 m.

If the main boom length is not enough, the reach can be extended with a 6.5 m extension that can be offset by 25° and 50°. "Its capacity is a generous 23.8 t, meaning it can be used to lift heavy loads over obstacles," said Demag.

In addition, a 1.50-m runner with a capacity of 26.6 t is available for the Demag AC 80-4. Accordingly, the crane is also recommended for indoor applications. The main boom can be lowered up to 3° below its horizontal position, so that potential work at height can be easily eliminated and the jibs can be installed quickly and safely.

In the class of up to 100 t, no other crane comes close to the AC 80-4's lifting capacity with a fully extended boom up to a radius of 30 m, according to Demag. The crane can lift an impressive 5.4 t at a radius of 14 m.

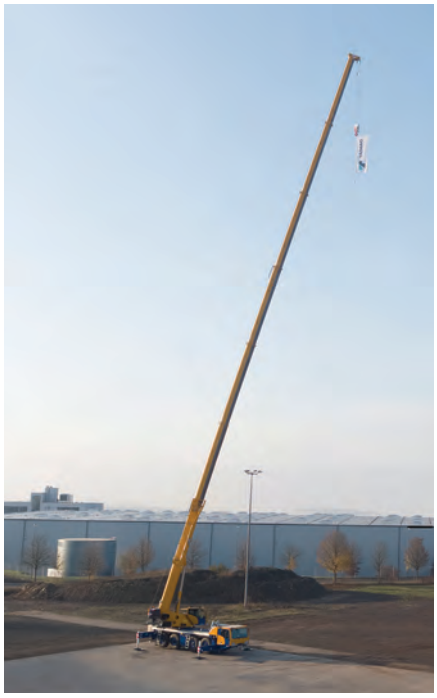
The company said the AC 80-4 also raises the bar with its main boom extended to 50 m. "At a radius of 10 m, it can lift 9.7 t, which is 2.2 t more than the next most powerful competitor." The crane features a line pull of 66.9 kN.

Demag already had an 80-t crane, the AC 80-2. "The worldwide success that this model had, showed that there's significant interest in a crane with this kind of lifting capacity. In fact, a large number of customers kept confirming this time and time again. That's why we decided to add the AC 80-4 to our product portfolio in the segment of up to 100 t," explained Michael Klein, Demag product marketing manager.

The AC 80-4 features a compact design, with nearly all of its dimensions being shorter than those of other four-axle units in its class, revealed Demag. The crane's total length is 12.15 m, the carrier length is 10.60 m, its height does not exceed 3.85 m, and the front overhang is a modest 1.49 m. "Together with its width of only 2.55 m, our AC 80-4 is better suited for tight work sites than any other crane in its class," said Mr Klein.

The AC 80-4 has a sophisticated counterweight design, which makes it possible to have a maximum counterweight of 17.7 t. On the road, it can transport up to 9.3 t of this counterweight itself while remaining under a 12 t-axle load limit, and all while also carrying the 6.5-m swing-away jib, said Demag. "Even when staying under an axle load limit of 10 t, it can carry 3.3 t of counterweight."

ALL IMAGES:
The new AC 80-4 all terrain crane features a compact design, offering a maximum main boom length of 60 m.



Once at the work site, the new Demag Surround View makes it easier for the operator to position the AC 80-4. This system uses the four crane cameras to show a computer-assisted diagram of the possible outreach of the outriggers, as well as the counterweight tailswing radius at the crane's current location.

"Demag Surround View displays in the carrier cabin the different outrigger widths so the crane operator can position the crane on the construction site, in order to extend all outriggers sufficiently far and ensure the required slewing radius. This reduces time-consuming measuring and trial and error when looking for a location, so that the crane can be ready for operation more quickly," explained Mr Klein.

The Demag Surround View system also supports the driver on the way to the construction site. The cameras can deliver images of the crane side areas when turning, so the driver is able to detect cyclists, pedestrians, or any obstacles.

The AC 80-4 is equipped with the Demag IC-1 Plus control system – which, during operation, calculates the crane's lifting capacity for every boom position as a function of the superstructure's slewing angle. "This means that the maximum available lifting capacity can be used with any outrigger configuration, including asymmetrical ones," said Demag. "This advantage is literally maximised when combined with the Flex Base system, making it possible to extend the outriggers to any point within their range."

The crane also comes with the IC-1 Remote telematics solution. It allows to remotely read and diagnose all important crane data and enables owners to integrate the AC 80-4 into their fleet management system.

Moreover, the AC 80-4 is fitted with the E-Pack, an electro-hydraulic system designed to be connected to the crane. It has an integrated 32-kW electric motor for quiet zero-emission crane operations. Specific applications for the E-Pack include crane jobs inside buildings, in dense urban areas, and at night in residential areas. ■

Website: www.demagmobilecranes.com

New Sandvik DD212 drill rig for narrow vein operations

Sandvik Mining and Rock Solutions has unveiled its new Sandvik DD212, a compact and intelligent single-boom electro-hydraulic drill rig for tunnelling and mining development in narrow vein drifts. This machine is an upgrade of the earlier model, the DD210 development drill rig.

"The new DD212 is a compact drill solution enabling mines to open smaller tunnel sections and benefitting from increased levels of productivity with more meters advanced," said Sandvik. The company revealed that based on factory and field tests, the DD212 delivers up to 20% reduction in boom positioning time per face, about 15% improvement in drill penetration rate, whilst its 3% improved pull out ratio can result in up to 10 cm greater advance per face when compared to similar equipment.

According to Sandvik, the DD212 reached 93% mechanical availability during its mine site test period, accumulating 300 hours percussion within a 2.5-month operation. The machine provides great performance with net penetration rate, drill quality and rock tools improvements with zero drill rods jammed during the test period.

The DD212 is equipped with new features, including the THC562 drilling control system with torque control and reaming hole selection. It enables the rig to provide increased drilling performance, while reducing the wear on both the rock drill and rock tools.

Another new feature is the SB20i intelligent boom for accurate hole electronic positioning, which allows the precise and fast navigation of drill feed and tool, with automatic parallelism and instrumentation for hole angle measurements. The boom offers large face drill coverage from 6 to 25 sq m, thanks to the 1-m boom extension and the two rotation actuators (narrow-vein type).

The Sandvik DD212 also has an extended 12 ft (3.7 m) TF feed rod, which optimises advance/round, whilst its RDX5 rock drill provides fast drilling cycle time and low operating costs. The rig's versatile CFX telescopic feed can retract from 12 ft to 6 ft (3.7 m to 1.8 m) and enhances multipurpose operations in small tunnel sizes, from 2.5 m x 2.5 m to 3.5 m x 3.5 m.

"The DD212 delivers accurate face drilling, cross cutting and bolting and enables mines to open smaller tunnel sections, reducing overbreak, dilution and drilling costs," summarised Sandvik.

"The DD212 brings operational safety and versatility for tackling different applications, precise electronic positioning, ergonomic operator interface, data monitoring, all leading to superior pull-out ratio and reduced tool consumption, ensuring that the new DD212 delivers the best fit in narrow vein drilling." ■

Website: www.rocktechnology.sandvik

Sandvik DD212 drill rig is equipped with an intelligent boom.

RTG innovations for sheet pile wall construction

RTG Rammtechnik GmbH, a company of Bauer Maschinen Group, has been actively developing new features for its RG telescopic leaders. Among them is a sheet pile assistance system integrated in the vibrator, which enhances safety and efficiency of the construction of sheet pile walls.

Previously, a sheet pile was attached to the vibrator with a chain, pulled upwards and then threaded into the grip by moving the vibrator downwards, explained RTG. During this process, the chain was loosened, with the sheet piles standing freely on the ground and potentially able to tip over before being threaded in.

Thanks to the new assistance system, it is now possible to safely thread a sheet pile into the vibrator by fixing the sheet pile (single or double pile) in place between the ground and the assistant, thereby preventing it from tipping over. "Two factors play a role here: first, the increased safety on construction sites, and second, the time saved by eliminating laborious manual threading," said Jonas Guettel, RTG product manager.

The assistance system has been applied in multiple applications, such as the construction of an underground garage in the German city of Berlin last year. Here, an RG 19T with integrated sheet pile assistant was deployed. The job involved securing a slope, and then later the excavation pit, using double U profiles with a length of 12 m. According to RTG, by adopting an RG 19T with the new system, threading in the sheet piles took just a fraction of the time that was previously needed (when an RG without assistant was used).

For a project in Karlsruhe, Germany, double U sheet piles with a length of 18 m had to be positioned for a new building complex with multiple underground floors. "During this project, the RG was operated by a highly experienced operator who was visibly impressed by the massive amount of time saved," said Mr Guettel.

In 2020, RTG presented its 'operation remote control," which is believed to be a world's first in the field of telescopic leaders. This new tool, available for all RTG equipment, enables the operator to control all functions externally – from set-up and drilling to impact driving. In the process, the B-Tronic is displayed on the attachable touch screen.

"Using remote control, the entire set-up process can be carried out by a single person in just about 15 minutes," revealed Mr Guettel. This makes one-man operation possible, resulting in considerable safety improvements, particularly on cramped construction sites, said RTG. The sheet pile assistant can also be operated by remote control.

RTG added that the new auxiliary winch for RG telescopic leaders is hydraulically adjustable, meaning that a range of positions can be achieved (three working positions and one transport position). It also allows the load capacity to be optionally increased to 8 t, eliminating the need for additional lifting equipment.

ABOVE: **An RG 19T with the integrated sheet pile assistance system working on a project in Karlsruhe, Germany.**

BELOW LEFT: **With RTG's operation remote control, all functions can be controlled externally.**

BELOW RIGHT: **The new auxiliary winch for RG telescopic leaders.**

All images © Bauer Group

"In all our new developments, we are careful to ensure that they are not only effective in practice but also intuitive to operate," summarised Mr Guettel. "The feedback we have received so far from operators after the first applications – some of them relatively new and some of them highly experienced – demonstrates that our innovations offer real added value in terms of safety and efficiency for the construction of sheet pile walls." ■

Website: www.bauer.de

Purtop® System

STRONG, ELASTIC, QUICK AND LONG-LASTING WATERPROOFING

QUICK REACTION TIME

IMMEDIATE WATERPROOFING

IMMEDIATE WALKABILITY

EXCELLENT MECHANICAL PROPERTIES

Spray polyurea membranes to waterproof and protect any type of structure: from roofs, bridge, decks and viaducts, hydraulic works in general, for quick and lasting solution.

Mapei Far East Pte Ltd
28 Tuas West Road, Singapore 638383
T: +65 6862 3488 E: mapei@mapei.com.sg
Learn more on **www.mapei.com.sg**

Mapei Singapore

MAPEI®
ADHESIVES · SEALANTS · CHEMICAL PRODUCTS FOR BUILDING

Snorkel upgrades A62JRT articulated boom lift

Snorkel offers an upgraded version of its popular A62JRT articulated boom lift, which is now in full production in the company's manufacturing facility in the UK.

Reaching a maximum working height of 20.8 m, the Snorkel A62JRT is a diesel-powered, rough terrain articulated boom lift capable of lifting up to 227 kg. It boasts compact dimensions, zero tailswing and an ultra-tight inside turning radius, as well as powerful hydrostatic four-wheel drive for rough ground conditions.

