SOUTHEAST·ASIA CONSTRUCTION

MARCH - APRIL 2024

Cover Story:

Batang Lupar Bridge No.2, Malaysia

30 YEARS

Features:

Turyapada Tower in Bali, Indonesia

India's first undersea rail tunnel

Vermeer HG400 horizontal grinder

DINGLI

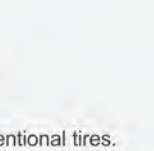
Exceed · New Height

Three-Year Warranty
No Wearing Parts

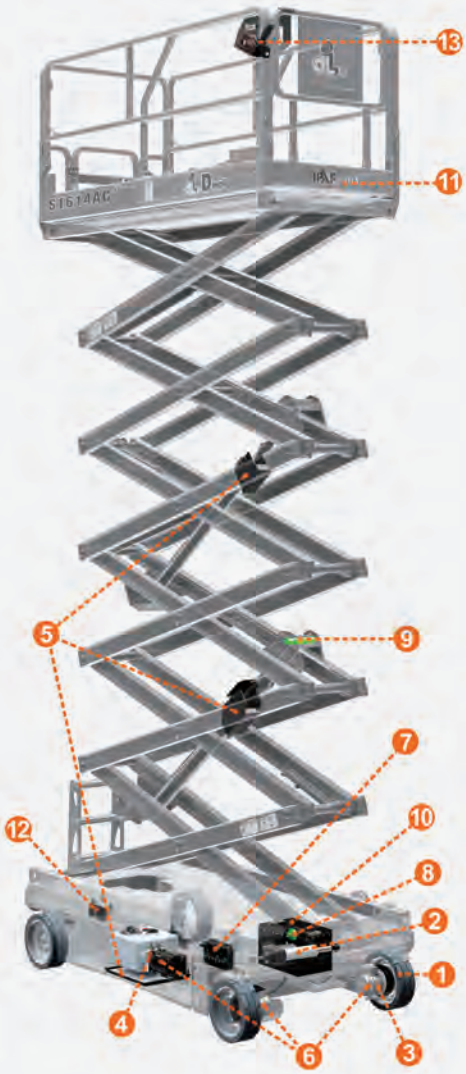
Comprehensive upgrade
Thirteen Innovations

Safety+ Durability+ Environmental Protection+ Performance+

1. High-strength Wear-resistant Tires - 100% longer life compared to conventional tires.
2. Electric Actuator Steering System - 15% increase in steering speed and 66% reduction in energy consumption.
3. Synchronous Reluctance Drive System - 15% increase in driving capacity, 25% reduction in rated current, and 45% increase in power density.
4. Synchronous Reluctance Integrated Pump Station - 25% increase in lifting capacity, 20% reduction in starting current, and 32% increase in power density.
5. Hydraulic Oil Anti-Leakage Device - Reducing hydraulic fluid contamination.
6. Self-Weight Energy Recovery System - Storing self-weight potential energy, increasing efficiency of the system by 20%.
7. Integrated Four-in-One Controller - 35% increase in power density, 40% reduction in parts costs.
8. Multiple Redundant Angle Detection System - Safety is increased by 100% and limit switches are reduced by 60%.
9. High-Precision Load Sensing System - 20% increase in overload accuracy.
10. Lithium Battery With Long Endurance - High-density LFP battery pack, modular replaceable design makes it free to switch lead-acid / lithium-ion power.
11. Large Load Capacity - Maximum increase up to 40% compared to the original model.



12. Horizontal Forklift Holes - Enhance transfer efficiency, easy transportation.
13. New PCU Joystick - The service life of the silicone buttons is greatly improved by 60%, the anti-fouling performance is improved by 50%, and the viewing area of the display is increased by 270%.