The upgrades introduced in January 2021, include a new Kubota V2403 Stage V/Tier 4 Final compliant diesel engine. When combined with improvements in the hydraulic circuits, the upgraded A62JRT reduces fuel consumption by up to 50%, said Snorkel. The company mentioned that a Tier 3 engine option is still available on the A62JRT.

In addition, the A62JRT has been upgraded with Snorkel's standardised control system with onboard diagnostic display, for easier servicing, maintenance and troubleshooting. This is the same diagnostics system used across a large proportion of the Snorkel product range.

With a focus on commonality, the A62JRT now features Snorkel's standardised tri-entry boom platform with universal mounting, which is also used on most Snorkel boom lifts, including the 400S/460SJ and 600S/660SJ mid-size telescopic boom lifts. According to the company, the new platform delivers a more ergonomic user experience and joystick arrangement, as well as rental-friendly features, including a six-bolt platform release for fast replacement in case of damage, and removable floor sections for quick repair and replacement between hires. ■

Website: www.snorkellifts.com

ABOVE: **The A62JRT now has the same spacious tri-entry platform as the Snorkel mid-size telescopic boom lifts.**

LEFT: **The improved control panel on the Snorkel A62JRT.**

LEFT AND RIGHT: **The upgraded version of Snorkel A62JRT articulated boom lift has entered full production. The machine is capable of lifting up to 227 kg, with a maximum working height of 20.8 m.**

BTA | BuildTech Asia 7 - 8 July Digital Series 2021

International Building & Construction Technology Expo

7 – 8 July 2021 | 10am to 6pm
Singapore Time, GMT 8+

Singapore Pavilion Virtual Booth

Enjoy up to **70%** Reimbursement!

Scan for more information or visit www.buildtechasia.com

Contact us for enquiries: (65) 6319 4024

Subject to Terms & Conditions

Organised by

sphere exhibits
A SUBSIDIARY OF sph

Co-organised by

Singapore Institute of Building Limited

Rbit button bits designed for lower drilling costs

The Rbit button bits from Robit have been designed to help customers reduce the total drilling costs by achieving faster rate of penetration and the lowest cost-per-meter.

"Our customers already know the great quality of our top hammer button bits. However, we took up the challenge of making our bits even better," said Robit. "All our button bits have been manufactured with recyclable 100% green steel. Consistent top quality is guaranteed by fully automated production lines. Rbit button bits are finalised with eco-friendly water-based paint."

The Rbit button bit series features an optimised button layout configuration of the Flat Face model, to ensure maximised rock contact and energy transmission. The series also has a new transition face that was developed in both Flat Face and Drop Centre models to improve the transfer of percussion energy into the rock.

Other highlights of the Rbit button bits include enhanced flushing design, now available in the Flat Face and Drop Centre models, delivering even faster rate of penetration; as well as redesigned wider retrac grooves, which allow more space leading to a better flow for the cuttings. The heavy duty models are also now available in both Flat Face and Drop Centre models.

"All of our new high quality Rbit drill bits have been designed with state-of-the-art computer fluid dynamics (CFD) simulation," explained Robits. "Moreover, field tests globally have demonstrated clear evidence of a superior drilling performance which our technical simulation had already guaranteed. Our partner drillers were happy with the excellent performance and noted better flushing and longer grinding intervals with the new Rbit drill bits."

According to Robit, its products are developed in the challenging rock conditions of Scandinavia and have a proven record globally. "With the new Rbit, we have found yet another way to deliver excellence to our customers worldwide," said the company. ■

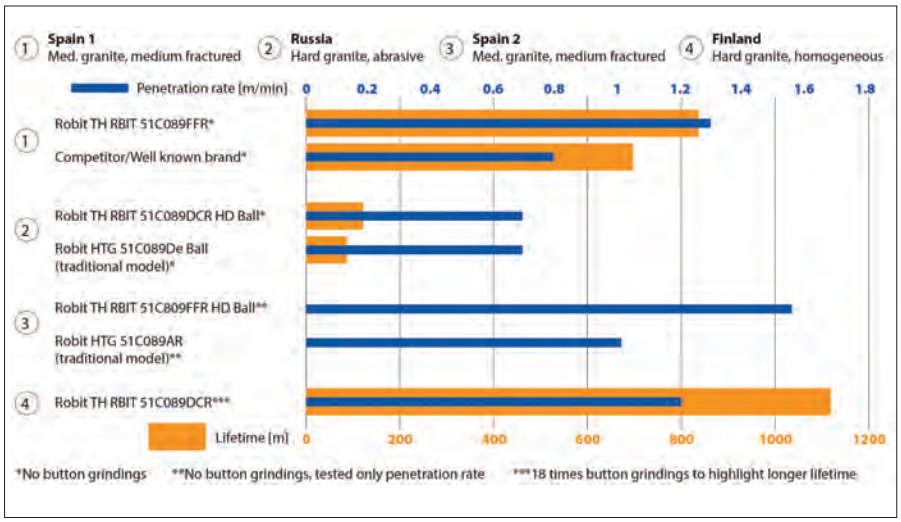
Website: www.robitgroup.com

The Rbit button bits from Robit feature eco-friendly water-based paint. They are designed to help customers reduce the total drilling costs.

New transition face to ensure better energy transfer.

Wider flushing grooves to allow better flow of cuttings.

Optimised button layout to maximise rock contact.



Robit's chart showing field tests globally, which displays the drilling performance of Rbit button bits.

Vögele's smallest screed ideal for restricted job sites

The new AB 200 extending screed from Joseph Vögele AG complements the company's Super 700(i) and Super 800(i) mini class pavers. It has a basic width of just 1.1 m and is capable of extending hydraulically up to 2 m. This gives the new screed a basic width 10 cm narrower than the existing AB 220, and facilitates high-precision paving projects in extremely cramped conditions.

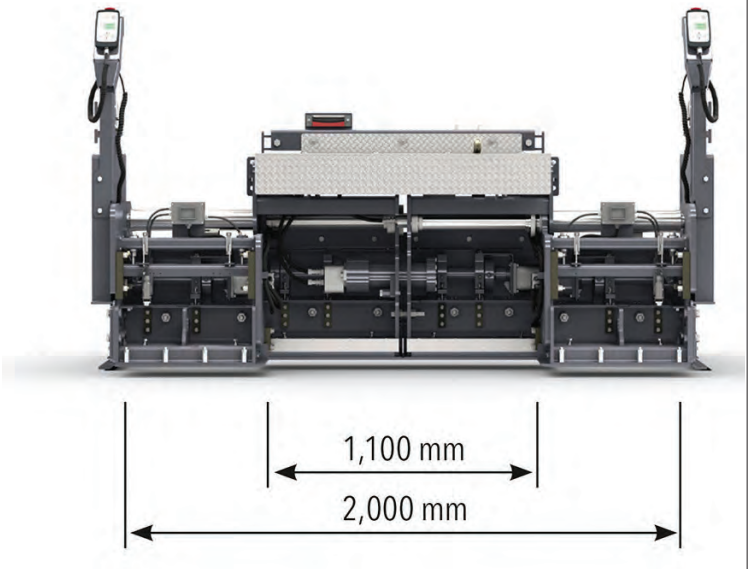
Using a special system for pave width reduction, users can also implement pave widths of just 0.5 m, as well as achieve a pave width of up to 3.2 m with bolt-on extensions. "The AB 200 expands the potential applications for mini class pavers and provides road builders in urban construction, landscaping and track work with more room for manoeuvre than before," said Vögele.

Together with the slightly larger AB 220 screed, Vögele covers the entire range of pave widths for small construction projects. The company supplies the new screed in two compaction variants: the AB 200 V with vibrators for the Super 700(i), and the AB 200 TV with tamper and vibrators for the Super 800(i).

As an extending screed, the new AB 200 is flexible and especially suitable for changing pave widths. Featuring a total of 12 different extending and fixed-width screeds, and pave widths from 0.5 to 18 m, Vögele now offers the right screed for every road construction application.

"We develop our products in close collaboration with our customers and claim to stock the ideal solution for every requirement," said Bastian Fleischer, product manager at Joseph Vögele Ag. "Having launched our largest screed, the SB 350, at bauma 2019, we are now rounding off the small end of our range with the AB 200." ■

Website: www.wirtgen.com



TOP RIGHT: **The AB 200 extending screed expands the potential applications for mini class pavers. It facilitates high-precision paving projects in extremely cramped conditions.**

ABOVE: **With a basic width of just 1.1 m, the AB 200 is the smallest screed from Vögele. It can extend hydraulically up to 2 m.**

Volvo machines help to expand Indonesian dairy farm

An EW145B Prime wheeled excavator and SD110 soil compactor from Volvo Construction Equipment are proving their productivity, efficiency and reliability in the expansion of a dairy farm in Berastagi, North Sumatra, Indonesia.

PT Ultrajaya Milk Industry is the country's largest producer of boxed milk and beverages. Founded in 1971, the company has invested continually in UHT and aseptic packaging technology, which has helped Ultra Milk become a household name in Southeast Asia.

To further increase its production, the company is expanding its cattle ranch and feed farm in Berastagi. Previously covering 73 ha, PT Ultra Sumatera Dairy Farm is adding an additional 83 ha of land to the farm so that it will eventually accommodate 6,000 Australian Holstein cows.

In October 2018, construction work began on the project. In May 2019, a Volvo EW145B Prime wheeled excavator and SD110 were drafted in from a local equipment rental company to assist with the earthwork. The machines operate eight hours a day and show no signs of slowing down.

"These are really reliable and durable machines. We've been working them hard for over a year now and they are still in top condition," said Ms Dinda, spokesperson for PT Ultra Sumatera Dairy Farm.

The 12.8-15 t EW145B Prime excavator has a strengthened undercarriage frame, reinforced boom and arm, and long wear components to withstand tough shifts. Similarly, the 11 t class SD110 soil compactor has been designed the achieve the same high quality performance pass after pass.

Both machines are powered by a Volvo Tier 3/Stage III-compliant engine, which delivers powerful performance along with dependability and environmental emission compliance. The Volvo D6E E1E3 engine on the EW145B Prime excavator even includes an automatic idling system for ultra-efficient fuel consumption. "The engines are powerful but have low fuel consumption, which is important for us as we try to keep costs down on the project," said Ms Dinda.

The EW145B Prime excavator features the multi-task credentials of a tool carrier and the pedigree of a thoroughbred digging machine. It is multi-functional, highly mobile, well-balanced and comfortable. The excellent all-round visibility, adjustable steering column and ergonomic controls, high-capacity climate control system, and vibration dampening lead to all-day operator comfort and productivity. The anti-slip steps and platforms, simplified ground level accessibility and centralised lubrication points make regular maintenance easy.

As for the SD110 compactor, its weight is balanced at the drum and at the tyres, leading to enhanced traction, fewer passes, reduced voids and maximum compaction. "Our operators particularly like the acceleration and compaction abilities of the SD110. They are very good for a vibratory roller," said Ms Dinda.

In addition, the articulation joint of the SD110 provides a +/- 17 degree oscillation angle and frame articulation of +/- 40 degree, for greater stability and manoeuvrability. Operators can select high or low drum amplitude from the control panel, offering a choice according to application or material depth. It is also easy for the operator to vary the frequency from the control panel in line with different soil types and conditions.

"Overall, we have been very impressed by the Volvo machines. They reliably deliver high productivity and efficiency day after day," concluded Ms Dinda. ■

Website: www.volvoce.com/indonesia

TOP AND ABOVE: **Volvo EW145B Prime wheeled excavator features a strengthened undercarriage frame, reinforced boom and arm, and long wear components to withstand tough shifts. The machine has been working on the project since May 2019, operating eight hours a day.**

OS+H ASIA

The 12th Occupational Safety+Health Exhibition for Asia

NEW DATES **28 - 30 JULY 2021**

Marina Bay Sands, Singapore

Safety Security Health

BOOK YOUR SPACE NOW! www.osha-singapore.com

For enquiries : (65) 6332 9620 osha@mda.com.sg

Follow Us! OS+H Asia Exhibition OSH Asia

Supporting Organizations:

Held in:

Organized by:

Messe Düsseldorf Asia

Demag AC 1000-9 performs heavy lifting in Mumbai

A Demag AC 1000-9 all-terrain crane was recently used to lift a 100-t tunnel boring machine (TBM) on the Bombay Central Metro Station project. Owned by Indian crane service provider Steel Carriers Infrastructure Pvt Ltd, the crane features a 1,200-t capacity.

The job site is situated right in the middle of Mumbai. "We had to pick up a 100-t tunnel boring machine at a radius of 20 m from below ground and bring it up to the surface," explained Sunil Makad, owner of Steel Carriers. "No other all-terrain crane in India would have been able to do this, and using a crawler crane was out of the question due to issues of cost-effectiveness. In fact, setting up a crawler crane under the tight space conditions at the work site would have taken significantly more time, which would have been wildly out of proportion to the short project duration of eight days."

Despite the suitability of the AC 1000-9, setting it up on the job site posed some challenges for Steel Carriers. The restricted space required the team's extensive skills and experience when it came to setting up the crane in such a way as to ensure that the demanding lift would be successful. And this was no mean feat given the load's weight and the lift's large radius - which meant that the AC 1000-9 had to be equipped with its full 228-t counterweight for a boom length of 30 m.

Before all these preparations could be carried out, however, the crane had to travel from the Steel Carriers workshop in Mumbai to the job site. In order to avoid the Indian metropolis' daily traffic, the team took the crane and the trailers carrying its equipment to the site late at night with four trips every night.

"The reason we had to split up the transport that way was that space at the work site was really tight, so having the crane come in with all its equipment at once was simply impossible," revealed Mr Makad. The team managed to put the crane together and have it ready for the lift in just one day, with only four people: the crane operator, a supervisor, and two assembly technicians.

In addition to the powerful crane required for the job, staying on schedule was one of the crucial factors in the project, as the deadline for completing the new metro line was fast approaching.

Speaking about the challenges, Mr Makad said, "During the lift, the load on the crane hook and the working area itself were not in the operator's field of view. In other words, he was completely dependent on the instructions provided by his co-workers through their walkie-talkies, as well as on their hand signals."

Nevertheless, the expertise and perfect coordination of the Steel Carriers team made it possible to carry out the lift with utmost precision. "Our team did an extraordinary job. We showed once again that we can carry out the toughest jobs with the AC 1000-9 and our experience, and meet our customers' expectations," enthused Mr Makad.

"The response times are extremely fast, spare parts are reliably delivered, and all other forms of assistance are absolutely dependable. And we know that with this support behind us, we can tackle any job without hesitation and help strengthen India's infrastructure network."

The Demag AC 1000-9 has been named 'Gajraj' by Steel Carriers. "This means 'king of the elephants,' which is what our employees decided to call our AC 1000-9 due to the fact that it's the biggest and only telescopic crane of its type in all of India," said Mr Makad.

Based in Mumbai, Steel Carriers was the first Indian company to put a new Demag crane into operation with the AC 200-1 about 15 years ago. The company's fleet currently includes telescopic and crawler cranes with lifting capacities ranging from 50 to 1,200 t. Apart from crane hire, Steel Carriers also offers transport services and storage of industrial goods and steel products. ■

Website: www. demagmobilecranes.com

ABOVE: **The AC 1000-9 has a 1,200-t capacity. In this project, the crane had to be equipped with its full 228-t counterweight for a boom length of 30 m.**

LEFT AND BELOW: **The AC 1000-9 was used to pick up a 100-t tunnel boring machine at a radius of 20 m from below ground and bring it up to the surface.**

Hillhead2021

The UK's largest Quarrying, Construction & Recycling Exhibition

22 – 24 June 2021
Hillhead Quarry | Buxton
Derbyshire | UK

Live demonstrations
550+ exhibitors
Free entry

Find out more at **hillhead.com**

Email: **hillhead@qmj.co.uk** | Phone: **+44 (0) 115 945 4367** | Join the conversation **@Hillheadshow #hillhead2021**

Terex Trucks TA400 impresses on tough landfill site

Civil and demolition company DECC recently bought a Terex Trucks TA400 articulated hauler to work on a landfill site in Swanbank, near Brisbane, Australia. The machine has been carrying out a variety of jobs from remediation of landfills to stormwater management.

DECC specialises in demolition, environmental, civil contracting, earthworks, remediation and decontamination services, as well as project management and consulting services within the construction industry. "We have pretty rough conditions in demolition, so we choose equipment that's tough, reliable and efficient – but without that hefty price tag," said Josh Cutts, DECC's national plant manager.

"We do lots of landfill jobs from design, construction, monitoring, remediation and post-closure management. The TA400 dump truck is performing a lot of these landfill jobs for us. It has been giving us heavy-duty and efficient performance in the various conditions that it has been used in so far."

DECC has a fleet of over 100 machines, including articulated dump trucks, excavators, skid steer loaders and road trucks. With so many jobs to do at the Swanbank site, the company was recently in the market for another articulated truck. "We had a requirement for an additional dump truck, so we got a Terex Trucks TA400 on trial. We used it for a couple of weeks before buying one," said Mr Cutts.

Since April 2017, Terex Trucks has partnered with construction equipment supplier Porter Group to exclusively represent the company throughout Australia. The Porter Group supplies leading construction equipment brands through sales and hire throughout Oceania. The company serves customers in a variety of industries including construction, quarrying and mining, recycling and landfill, demolition, forestry, road building and agriculture.

"With all the investments and improvements that have happened since Volvo Construction Equipment took ownership of Terex Trucks in 2014, they are now producing great ADTs," said Michael Carter, national sales manager for Porter Equipment Australia. "The trucks are robust, reliable, powerful, and they can handle whatever terrain and conditions you throw at them – which is exactly what the TA400 has proved to DECC on this landfill site. "

"I can't fault the service at Porter Equipment at all, I buy a lot through them," said Mr Cutts. "They're brilliant – from their sales team to the guys in the yard, who drop everything to come and assist us if we ever have a breakdown. I've worked with them in Brisbane, Sydney and Newcastle and their teams have been extremely supportive all the time."

The TA400 is the largest articulated hauler on offer from Terex Trucks, with a maximum payload of 38 t and a heaped capacity of 23.3 cu m. It is powered by a high performance, fuel efficient engine that develops a gross power of 331 kW. The TA400 meets the demands of the most extreme operations including quarries, mines and large-scale construction projects.

For the Australian market, the TA400 is fitted with a fuel-efficient Tier 2 engine to meet local emission requirements. However, the trucks can be fitted with a globally emission compliant engine that meets the requirements of EU and North American legislation without the need for a diesel particulate filter (DPF). This is achieved via the latest generation selective catalytic reduction (SCR) technology, combined with exhaust gas regeneration (EGR) and a variable geometry turbo (VGT).

"Together with Porter Group, we want to show customers that Terex Trucks has come a long way over the last few years, and with the latest generation machines, there has never been a better time to invest in a Terex Trucks ADT," said Lee Irving, regional business manager for APAC/Oceania at Terex Trucks. "Since Volvo CE acquired Terex Trucks, we've made substantial investments and improvements in our people, processes, products and facilities. These improvements can be seen in our latest products, the TA400 and TA300, two robust and reliable off-highway dump trucks." ■

Website: www.terextrucks.com

ALL IMAGES: **The TA400 articulated hauler helps DECC to carry out a variety of jobs from remediation of landfills to stormwater management, at a site just outside Brisbane, Australia.**

2021 TRENCHLESS ASIA

TRENCHLESS ASIA 2021

16-17 November

Kuala Lumpur Convention Centre, Kuala Lumpur, Malaysia

Featuring:
INTERNATIONAL NO-DIG 2021 KUALA LUMPUR
THE 38th INTERNATIONAL NO-DIG

The twelfth event in this outstanding series returns to Kuala Lumpur and for the first time, features the ISTT International No-Dig.

Floor plan extended due to phenomenal demand – Book your stand now

- Featuring ISTT International No-Dig
- Trenchless Technology
- Underground Infrastructure
- Pipeline Technologies
- Underground Utilities
- Trenchless Solutions for Urban Flooding
- Knowledge Transfer
- Green Technology

For more details regarding exhibiting and sponsorship opportunities please contact:
Paul Harwood at pharwood@westrade.co.uk or +44 (0)1923 723990
Stuart Hillyard at shillyard@westrade.co.uk or +44 (0)1923 723990

Book your stand today – www.trenchlessasia.com

Organised by

Supported by

Official Media Partner

Media Partner

Platinum Sponsors

Gold Sponsors

Global knowledge exchange advances Asia's tidal energy sector

Lessons learnt from MeyGen Phase 1A

By: Narsingh Chaudhary, Executive Vice President and Managing Director, Asia Power Business, Black & Veatch
Tim Baker, Technical Director, Marine Energy, Black & Veatch Europe

Narsingh Chaudhary

Asia is seeking renewable energy investments as it carefully balances energy security, environment sustainability and energy equity requirements to meet the escalating power consumption needs of its growing economies and populations.

In addition to solar and wind energy, another viable renewable energy source that can potentially be harnessed in the region is Ocean Renewable Energy (ORE). Ocean energy includes wave, tidal, salinity gradient and ocean thermal energy conversion technologies.

According to the International Renewable Energy Agency (IRENA), ocean energy accounts for approximately 530 MW of installed generation capacity globally today. Tidal stream and wave projects under construction are anticipated to add another 3 GW of installed capacity short-term within the next five years, most of it in Europe (55%), Asia Pacific (28%) and the Middle East and Africa (13%). With the support of incentives and regulatory frameworks, IRENA forecasts potential growth of ocean energy of up to 10 GW of installed capacity by 2030 globally.

State of the industry in Asia

In its efforts to promote tidal energy investments, Indonesia has identified the Pantar Strait, East Nusa Tenggara, as a potential location for the development of tidal power plants.

China has installed a 500 kW tidal stream turbine with a rotor diameter of 18 m between the islands of Putuoshan and Huludao in the Zhoushan archipelago.

The Korea Institute of Ocean Science and Technology (KIOST) has contracted the European Marine Energy Centre (EMEC) to deliver technical support for the development of its tidal energy test site at Jang-Juk Strait near Jindo Island, Korea.

To advance the development of Asia's tidal energy sector, one approach is to review best practices from global installations and refine them to meet regional requirements.

MeyGen Phase 1A lessons

An example of a global installation is the MeyGen Tidal Energy Project in Scotland's Pentland Firth. As the first multi-megawatt tidal array, MeyGen Phase 1A is a trail blazer. The 6 MW demonstration array, comprised of four 1.5-MW tidal turbines, entered its 25-year operations phase in April 2018.

In 2019, it was reported that MeyGen had exported over 13.8 GWh of predictable renewable electricity, equivalent to the average annual electricity consumption of around 3,800 typical United Kingdom (UK) homes.