AC+								
	250kg	408kg	250kg	450kg	350kg	350kg	350kg	350kg
Working Height	**8m**	**8m**	**10m**	**10m**	**12m**	**14m**	**16m**	**16m**
Overall Width	0.7m	0.8m	0.8m	1.2m	1.2m	1.2m	1.2m	1.4m

AC+ Series Scissor Aerial Work Platform

ZHEJIANG DINGLI MACHINERY CO.,LTD.

ADD:188 Qihang Road, Leidian Town, Deqing, Zhejiang, P.R.C

TEL:+86-572-8681688

Phone:+86-13806523131 Susan Huang

E-Mail:export@cndingli.com

Https://en.cndingli.com

PERFECT PARTNERS.

Introducing the Cat® 320 GX Excavator

The new economy model with all the reliability and ease of operation you expect from a Cat excavator, with easy maintenance and lower cost features designed to give you a faster return on your equipment investment. Compatible with Cat H120 GC Hammer to make short work of your demolition, construction, and quarry needs. The result is a low cost per hour solution providing the consistent power and performance you need.

THAILAND/ LAOS
metrocat.com

PHILIPPINES
monark-cat.com

MALAYSIA
tractors.com.my

SINGAPORE
tractors.com.sg

CAMBODIA
cambodiametro.com

MYANMAR
mspcat.com.mm

VIETNAM
phuthaicat.com.vn

BANGLADESH
banglacat.com

CAT®
LET'S DO THE WORK.™

www.cat.com

2nd Edition
CBA EXPO
ConsBuild ASIA 2024

THAILAND INTERNATIONAL CONSTRUCTION, MINING AND BUILDING TECHNOLOGY EXPO

22-24 August 2024

BITEC, Bangkok, Thailand

www.consbuildasia.com

Register NOW

Co-Concurrent with
CONCRETE EXPO ASIA

For more info: E-mail: info@consbuildasia.com Website: www.consbuildasia.com CBA Expo @CBAExpo

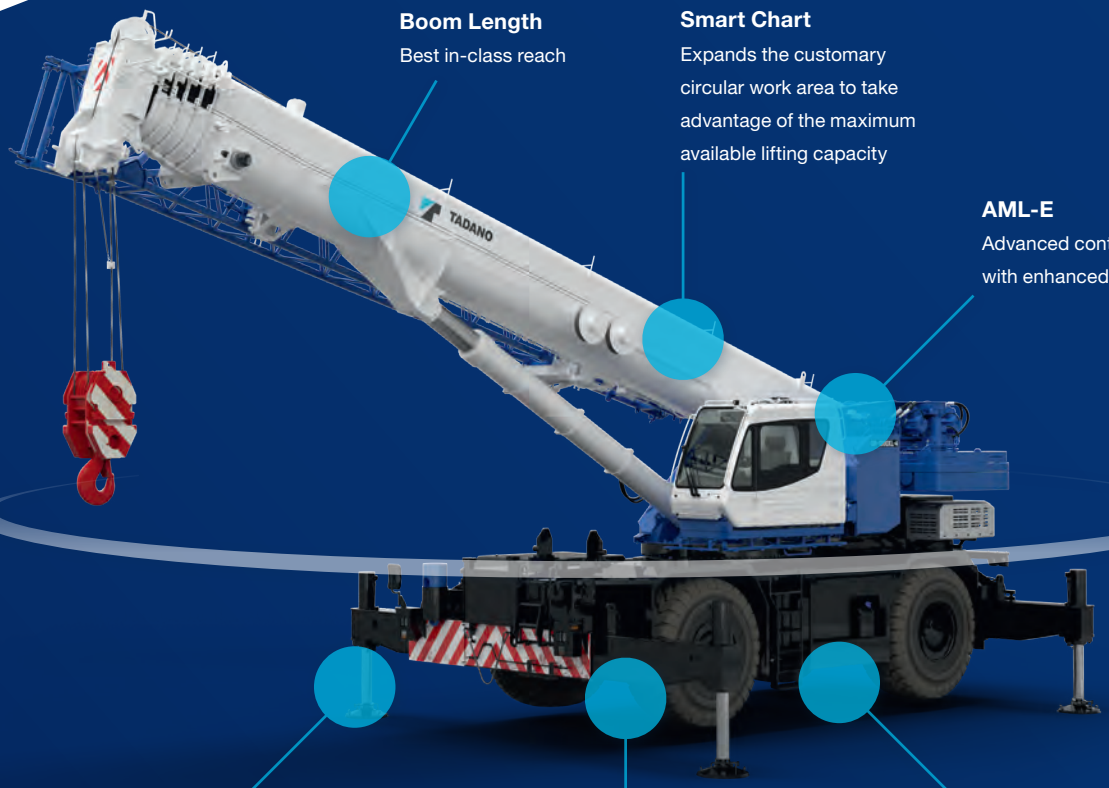
Organizer
MB Global Marketings Co., Ltd.