MeyGen Phase 1A was partly funded through a £10 million (US$13.4 million) grant from the UK Department for Business

Tidal stream and wave projects under construction are anticipated to add another 3 GW of installed capacity short-term within the next five years, most of it in Europe (55%), Asia Pacific (28%) and the Middle East and Africa (13%).

ABOVE AND BELOW: **MeyGen Phase 1A is a 6 MW demonstration tidal array comprised of four 1.5-MW tidal turbines. The project entered its 25-year operations phase in April 2018.**

Energy and Industrial Strategy (BEIS), with a requirement that lessons learnt from every aspect of the project were collated and shared. The result is a comprehensive lifecycle assessment of a megawatt-scale array in the UK.

Some key findings in the assessment authored by Black & Veatch are:

- **Integration of turbine and power train suppliers:** By integrating the entire power train system with the turbine supply work package, correct component system integration would be ensured.
- **Interventions:** Many early stage issues that required interventions were as a result of faults in standard components, rather than novel components specific to the tidal industry.
- **Pitch system:** MeyGen encountered fewer technical issues with the pitch system of those turbines employing an electrical pitch system in comparison to those with a hydraulic pitch system.
- **Foundation type:** MeyGen Phase 1A uses gravity foundations which have three feet that each require a suitably level seabed. MeyGen has found it

As the first multi-megawatt tidal array, MeyGen Phase 1A is a trail blazer.

extremely difficult to find locations that satisfy the foundation requirements for all the feet of all the foundations. MeyGen should have given a higher weighting to this issue when deciding between the use of gravity base or monopile foundations in the early engineering stage.

- **Cable stability:** No suitable guidance existed for stability of cables on a fractured rock seabed under the action of significant tidal and wave loading, which meant that MeyGen had to develop a custom approach which relies on frequent cable monitoring but allowed significant cost savings. A cable stability standard drawing on MeyGen's experience is in preparation and will be published by the British Standards Institute.
- **Dry-mate vs wet-mate electrical connectors:** MeyGen found that the use of dry-mate connectors significantly increased the complexity of the turbine installation and retrieval, due to the need to handle the cable tails attached to the turbine, which increased the mobilisation time required and also required standby periods between operations. Handling cable tails on deck, which could be under tension, also significantly increased the health and safety risk compared to the use of wet-mate connectors. Dry-mate connectors also restricted the permissible current velocity for installation operations, as the vessel remained connected to the sea bed, which limited installation windows to neap tides, making it more difficult to negotiate on vessel rates due to the lack of flexibility, exacerbated if multiple turbines required installation/retrieval.
- **Vessel capability:** One of the most impactful lessons learnt by MeyGen from a cost perspective is that currently available dynamic positioning vessels do not work reliably in currents stronger than six knots. The safe use of a Jack-Up Vessel at a high velocity tidal site was proven to be possible (this approach had previously been questioned within the industry for a number of years). MeyGen's view is that for foundation installation a Jack-Up Vessel can be cost effective; however, MeyGen would still expect to use a dynamic positioning vessel for turbine and cable installation.
- **Real-time onsite metocean data feed:** Having real-time metocean data feeds on site can be invaluable as it allows detailed operational planning.
- **Marine Warranty Surveyor:** The Marine Warranty Surveyors (MWS) were not initially familiar with the kind of operational procedures in often strong currents required for a tidal energy project, and the successful engagement with the MWS has been a key component to the success of MeyGen Phase 1A.
- **Energy-based availability:** Most O&M contractors applied the same philosophy as for offshore wind in terms of attempting to maximise overall availability, but in tidal energy priority should be given to maximising availability during times of peak flow (time-based vs energy-based availability).
- **Turbulence:** Turbulence variations across site can significantly influence performance of individual turbines if they have a narrow design envelope. Having a machine that can be remotely adapted to different environmental conditions would negate the need to decide between operating a turbine at sub optimal parameters or choosing to mobilise an unplanned intervention.
- **Performance estimates:** MeyGen attempted to conduct the power performance assessment according to the International Electrotechnical Commission Technical Specification (IEC TS) on Tidal Power Performance Assessment, but in practice encountered a number of issues which made this difficult. In particular, the site not meeting the required sea bed slope parameters for instrument deployment, and the number of instruments stipulated by the IEC TS was cost prohibitive. The MeyGen experience is feeding into the second edition of this IECT TS.
- **Health & Safety:** The onshore and offshore works had different lead parties responsible for ensuring the Construction, Design and Management regulations (CDM) were met. This introduced a lot of interface complexity which could be greatly simplified if only one party was responsible for both.
- **Stakeholder engagement:** There have been no local stakeholder complaints or incidents throughout the construction and early operations phases of the project. Due to the novel nature of the project potential stakeholder impacts had been identified as a possible area of concern during the consenting process. ■

To read the report's key findings, download the executive summary: https://bit.ly/31vkSqv
The full lessons learnt throughout the design, construction and initial operations phases of MeyGen Phase 1A are available here: https://bit.ly/2BffaOD

ASEAN SUPER

International Construction Week

ASEAN'S LEADING EVENT FOR THE BUILT ENVIRONMENT

15 - 17 JUNE 2021

MALAYSIA INTERNATIONAL TRADE AND EXHIBITION CENTRE (MITEC), KUALA LUMPUR

ASEAN M&E SHOW
ASEAN'S PREMIER MECHANICAL & ELECTRICAL ENGINEERING, POWER AND ENERGY SHOW

futurebuild southeast asia

IFSEC SOUTHEAST ASIA

ASEAN LIFT EXPO & FORUM

ASEAN LIGHT

ASEAN SOLAR EXPO & FORUM

REVAC EXPO & FORUM

TENAGA EXPO & FORUM

HEAVY MACH

SUPPORTED BY

Ministry of Works, Malaysia

HOSTED BY

CIDB MALAYSIA

ORGANISED BY

informa markets

www.super8asean.com

IN SAFE HANDS

THE GOLDEN BRIDGE IS ONE OF VIETNAM'S LATEST ICONIC LANDMARKS, SET AMIDST THE MAGNIFICENT NATURE OF BA NA HILLS IN DA NANG CITY. IT SPANS 12.8 M WIDE AND 150 M LONG, FEATURING TWO GIANT HANDS. NESTED ON THE PARADISE GARDEN, THE BRIDGE SERVES AS A TRANSIT TO TAKE VISITORS FROM THE MOUNTAIN FOOT OR FRENCH VILLAGE TO LE JARDIN D'AMOUR GARDENS.

Opened in 2018, the Golden Bridge is owned by Sun Group and was designed by TA Landscape Architecture. It has eight arches, the longest of which measures 21.2 m. The guardrails are covered with gold, hence the name 'Golden Bridge.'

According to TA Landscape Architecture, the design embodies the hands of the Mountain God drawing from inside a rocky mountain a golden sash to carry villagers to the Paradise Garden, perfectly matching the fantasy and fairy theme of Ba Na Hills.

Concreting work in the forest

The giant hands look like they are carved from stone, but they are not. The skeleton of the hands was built with steel meshes and then covered with fibreglass.

Construction of the entire bridge took about a year, during which it faced many problems due to the project's location in the forest and mountainous areas, where access was limited.

For one, it was impossible to mix concrete on site. In addition, transporting ready-mixed concrete for such a long distance at high temperatures yet maintaining the required mechanical strengths for pillars and foundation to support the bridge's weight was also a big challenge.

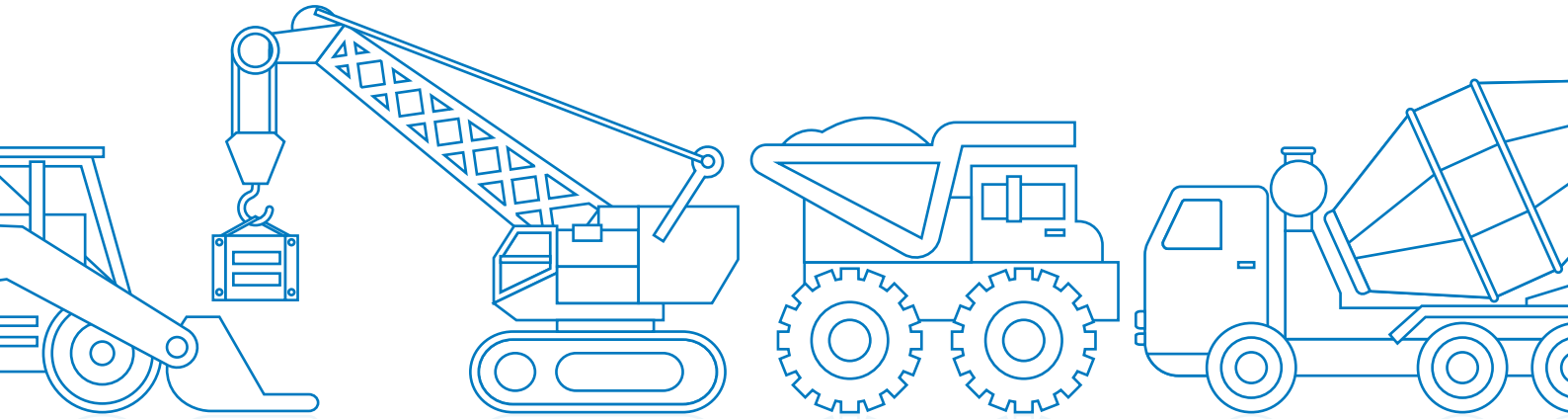
Following site trials, evaluation of product quality and cost effectivity, Mapei Vietnam - the local subsidiary of the Mapei Group - was commissioned to supply concrete admixtures for all pillars and foundation of the bridge.

Mapei provided its Dynamon SR2 VN system (its counterpart on the international market is Dynamon SR2), a superplasticiser based on acrylic polymer for ready-mixed concrete, which is ideal for applications that need strong water reduction, along with relatively high mechanical strength. The product's performance makes it particularly suitable to carry out casting at high temperatures and when the concrete must be transported over long distances. Mapei was involved in the project from 2017 to 2018. ■

Website: www.mapei.com.sg

RIGHT: **Ready-mixed concrete was used for the piles and foundation of the bridge. Mapei's Dynamon SR2 VN admixture ensured the required mechanical strengths to support the weight of the bridge, even if it was cast at high temperatures.**

The article courtesy of Realta Mapei International no. 83



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.

Scan to visit our website

facebook.com/southeastasiaconstruction

instagram.com/southeastasiaconstruction

linkedin.com/company/tradelinkmedia

issuu.com/southeastasiaconstruction

WE ALSO PUBLISH

SEAB SOUTHEAST ASIA BUILDING

bathroom+kitchen today

lighting today

SECURITY SOLUTIONS TODAY

TRADE LINK MEDIA PTE LTD

101 Lorong 23 Geylang #06-04 Prosper House Singapore 388399 Tel: (65) 6842 2580 Fax: (65) 6745 9517
info@tradelinkmedia.com.sg | www.tradelinkmedia.biz

The stunning 'double ribbons'

Lying by the Taihu Lake, Suzhou Cultural Centre has recently opened to the public. With its stunning 'giant double ribbons', this new masterpiece has become the latest cultural, exhibition and convention destination for the Yangtze River Delta region.

As one of the prestigious projects commissioned by the city of Suzhou, part of the Wujiang Lakefront Masterplan, the iconic development occupies a site of over 100,000 sq m with two main buildings: Suzhou Opera House and Wujiang Exhibition Centre.

Each of the two main buildings houses approximately 40,000 sq m superstructure, and is further divided into sub-buildings of different functions. The 1,600-seat Suzhou Opera House features

LEFT, ABOVE AND BELOW: **The newly opened Suzhou Cultural Centre incorporates two main buildings, Suzhou Opera House and Wujiang Exhibition Centre, which are connected by giant double ribbons. The top ribbon also serves as a bridge allowing pedestrian access.**

an international standard opera theatre, a multifunctional stage, a modular 600-seat hall, and an IMAX theatre; whilst the Wujiang Exhibition Centre comprises a museum, an exhibition centre, and a conference centre.

The entire development has a construction area of over 220,000 sq m. Arup was tasked to provide combined structural and facade engineering services, supporting the architects - Christian de Portzamparc / 2Portzamparc - to deliver this mega project.

'Giant double ribbons'

The two main buildings are connected by the double ribbons, which symbolise silk water sleeves of the Kunqu Opera and are intended to reflect the cultural richness of Suzhou, said Arup.

"The double ribbons use space tube truss structures with rotating geometry to create a single continuous facade scheme over the complex," Arup explained further. "They continue to the edges of the buildings and cantilever 50 m outwards as the facade wings.

"The ribbons consist of a top ribbon with a span of 100 m – the largest in China – and a bottom ribbon stretching over 370 m – the longest in the country. The top ribbon also serves as a bridge allowing pedestrian access to the fantastic views of the lake and the city."

Structural resilience

Arup highlighted that long-span structures are not ideal in a seismic zone, such as where this project is located. "To meet safety requirements, we carried out detailed numerical analyses to identify alternative load paths and provided numerous novel solutions for the museum, IMAX and opera house buildings to ensure structural resilience.

"Spaced V-columns are used to support the ribbons – with each of them inserted into a 4.1-m-diameter circular concrete column to enhance structural resilience and facilitate construction. This was the first time for this innovative approach to be used in China."

Comfortable space

The museum comprises three display areas connected by bridges with a six-storey

TOP AND ABOVE: **The entire development has a construction area of over 220,000 sq m. Arup was tasked to provide combined structural and facade engineering services, supporting the architects - Christian de Portzamparc / 2Portzamparc - to deliver this mega project.**

shared hall running through the entire building, creating a continuous, spectacular exhibition area with daylight beaming down from the skylights. Leveraging the shared hall, Arup extensively used inclined reinforced concrete columns and beams to set up a hidden structure that supports the museum, skylights and connection bridges.

"In the opera theatre, we ingeniously used structural features to meet the artistic, technical and comfort requirements of the world-class performance facility while maximising usable space," said Arup. "To meet the seating, headroom and comfort requirements, the 1,600 seats were arranged at three levels with two of them cantilevering out. Within limited space, our engineers ingeniously used the features of the audience stands to hide the cantilever structure and building services."

ABOVE AND BELOW: **To meet safety requirements, Arup carried out detailed numerical analyses to identify alternative load paths and provided numerous novel solutions for the museum, IMAX and opera house buildings to ensure structural resilience.**

Facade design

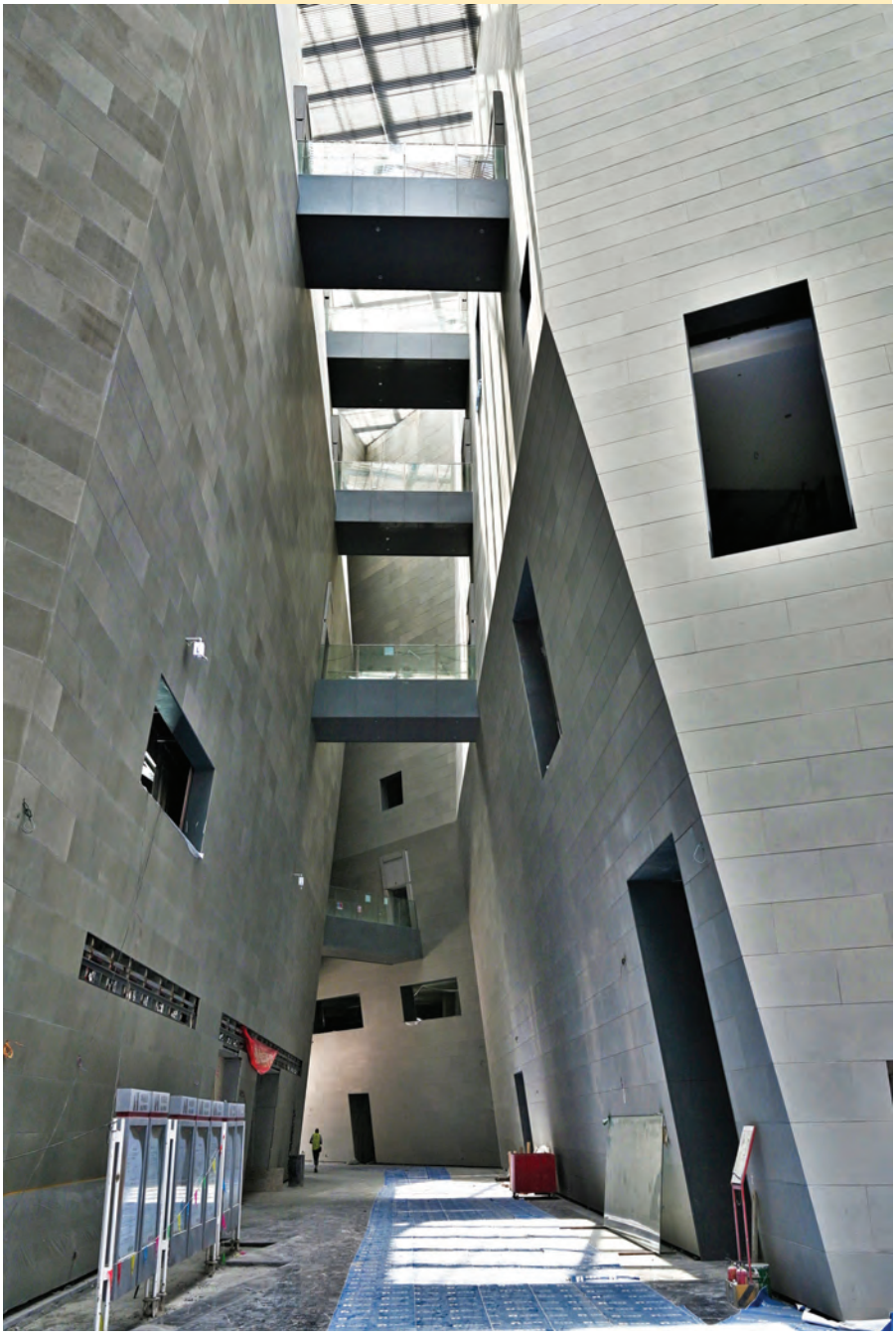
The facade of the opera house features hanging bamboo columns of 300 mm in diameter to create a dynamic visual effect, added Arup. "We divided the bamboo columns into various areas according to their loadings and used different methods to fix them for a unified column section. A large number of 'sleeved column connections' were used at the bottom of the curtain wall keel for both decoration and support. This innovative design not only realises the architect's design intent but also reduces wind-induced deformation of the curtain wall system."

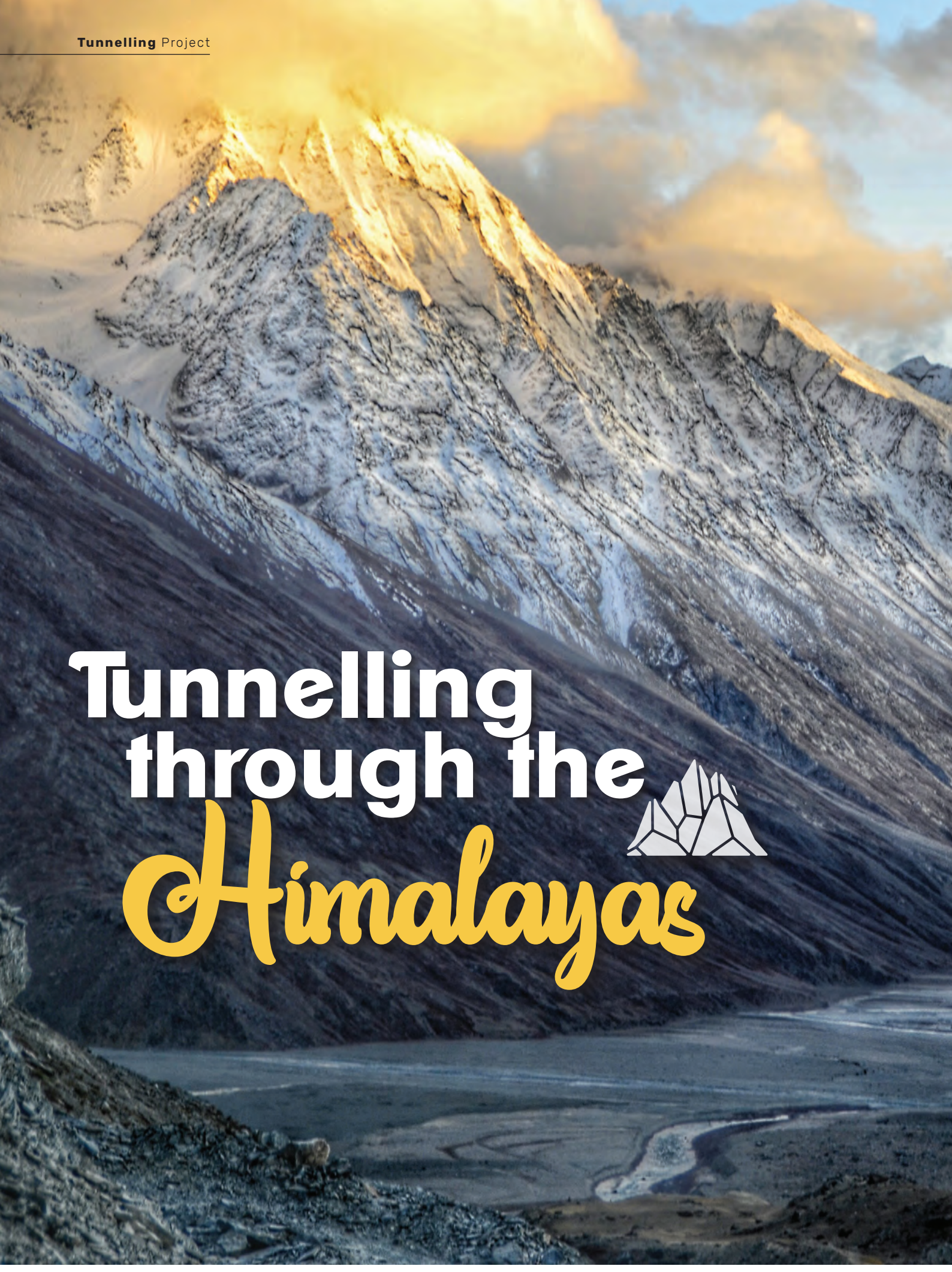
Arup further stressed that the demanding combination of shape and surface of the twisted ribbons called on its expertise in parametric design. "We employed Rhino and Grasshopper to find the most efficient division and formation of the curtain wall panels that retain the beauty of the original design while easing the construction and thus reducing cost."