Supporters
TSEA

Bronze Sponsors
AMMANN Bekaert

Official Media Partner
SOUTHEAST-ASIA CONSTRUCTION

TADANO



Boom Length
Best in-class reach

Smart Chart
Expands the customary circular work area to take advantage of the maximum available lifting capacity

AML-E
Advanced control system with enhanced features

Unrivaled Reliability

Unique Quality

Reduced Fuel Consumption
- Fuel Monitoring
- Eco Mode System
- Automatic Pump Disconnect

Take a closer look at Tadano.

Discover how Tadano RT cranes deliver maximum lifting performance with unrivaled reliability.

Tadano RT cranes give your business the next-generation features you need to work safer, faster and more effectively than ever. Tadano View gives your operators a birds-eye view of the crane's surroundings on a large, multi-function display inside the cab. Reduce fuel consumption with Fuel Monitoring, Eco Mode and Automatic Pump Disconnect. And expand the working area to get the best crane performance in any outrigger extension setup with Smart Chart.

Take a closer look at what Tadano can do for your business.
Learn which models are available in your region at tadano.com.

SOUTHEAST ASIAN

BUILDING AND CONSTRUCTION EXHIBITION AND CONFERENCE

BCT
BUILDING CONSTRUCTION TECHNOLOGY

EXPO 2024

18 19 20 SEPTEMBER 2024

Hall 12, IMPACT Exhibition
and Convention Center, Bangkok, Thailand

"THE CONSTRUCTION INDUSTRY MEETING PLACE"

SCAN TO VISIT WEBSITE

Website: www.bct-construction.com

BuildingConstructionTechnology Expo/BCT Expo

Organizer IMPACT MUANG THONG THANI

Lintec CSM Containerised Asphalt Mixing Plant with HRC


Linnhoff NVX NovaMax Asphalt Mixing Plant

Lintec CCE Containerised Concrete Batching Plant

Your Total Solution for Asphalt and Concrete

Lintec & Linnhoff's presence in Southeast Asia has been growing exponentially over the years. This includes:

- A full range of 100% ISO-certified sea containerised as well as conventional asphalt & concrete plants;
- Conventional batch, Screen-drum batch and Continuous range of asphalt solutions;
- Wet, Dry and Hybrid range of concrete solutions;
- Hot & Cold RAP Recycling Systems, Foam asphalt systems, Soil Stabilisers and Road base mix expert.

www.lintec-linnhoff.com **info@lintec-linnhoff.com**

LINTEC & LINNHOFF

2024

TRENCHLESS ASIA

TRENCHLESS ASIA 2024

16-17 July

World Trade Center Metro Manila, Philippines

The thirteenth event in this outstanding series travels to Manila.