Penny Cheung, Shanghai office leader at Arup concluded, "We are honoured to deliver this complex project with our technical innovation and seamless integration of structural and facade expertise. It will become a cultural attraction in its own right." ■

Website: www.arup.com

OPPOSITE IMAGES AND BELOW: **The interior of the project during construction. This new landmark has now become an exciting cultural, exhibition and convention destination in the city of Suzhou.**





Tunnelling through the Himalayas

The Atal Tunnel in India was finally completed in 2020, after 14 years of work and with enormous challenges, including heavy snowfall, avalanches and severe geographic conditions. Located in the Pir Panjal Range of the Himalayas, it is now the world's longest highway tunnel above an altitude of 10,000 ft. The engineering team on the project, SMEC, shares the story behind this once-in-a-lifetime milestone.

Image © Avalok Sastri / Pixabay

The need for a road through the Rohtang Pass, which is located at an altitude of over 13,000 ft in the Pir Panjal Range of the Himalayas, was discussed as early as 1860 by the Moravian Mission, revealed SMEC. Nearly 160 years later, the Atal Tunnel (formerly called the Rohtang Tunnel) has become a reality.

In 2006, SMEC was engaged by India's Border Roads Organisation and the Ministry of Defence to provide design, engineering and advisory services on the project. The company also took on a subsequent role as the Independent Engineer (IE), carrying out supervision, project management and contract management for all electrical and mechanical installations.

"This was a very special project for SMEC because it has a significant impact on the people living here and what a contribution it is to India," said Prashant Agrawal, senior general manager (hydropower & dams) at SMEC. "Our team of more than 25 experts from different countries has come together to provide our global expertise to our client, so that this huge undertaking can become a reality."

The opening of the 9-km tunnel is a relief for almost 20,000 people in the Lahaul and Spiti Valleys, as they are no longer isolated from the rest of the country due to snowfall, avalanches and landslides. The travel distance between the two valleys and Manali has also been reduced by 46 km, with the travel time cut by up to four hours.

SMEC pointed out that despite its successful effort, the remoteness, accessibility and extreme altitude of the project presented immense challenges to geological works, tunnelling and mechanical and electrical installations.

TOP AND ABOVE: **The remoteness, accessibility and extreme altitude of the project presented immense challenges to geological works, tunnelling and mechanical and electrical installations.**

Difficult tunnelling

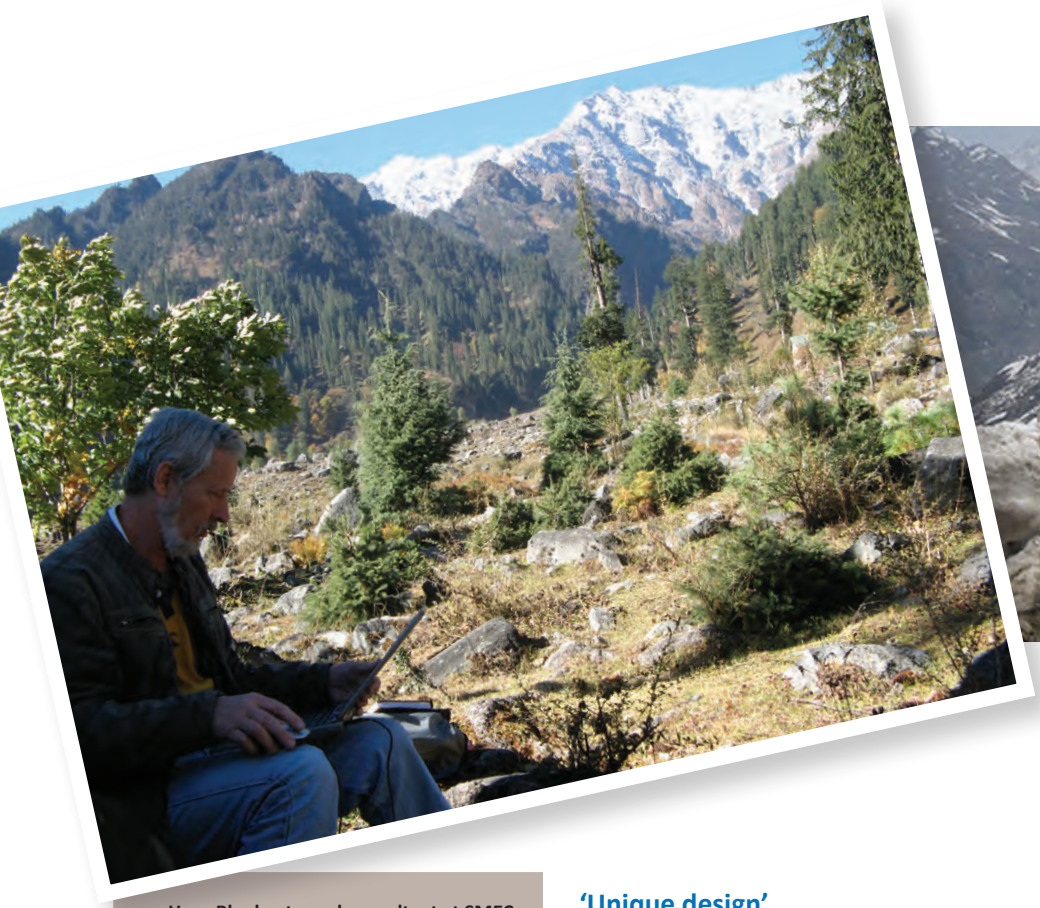
The topographical layout of the mountain range through which the tunnel was planned, including some 5,200 m high peaks, precluded almost any practical possibility of a shaft or adit to investigate the ground conditions along the alignment, explained SMEC. Thus the entire investigation was undertaken by desktop studies and supplemented by aerial (helicopter) reconnaissance.

"The geological investigations were quite difficult because the mountains have peaks up to 5,200 m covered in snow. They are the High Himalayas," said Robert Goldsmith, chief technical

principal engineering geology at SMEC. "So our geological investigations were limited initially to extensive desk studies, satellite imagery and so on. And a few geological traverses up into the rugged mountain valleys."

The fire and life safety requirements were equally challenging, given that the two tunnel portals were located in different climatic conditions, added SMEC. The southern portal was in a lush, forested location and the northern portal in an arid climate. This resulted in extreme atmospheric pressure differentials between the two portals and thus high wind velocities in the tunnel.

ABOVE, INSET AND BELOW: **The opening of the 9-km Atal Tunnel is a relief for almost 20,000 people in the Lahaul and Spiti Valleys, as they are no longer isolated from the rest of the country due to snowfall, avalanches and landslides. The travel distance between the two valleys and Manali has also been reduced by 46 km, with the travel time cut by up to four hours.**



Hans Bleuler, tunnel consultant at SMEC (above) and Robert Goldsmith, chief technical principal engineering geology at SMEC (above right).

"The resulting extreme atmospheric pressure differential between the two portals could result in up to 30 km/hr high velocities," said Hans Bleuler, tunnel consultant at SMEC. To allow effective fire suppression, the north portal was fitted with a hydraulically operated door, which allowed for control of air velocity within the tunnel during a fire event.

"With the tunnel being driven under 5,200-m-high peaks and the anticipated variability of the rock, we had to include provision for flexible support system to allow for up to 600 mm convergence of the tunnel during excavation," added Mr Bleuler.

The location of the proposed 9-km tunnel meant that the excavation could be attempted only from the two portals, with the north portal not accessible for more than half the year due to snow, avalanches and blizzards, said SMEC. Access over the 4,000 m high Rohtang Pass was limited to the brief summer period.

SMEC investigated two viable construction methods, including by tunnel boring machine (TBM) and by drill & blast. In the end, the drill & blast method was chosen, which would offer the flexibility to adopt different kinds of support systems as excavation progressed.

'Unique design'

SMEC also highlighted the design of the tunnel. It featured an independent escape passage with a separate ventilation system, aligned to current international best practice. This escape passage was located below the tunnel pavement and included airlocks at each access point.

"This meant the design of the tunnel cross section was quite unique as we had to effectively separate the tunnel into three compartments, using concrete roof slabs and in-situ pavement slabs," said SMEC.

"The crown of the tunnel formed a large tunnel ventilation duct used for providing adequate air supply during operations and smoke extraction capability during a fire event. The road section included regular access points to the emergency egress, the space below the pavement slab was used for the emergency evacuation of road users during a fire event as well as trafficable access for firefighting service personnel and equipment."

Finally, the south portal needed to be secured by an avalanche protection gallery since it is located in an active avalanche catchment area, continued SMEC. "This allowed us to develop the entire southern ventilation, tunnel control and maintenance facility within this avalanche gallery, designed using international (Swiss Avalanche Design Institute) guidelines."

With its multi-disciplinary team of specialists, SMEC completed the tender design and construction began around late 2009 to 2010.

Heavy snowfall in the Himalayas posed a big challenge to the project team.

Complex geological conditions

The Himalayas are a thrilling but daunting environment when it comes to geological setup and challenges to large civil works, explained SMEC. On this project, the team was dealing with complex rock types of schist, gneiss, phyllite and quartzite as major rock types with interbedded layers and faults.

"Because of the remote nature of the project, it was very challenging to get significant geotechnical investigations undertaken for the full length of tunnel," said Luke Drowley, manager, tunnels – NSW at SMEC.

"There were large lengths of tunnel where no borehole information was available, and so we relied on interpretation of surface geology. To account for this, we developed a suit of rock support classes to cover the full range of expected ground conditions that we would encounter. These support classes ranged from light rock bolts and shotcrete through to heavy lattice girders and thick shotcrete linings."

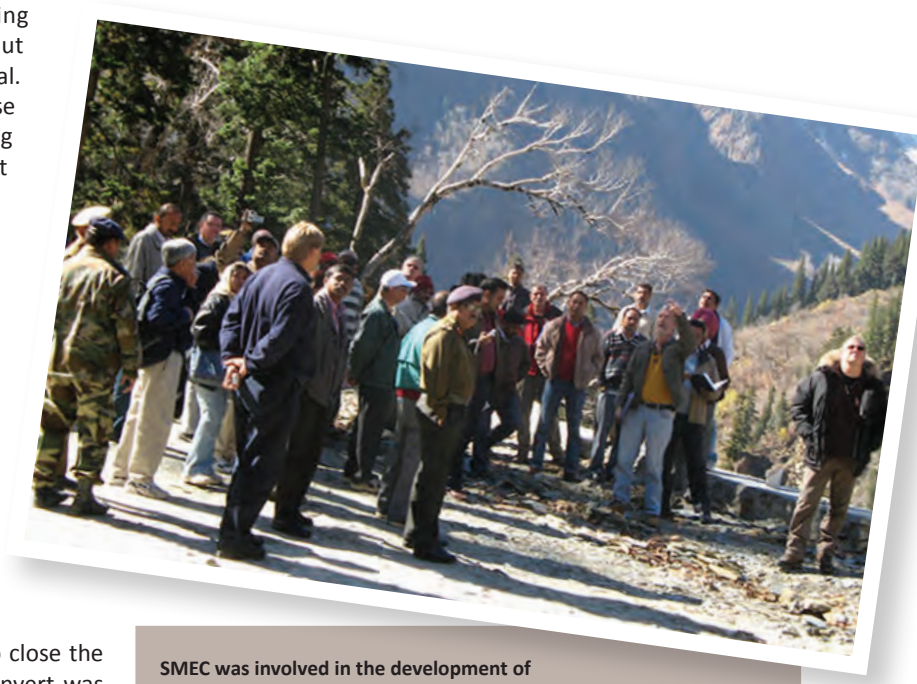
The Himalayas are a thrilling but daunting environment when it comes to geological setup and challenges to large civil works.