TRENCHLESS ASIA is the major annual international gathering for trenchless technologists to meet and discuss the latest industry developments featuring:

- Trenchless Technology
- Underground Infrastructure
- Pipeline Technologies
- Underground Utilities
- Trenchless Solutions for Urban Flooding
- Knowledge Transfer
- Green Technology

BOOK YOUR STAND TODAY

For more details regarding exhibiting and sponsorship opportunities please contact:
Contact Trevor Dorrell: tdorrell@westrade.co.uk or +44 (0)1923 723990

Organised by

Supported by

Chinese Partner

Official Media Partner

Bronze Sponsors

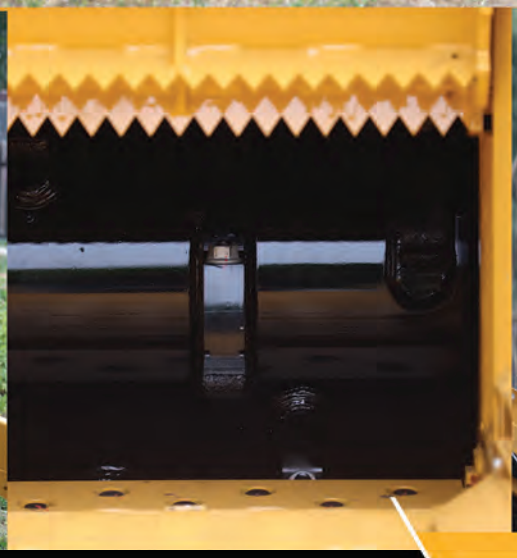
Platinum Sponsors

Conference & Drinks Sponsor

Conference Sponsor

www.trenchlessasia.com

CAPABLE GRINDER
SMALL FOOTPRINT



EFFICIENT ORGANIC MATERIALS PROCESSING WITH HG400

An entry level, small horizontal grinder, the HG400 Horizontal Grinder can process materials like compost, pallets, wooden construction debris and logs with efficacy, making it suitable for mulching and recycling industries. Its compact size faciltates ease of transportation and its wide, flared infeed walls allow for hassle-free feeding of materials.

Vermeer

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

CONTENTS

NEWS

EVENTS

PRODUCTS

On the cover:
Construction of Batang Lupar Bridge No.2 in Sarawak, Malaysia
(page 48)

Cover designed by
Fawzeeah Yamin

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)

Media Sales Consultant
Jasmine Gan (jasmine.gan@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

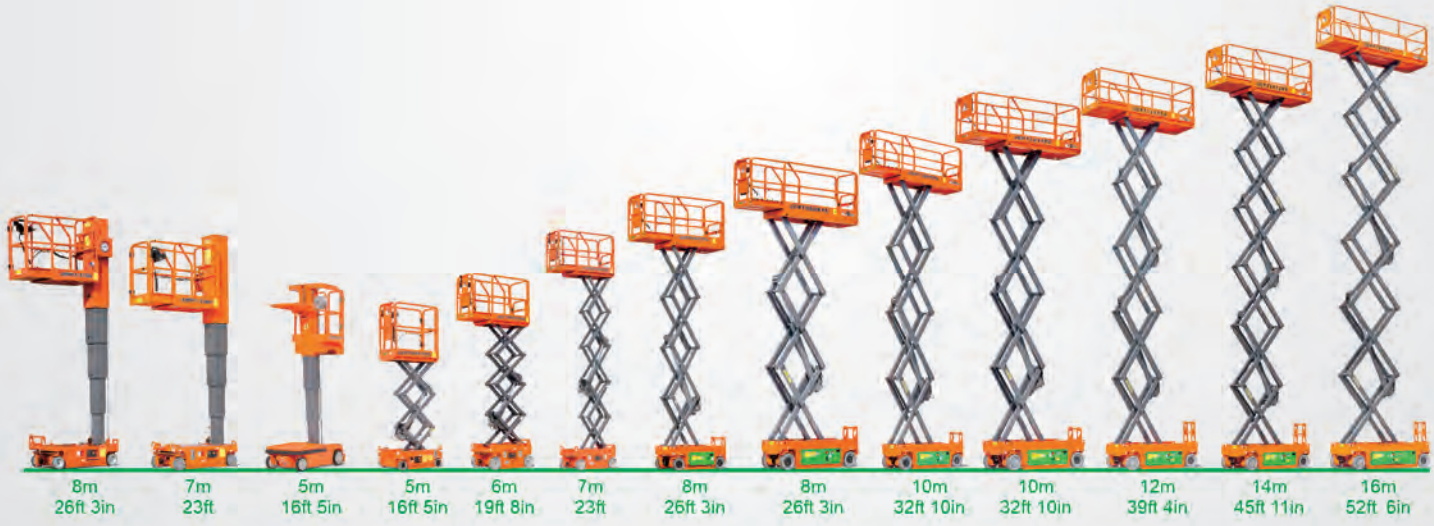
ISSN 2345-7082

Scan to visit our website

DINGLI

Exceed · New Height

HYDRAULIC OIL FREE



Working Height

World's First Oil-Free & All-Electric AWP Series

ZHEJIANG DINGLI MACHINERY CO.,LTD.

ADD:188 Qihang Road, Leidian Town, Deqing, Zhejiang, P.R.C

TEL:+86-572-8681688

Phone:+86-13806523131 Susan Huang

E-Mail:export@cndingli.com

Https://en.cndingli.com

CONTENTS

PROJECTS & OTHER FEATURES

SOUTHEAST ASIA CONSTRUCTION is published six times a year by:
Trade Link Media Pte Ltd. RCB Registration no: 199204277K
Address: 1 Paya Lebar Link, #04-01 Paya Lebar Quarter 1 (PLQ 1), Singapore 408533
Tel: +65 6842 2580 Email: info@tradelinkmedia.com.sg
Website: http://seac.tradelinkmedia.biz

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$70; Malaysia and Brunei - S$120; Rest of Asia - S$180; Japan, Australia, New Zealand, Middle East, Europe and USA - S$220 (Inclusive of GST / Reg: M2-0108708-2).

Printed in Singapore by Fuisland Offset Printing (S) Pte Ltd.
MCI (P) 061/08/2023 • ISSN 2345-7082 (Print) and ISSN 2345-7090 (E-Periodical) • KDN No: 1560 (1271)-(6)

INTERNATIONAL SALES OFFICE:
Mr. Akiyoshi Ojima, 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: ojima@echo-japan.co.jp

Passion for Progress

BAUER MASCHINEN: THE TRUE ALL-ROUNDERS

We are not only machine manufacturers, but full service providers for all challenges in the field of specialist foundation engineering. Whether drilling, cutting, piling or mixing technology, our products have been setting standards for over half a century.

BAUER Maschinen GmbH
BAUER-Strasse 1
86529 Schrobenhausen
Germany
www.bauer.de

BAUER MASCHINEN

Merdeka 118: World's second tallest building officially inaugurated

The much-anticipated Merdeka 118 tower, Malaysia's new iconic landmark, was officially opened on 10 January 2024. At 678.9 m in height, it is currently the second tallest building in the world, after Burj Khalifa in Dubai (about 828 m).

Rising above the city of Kuala Lumpur, Merdeka 118 (Merdeka means 'independent' in Malay) features 118 storeys with various facilities such as offices, hotels and retail outlets. According to the developer, Permodalan Nasional Berhad (PNB), there are 84 storeys of Premium Grade-A office space and the highest floors of the tower will house an observation deck and Malaysia's first Park Hyatt hotel.

In its press release, PNB also mentioned that Merdeka 118 will set high sustainability standards, aiming for the country's first triple-green platinum rating from Leadership in Energy and Environmental Design (LEED), Green Real Estate (GreenRE) and Green Building Index (GBI). In addition, the tower will obtain WELL certification from the International WELL Building Institute Asia Pacific supporting the wellbeing of the tenants and the wider community.