According to SMEC, one of the most challenging sections was the Seri Nallah fault zone, located about 1.5 km into the mountain from the south tunnel portal. Here, the soft material and conditions were more adverse than the team predicted prior to construction. Tunnelling through this section was so difficult that it took almost five years to complete.

The primary rock support was designed under seven different support classes, including a combination of rock bolts, lattice girders and shotcrete, with the provision of forepoles and piperoof for more challenging ground. "For the fault zone, however, we had to introduce additional support measures and change the construction sequence," said SMEC.

"This section was excavated with a circular or oval shape rather than the standard horseshoe shape. There was heavy water ingress of more than 100 l/s owing to the glacial lake. The tunnel in this reach was excavated after installing a piperoof and excavating the face in small intervals while supporting it with shotcrete, face bolts and a central core.

"With high deformations, it was also necessary to close the shotcrete ring as soon as possible. So a temporary invert was installed after the excavation of the heading, which was followed by bench excavation and finally excavation of the deep invert."



SMEC was involved in the development of Atal Tunnel for 14 years. The company provided its multi-disciplinary team of specialists from different countries to bring this engineering feat to completion.

Complicated mechanical & electrical system

"One of the complex pieces of work was designing a tunnel ventilation system in accordance with international best practice," said Robert Dunlop, tunnel ventilation & HVAC design expert at SMEC. The team had to consider the tunnel's height above sea level and the different barometric pressures from the portals on each side of the mountain range at different times of year, and how this would affect the normal and emergency mode of operation of the ventilation system. The solution to these challenges was to incorporate a tunnel door at the north portal to better manage the airflow in the tunnel.

As listed by SMEC, the company provided the design documentation for the following mechanical and electrical systems:

- Tunnel ventilation system – including a point extraction system with fire dampers evenly spaced along the overhead ventilation duct leading back to ventilation stations located at the north and south portals, tunnel door and tunnel and ambient air quality sensors, and air velocity and direction sensors to manage the ventilation requirements.
- Emergency egress tunnel ventilation system – located under the main road tunnel, supplying air to the egress tunnel and electrical niches.
- Mechanical ventilation and air conditioning systems servicing the tunnel electrical equipment rooms located at the ventilation stations at each portal and at the electrical niche every 1,500 m along the tunnel.
- HV power supply located at the south portal substation and reticulated through the tunnel to ventilation buildings at each portal and to each electrical niche through a ring main system.
- Diesel generation back up power supply system and UPS and battery backup systems

What this tunnel offers – safe, year round road travel through the Rohtang Pass – is a first for India.

TOP, ABOVE AND BOTTOM LEFT: **The drill & blast construction method was chosen for the project. Opened in October 2020, the tunnel now facilitates two-way traffic and can accommodate up to 3,000 vehicles per day in any weather conditions.**

- LV electrical power distribution systems from each electrical equipment room through local distribution boards at 300 m ctrs to the electrical equipment such as lights, dampers, pumps, etc.
- Tunnel lighting systems, building lighting and power and security system.
- Earthing systems at the portal buildings and along the tunnel to minimise stray current, reduce corrosion and optimise the life of equipment in the tunnel.
- Tunnel operational management and control systems, integrating the plant management and traffic management system into one supervised and comprehensive operational system, including operator control facilities and video wall at the south portal control building.
- Plant management and control systems, including remote operation and monitoring of all subsystems including ventilation, traffic, lighting, communication, CCTVs, radio broadcast, telephones, fire detection, power supplies, security and access control, etc.
- Traffic management and control systems including CCTV cameras, lane use signals, variable speed limit signs along the tunnel, variable messages signs and stop/go signs at the portal.
- Tunnel fire detection and suppression systems, including a linear heat detection system capable of locating a fire in the tunnel, and water storage tank and fire hydrant system utilising a ring main through the egress tunnel to ensure system reliability.
- Building fire detection and suppression systems, including smoke and heat detection systems as well as fire hose reels and fire extinguishers.
- Tunnel drainage water and oil separation plant to ensure environmental requirements are met.
- Buildings hydraulic services, including water supply and sewerage holding tanks.

Life-changing project

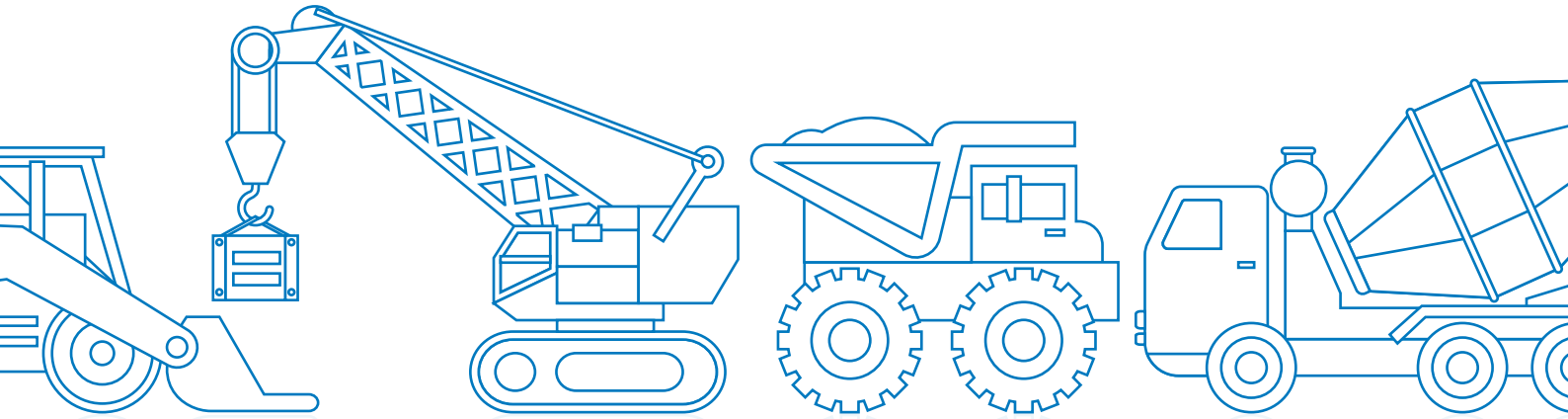
"After 14 years of our persistence and collaborative effort with our client and contractors, we're really pleased to see this tunnel getting completed," said Mr Agrawal. It now facilitates two-way traffic and can accommodate up to 3,000 vehicles per day in any weather conditions, at a maximum vehicular speed of 80 km/hr.

The Atal Tunnel is truly a life-changing achievement, helping to improve the quality of life for the people living in the area, and ultimately benefitting the economy of the country in general.

"Previously, access over the Rohtang Pass was limited to only six to eight months out of each year, due to heavy snowfall, avalanches and landslides. What this tunnel offers – safe, year round road travel through the Rohtang Pass – is a first for India," said SMEC. "It enables the previously isolated communities of the Lahaul and Spiti Valleys to travel and sell agricultural produce in towns, as well as boost tourism by providing all-year access to Leh and Lahaul-Spiti Valley."

"We are really proud to have helped make an impact on so many lives by delivering this Atal Tunnel," concluded Mr Agrawal. ■

Website: www.smec.com



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.

Scan to visit our website

facebook.com/southeastasiaconstruction

instagram.com/southeastasiaconstruction

linkedin.com/company/tradelinkmedia

issuu.com/southeastasiaconstruction

WE ALSO PUBLISH

SEAB SOUTHEAST ASIA BUILDING

bathroom+kitchen today

lighting today

SECURITY SOLUTIONS TODAY

TRADE LINK MEDIA PTE LTD

101 Lorong 23 Geylang #06-04 Prosper House Singapore 388399 Tel: (65) 6842 2580 Fax: (65) 6745 9517
info@tradelinkmedia.com.sg | www.tradelinkmedia.biz

ABOVE AND BELOW: **Züblin Spezialtiefbau was contracted to install 1,310 piles for the foundation of a new general hospital in Oberwart, Austria. To complete this task, the company used a Liebherr LB 28 drilling rig equipped with the LIPOS positioning system. The machine was supported on site by a Liebherr THS 110 concrete pump.**

BUILDING SOLID FOUNDATION *for new hospital*

A new general hospital by the Burgenland Hospital Association (KRAGES) is currently under development in Oberwart, Austria. It is designed to provide medical, nursing and therapeutic care in the region, located in direct vicinity to the existing hospital. In order to avoid subsequent settlement and damage to the new building, the available land requires substantial foundation work before it can support the whole hospital.

Züblin Spezialtiefbau Ges.m.b.H. was contracted to install 1,310 piles over an area of 23,000 sq m for the foundation of the new building. These piles with a diameter of 630 mm were installed using the CFA (continuous flight auger) method. The maximum depth of the foundation piles was 16 m.

Initially, it was assumed that the construction period would take approximately four months to carry out more than 1,000 piles. For this job, Züblin Spezialtiefbau used a Liebherr LB 28 drilling rig equipped with the LIPOS positioning system. The rig was supported on site by a Liebherr THS 110 concrete pump.

Once the entire building ground was measured accurately and the precise position of each single pile identified, the gathered data could be transferred as a digital drilling plan to the LIPOS positioning system in the Liebherr machine in no time. Jobsite data and pile lists for work to be performed were transferred to the machine when the drilling list was uploaded. The operator was able to see his position with centimetre precision at all times, thanks to an additional monitor in the cabin.

The LB 28 rig could be manoeuvred with ease to each of the 1,310 drilling points without the need of any iron stakes or colour markings for orientation. The operator no longer had to watch out for ground markings or the concrete hose. Furthermore, the LIPOS system simplified the positioning of jobsite equipment. The concrete pump, the reinforcements, as well as other tools and material could be optimally positioned around the drilling rig.

An above-average daily drilling performance was achieved using the LB 28 rig and the construction work could be completed earlier than planned, reportedly only after three months - owing to the productive working method with a reliable machine. The LIPOS positioning system played a decisive role here. Without this system the drilling points would have had to be newly measured, drawn and marked at least three times a day. Such an enormous effort was eliminated with the help of LIPOS.

All jobsite personnel had a clear overview at all times of exactly where the piles were, which piles were already completed and which still had to be done. "The LIPOS positioning system is ideally suited for completing jobsites, especially using the CFA method. It has proven itself well on the jobsite and makes working processes easier, allowing continuous real time control and monitoring. Quality management is considerably improved through the automatic recording of the processes. The LIPOS system is basically self-explanatory for the operator and convinces through easy handling," explained the site manager, Harald Fugger. ■

Website: www.liebherr.com

ABOVE: **Test measurements can be carried out quickly and easily using the Rover Rod.**

ABOVE LEFT: **The LIPOS antennae are mounted directly on the leader and allow for centimetre precision in positioning.**

LEFT: **The exact position of the Liebherr machine is constantly displayed on the additional LIPOS monitor in the cab.**

© Skanska

'FORMING' THE CITYGATE

When the Citygate office complex in Göteborg, Sweden, was designed, the planners weren't just thinking about square metres and building height but also places great importance on sustainability. As well as being a new landmark for the Gårda business district, the building is set to be a flagship for ecological construction and social responsibility. For example, using special 'green concrete' would reduce 250 t of carbon dioxide. In addition, the facade is being made from recycled aluminium, thus saving natural resources. The completed building is intended to secure LEED (Leadership in Energy and Environmental Design) certification.