"The Merdeka 118 precinct development represents PNB's aspiration to uplift the financial lives of Malaysians across generations as well as a symbol of Malaysia's progress and development as a nation," said Raja Tan Sri Dato' Seri Arshad Raja Tun Uda, group chairman of PNB.

In a separate announcement, contractor Samsung C&T Engineering & Construction Group (Samsung C&T E&C Group) shared some methods and challenges in building Merdeka 118. "With its innovative design and towering height, the most advanced construction technologies were employed," it said.

About 400,000 cu m of high-strength concrete was needed for the project, and a high-pressure pumping technology was used to pump the concrete up to the required height as the tower grew, revealed Samsung C&T.

To make the concrete stronger, 40,000 km of rebar was used, the contractor added. A global positioning satellite (GPS) system was also used to make real-time height measurements, helping to ensure the accuracy of the work.

Image: Filipe Freitas/Unsplash

At 678.9 m high, the Merdeka 118 tower in Kuala Lumpur, Malaysia, is currently the second tallest building in the world.

The structure itself stands a little over 500 m tall, and is topped by a spire that adds a further 160 m. To raise this spire, which weighs 933 t, to the top of the tower, Samsung C&T applied a method that pushed the spire up using a hydraulic jack so that a tower crane would not be necessary. ■

L&T Construction to build new cable-stayed bridge in Assam, India

The Transportation Infrastructure Business of L&T Construction has won a contract to build the Palashbari to Sualkuchi cable-stayed bridge across the Brahmaputra River in Assam, India.

The project, which has been awarded by the Public Works Roads Department (PwRD), Assam, will involve a 12.21-km bridge with approaches connecting Palashbari and Sualkuchi. The bridge will directly connect the two towns.

The bridge will also directly connect to the Lokpriya Gopinath Bordoloi International Airport (GAU) in Assam. The project will feature a 3.6-km cable-stayed bridge portion along with a 5.61-km approach on Palashbari side and a 3.0-km approach on Sualkuchi side including wetland approach viaducts.

According to L&T, the maximum span of the cable-stayed portion will be 165 m. The project is scheduled to be completed in 48 months.

In addition, L&T is currently working on the Dhubri Phulbari Bridge project for the National Highway Infrastructure Development Corporation (NHIDCL) as well as several other infrastructure projects in Assam. ■

CaruccieChiurazzi

DEMOLISHING ROCK WHILE SAVING ON FUEL*

***Indeco HP-FS hydraulic hammers use up to 20% less fuel than rival products in the same class.**

What sets Indeco equipment apart is not just its functionality, but also its fuel-efficient design. The Fuel Saving hydraulic system, operating at lower working pressures and reduced oil flow rates, helps HP-FS series hydraulic hammers deliver optimum performance and maximum productivity, while cutting fuel consumption at the carrier.

INDECO
A TOOL FOR EVERY JOB

www.indeco.it

Aurecon to deliver design and construction expertise for Singapore's CRL Clementi interchange station

Aurecon has been appointed as the lead consultant to China Communications Construction Company Ltd and Sinohydro Corporation Ltd Joint Venture, which has been awarded the contract for CR208 Cross Island Line (CRL) Clementi interchange station by Singapore's Land Transport Authority (LTA). The contract totalling approximately S$514 million also includes addition and alteration works at the existing Clementi station on the East-West Line.

The new Clementi interchange station (CR17) – which is part of the CRL Phase 2 project – is a Civil Defence interchange station situated along Clementi Avenue 4. Upon completion, it will link the CRL and the East-West Line, enhancing connectivity for residents, businesses and educational institutions in the vicinity.

Aurecon's role as the lead consultant involves providing detailed design consultancy services for civil, structures, architecture, and mechanical and electrical works throughout the design and construction phases of the project. Aedas will be supporting Aurecon for the architectural scope.

Singapore's CRL Phase 2 spans approximately 15 km and features six underground stations, namely Turf City, King Albert Park, Maju, Clementi, West Coast and Jurong Lake District. This expansion aims to address public transport accessibility for residents in the western regions, including areas like Sunset Way and West Coast.

Image: LTA (via Aurecon)

An artist's impression of Clementi interchange station.

"The Clementi interchange station will play a key role in enhancing public mobility, providing a connection between the Cross Island Line to the existing East-West Line," said Marcus Tong, Aurecon technical director for geotechnical, structures and tunnels, who is leading the project. ■

Rent Trade & Service is new Haulotte distributor in Thailand

Rent Trade & Service Co Ltd (RTS) has become an official distributor of Haulotte aerial work platforms (AWP) in Thailand. "Thailand's marketplace for AWP rental is competitive, and expected to continuously intensify. Haulotte products are high quality, cost-flexible, and equipped with safety innovations that use latest technologies," said Mr Tamura, president of RTS.

"Followed by the recovery of construction, Thailand's rental market continues to expand, its potential is large and attracts various newcomers from other countries," added Mr Kikuchi, general manager of RTS. "Resulting from the growth, more safety is required, and we believe that our partnership will be the leading provider of safety in the near future."

With the Thai construction sector experiencing a resurgence and a growing need for reliable equipment, this collaboration will enable both companies to meet the increasing demand. Local customers now have access to Haulotte's full range of electric and diesel-powered scissor lifts as well as articulating and telescopic booms.

BELOW: **Rent Trade & Service Co Ltd (RTS) has become an official distributor of Haulotte aerial work platforms in Thailand.**

LEFT: **Customers in Thailand now have access to Haulotte's full range of electric and diesel-powered scissor lifts as well as articulating and telescopic booms.**

"We are delighted to welcome Rent Trade & Service Co Ltd into the Haulotte family," said Darren Phua, general manager at Haulotte Singapore. "Their deep understanding of the rental market and commitment to safety are perfect match with Haulotte's values. Together, we are ready to elevate standards and provide unrivalled support to the construction industry in Thailand." ■

Sun Hung Kai Properties acquires nine electric machines for use on Hong Kong construction sites

One of Hong Kong's largest developers, Sun Hung Kai Properties Limited (SHKP), has purchased nine units of electric construction equipment to replace their diesel counterparts. This crucial step towards decarbonisation aims to set an example for the construction industry, and supports the Hong Kong government's Climate Action Plan 2050, which envisions 'Zero-carbon Emissions • Liveable City • Sustainable Development.'

"SHKP has committed substantial resources to reducing carbon emissions and promoting sustainable development. Electrification on construction sites is an important component of the group's carbon-reduction strategy," said Adam Kwok, executive director at SHKP.

According to Mr Kwok, this shift to electric power is estimated to lead to an annual reduction of approximately 240 t of carbon emissions, equivalent to planting over 10,000 trees. He hoped that the move would encourage other industry players to use more green building equipment. He also noted that the use of electric equipment eliminates diesel combustion, effectively reducing emissions and noise levels on construction sites, and would provide frontline workers with a cleaner and healthier work environment.

The nine electric machines acquired by SHKP consist of five truck cranes, two truck mixers and two trailer pumps, all manufactured by Sany Group. Some of the machines have been deployed on SHKP projects, including the mega project at Sai Sha near Ma On Shan, the Hong Kong Business Aviation Centre in-situ expansion, and the projects in Kwu Tung and So Kwun Wat.

SHKP is currently implementing its green initiatives across five major areas of construction:

1). Adopting green smart technologies

SHKP's projects adopt green smart technologies from design and construction to facility management. These technologies include: modular integrated construction (MiC), multi-trade integrated mechanical, electrical & plumbing (MiMEP), design for manufacture and assembly (DfMA), Internet of Things (IoT), and building information modelling (BIM).

2). Developing green energy infrastructure

SHKP is building one of Hong Kong's largest solar energy networks. Nearly 15,000 solar panels had been installed by the end of last year across various locations, totalling an area of approximately 400,000 sq ft. This extensive network is expected to result in an annual reduction of approximately 2,700 t of carbon emissions. In addition, the group has installed battery energy storage systems on construction sites to power electric machinery.