For the contractor, Skanska, both the ecological building construction and wellbeing of the future users are important issues. The Citygate is aimed to receive the WELL Building Standard certification upon completion. To meet this standard, the development must fulfil several requirements, such as good access to daylight and electric lighting with appropriate colour temperatures.

BIM (Building Information Modelling) is also playing a significant role in the construction process. With this technology, buildings can be planned, built and operated more efficiently and using fewer resources. Defined procedures and processes were established in the early project stage. The 3D formwork planning for the building that the BIM experts drew up was particularly important for providing crucial input about feasibility and potential savings at an early stage.

TOP AND RIGHT: **The 144-m-high Citygate office complex in Göteborg, Sweden, is scheduled for completion in 2021.**

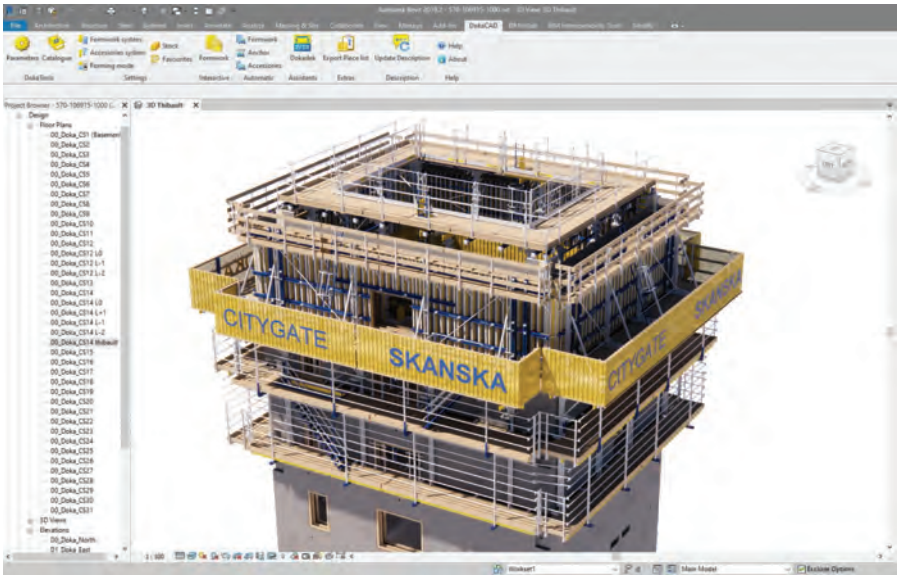
Designed by Henning Larsen Architects, the Citygate provides an office space of 42,000 sq m. Construction work started in the second quarter of 2020 and is scheduled for completion in the second quarter of 2021.

3D modelling

Before the official start of construction, engineers from Doka, Skanska and Alimak (who provided the construction hoist) were able to move virtually through the 3D building core, inspect the Doka SKE50 automatic climbing formwork in detail, and clarify interaction with the construction hoist to ensure access at every construction stage.

However, prior to reaching this phase, Doka's BIM experts created 3D formwork solutions using the DokaCAD for Revit planning software (an Autodesk Revit plug-in that allows native, automated formwork planning in BIM software). One of the major advantages of this system was that the customers were able to integrate the formwork planning delivered by Doka seamlessly into their own Revit model.

A digital collaboration network of project participants was set up in the construction project management software, BIM 360, which provided a shared 3D model that everyone could access without the need for any other custom software. This meant that collisions could be identified earlier (e.g. the insert-moulded horizontal and vertical tensioning cables for prestressing) and eliminated before execution.



ABOVE: **The DokaCAD for Revit planning software was used to draw up 3D formwork plans, taking into account safety, time and costs.**

BELOW: **During a virtual tour of the building, the technicians and the customer were able to get a precise idea of the planned formwork solutions before construction began.**

DokaXact and Concremote

DokaXact has a decisive role for workflow efficiency and ensuring precise construction of Citygate's building core. The system is based on measurement sensors installed at predefined points of the formwork, communicating wirelessly with a central processing unit. Surveyors and the site construction team use DokaXact to quickly and accurately position the wall formwork on the automatic climbing system.

"DokaXact makes life easier for the surveyors, who do not have to be present as often during adjustment of the formwork panels. That saves time," said Niklas Jarlström, Skanska production manager.

Using the DokaXact app, which guides the construction site team through the process step by step, the formwork can be positioned for the next concreting stage with millimetre accuracy. Data about the current position and progress are transmitted via a cloud and can be viewed and re-used from anywhere.

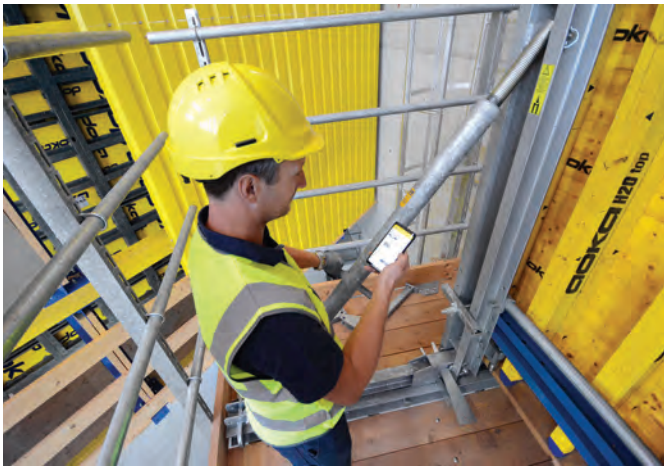
"Our specialist teams and the surveyors both save lots of time during the formwork adjustment," explained Daniel Dahlgren, supervisor at Svensk Armering & Betongbyggen AB, subcontractor on the project. "The app is very reliable and easy to operate."

The entire inner formwork in the building core, 48 m long with an area of 220 sq m, is positioned in only 25 to 30 minutes. Getting one side of the formwork positioned accurately is essential for the installation of the reinforcement in accordance with the plans. The ±10 mm construction tolerance for the building core was maintained throughout each storey and was confirmed by measurements of the surveyor.

Concremote is used to improve the planning of the construction project. It also gives the client access to real-time data from anywhere, any time. This means that information about the concrete performance can be analysed and appropriate construction measures can be carried out at the right time, e.g. formwork striking. In the Citygate project, the real-time concrete strength data is being used to achieve the planned cycle time of one storey per week.

ABOVE: **A view into the building core, showing the safe access from the construction hoist to the Doka automatic climbing formwork**

LEFT: **Concremote provides access to real-time data from anywhere, any time. As such, concrete performance can be analysed and appropriate measures can be carried out at the right time.**



The DokaXact app helps surveyors and the site construction team to quickly and accurately position the wall formwork on the automatic climbing system. Data about the current position and progress are transmitted via a cloud and can be viewed and re-used from anywhere.

Doka automatic climbing formwork

Due to required space inside of the building core, Doka's SKE50 plus automatic climbing formwork with mast system was adopted. This allows enough clearance to lift prefabricated wall and ceiling elements into place, while still convenient for striking formwork. "The solution is a well-thought-out system which simplifies the work and can contribute to keeping cycle times short," said Mr Jarlström.

Doka's Monotec tie-rod system is applied at the upper waler level of the Top 100 tec large-area formwork. The tie-rods can be easily operated from the outer top platform, which speeds up forming works under safe working conditions and avoids the need for ladders and additional scaffolding on the inside. For efficient installation of the prefabricated reinforcement cage, the SKE50 plus automatic climbing formwork with a travelling unit was selected for the outer platforms. This features a wall formwork that can be retracted by up to 95 cm.

For safety reasons, specially built stairs and ladders were used as walkways between the different levels. Safe access from the construction hoist to the Doka automatic climbing system was also ensured throughout construction. ■

Website: www.doka.com

SUBSCRIPTION FORM

Fax your order to **+65 6842 2581** or email us at **info@tradelinkmedia.com.sg**

Please (√) tick in the boxes.

PRINT

☐ **Southeast Asia Building**
Since 1974

☐ **Southeast Asia Construction**
Since 1994

***1 year** (6 issues) per magazine*

Singapore	SGD$60.00
Malaysia / Brunei	SGD$105.00
Asia	SGD$155.00
America, Europe	SGD$185.00
Japan, Australia, New Zealand	SGD$185.00
Middle East	SGD$185.00

☐ **Bathroom + Kitchen Today**
Since 2001

***1 year** (4 issues) per magazine*

Singapore	SGD$32.00
Malaysia / Brunei	SGD$70.00
Asia	SGD$85.00
America, Europe	SGD$135.00
Japan, Australia, New Zealand	SGD$135.00
Middle East	SGD$135.00

DIGITAL

Lighting Today
is available on digital platform.
To download free PDF copy,
please visit:

http://lt.tradelinkmedia.biz

☐ **Lighting Today**
Since 2002

Security Solutions Today
is available on digital platform.
To download free PDF copy,
please visit:

http://sst.tradelinkmedia.biz

☐ **Security Solutions Today**
Since 1992

Personal Particulars

Name: _____

Position: _____

Company: _____

Address: _____

_____

Tel: _____ **Fax:** _____

E-Mail: _____

IMPORTANT

Please commence my subscription in

_____(month/year)

Professionals (choose one):

☐ Architect ☐ Landscape Architect ☐ Interior Designer ☐ Developer/Owner

☐ Property Manager ☐ Manufacturer/Supplier ☐ Engineer ☐ Others

☐ I am sending a cheque/bank draft payable to:
Trade Link Media Pte Ltd, 101 Lorong 23, Geylang, #06-04, Prosper House, Singapore 388399
Co. Reg. No: 199204277K * GST inclusive (GST Reg. No: M2-0108708-2)

☐ Please charge my credit card (circle one): Amex / Diner's Club

Card Number: _____ Expiry Date: _____

Name of Card Holder: _____ Signature: _____

ADVERTISERS' INDEX

GIVE YOUR BUSINESS THE UPPER HAND

To build a stronger, more profitable business, you have to get hands-on. Real knowledge comes from testing the latest equipment. From touching game-changing technologies. From getting your hands dirty in interactive trainings and skills competitions. **World of Concrete** is the commercial construction industry's largest annual international event for concrete and masonry professionals and puts these kinds of immersive opportunities at your fingertips — join your community here and experience real, tangible results.

Hands down, the best decision you'll make.
Register now at **worldofconcrete.com**

WORLD OF CONCRETE®

JUNE 8–10, 2021

EDUCATION: JUNE 7–10, 2021

LAS VEGAS CONVENTION CENTER
LAS VEGAS, NV, USA

A selected participant in the U.S. Department of Commerce's Trade Events Promotional Program

informa markets

Experience the Progress.

Slurry Wall Cutter LSC 8-18

- **Maximum flexibility** through modular design and a wide range of applications
- **Fuel savings** through efficiently optimised and innovative drive technology
- **Highest performance** through powerful and robust cutter wheel drives
- **Cost and time-savings** on the jobsite through Condition Monitoring and the new pay-per-use model 4C-Power
- **Highest safety standards** and ease of operation through an integrated handling system

4C-Power

Liebherr-Singapore Pte. Ltd.
No. 8 Pandan Avenue
609384 Singapore
Phone: +65 6424 4216
E-mail: carsten.fricke@liebherr.com
www.facebook.com/LiebherrConstruction
www.liebherr.com

LIEBHERR