3). Research and innovation in green building technologies

Through collaboration with enterprises, universities and research institutions, SHKP aims to enhance the efficiency and scale of emissions reduction. The group has partnered with The Hong Kong Polytechnic University to conduct research in three areas: green applications, green building materials and green construction processes. The research on the injection of carbon dioxide into concrete is anticipated to yield results in 2025.

4). Supply of green building materials

SHKP's subsidiary, Glorious Concrete, is providing the industry with low-carbon, ready-mixed concrete with CIC Green Product Certification. This includes four types of Platinum-grade ground granulated blast-furnace slag (GGBS) concrete.

5). Training green building talent

SHKP has established Sanfield Construction Innovations Limited, a company comprised of experienced engineers and professionals specialising in information technology and digital transformation. It takes a leading role in advocating for the adoption of environment-friendly and energy efficient technologies. ■

LEFT: **A ceremony was held on 22 February 2024 to mark the official handover of the nine electric machines to Sun Hung Kai Properties.**

The electric truck crane.

The electric truck mixer.

NLEX announces three major road projects in Philippines

The Philippines' NLEX Corporation has pledged to continue implementing infrastructure development and enhancement projects this year to expand its road capacity.

"This 2024, we intend to embark on three major infrastructure projects and a series of enhancement programmes on our assets, which are our roads and our systems, all for the improved travel experience of our motorists at NLEX, SCTEX and NLEX Connector," said J. Luigi Bautista, president and general manager of NLEX Corporation.

One of the major projects is the Candaba 3rd Viaduct, which is scheduled for completion by November 2024. It is being built in the middle of two existing bridges that connect the towns of Pulilan, Bulacan and Apalit, Pampanga. This 5-km viaduct will be widened to three lanes with inner and outer shoulders in each direction.

Another major project is the NLEX C5-Link. The first 2-km of the project, between the Mindanao Avenue toll plaza and Quirino Highway in Novaliches, is set to begin construction by the second quarter of 2024.

The third major project is the expansion of NLEX San Fernando to SCTEX Spur in Mabalacat, Pampanga, which is targeted to start in the second quarter of 2024. Besides the expansion work, the project will also include the installation of road lighting from NLEX San Fernando all the way to Sta. Ines in Mabalacat for improved safety as well as the expansion of the Angeles Interchange to accommodate the increase in volume of vehicles in the area.

Furthermore, NLEX has recently signed an agreement with the Department of Public Works and Highways (DPWH) and the Toll Regulatory Board (TRB) to build the Sto. Tomas Interchange between San Simon and San Fernando in Pampanga, which will provide direct access to Santo Tomas and nearby towns. This interchange will also ease congestion leading to San Fernando by providing an additional entry point to the province.

NLEX Corporation is a subsidiary of Metro Pacific Tollways Corporation (MPTC), the toll road arm of Metro Pacific Investments Corporation (MPIC). ■

Both images: NLEX Corporation

ABOVE: **The first 2-km of the NLEX C5-Link project is set to begin construction by the second quarter of 2024.**

LEFT: **Currently under construction, the Candaba 3rd Viaduct is being built in the middle of two existing bridges.**

SCG International, CPAC and Shah Cement partner to provide ready-mix concrete consultancy service

Thailand-based SCG International and CPAC (The Concrete Products and Aggregate Co Ltd) have formed a partnership with Bangladesh's Shah Cement Ready Mix Concrete to provide consultancy and development services for ready-mix concrete.

This collaboration aims to enhance production efficiency and develop innovative mix designs for ready-mix concrete that reduce cement usage. The initial phase will focus on production development aimed at reducing carbon dioxide emissions through cutting cement usage by 25 kg/cu m.

In the future, there are plans to further improve production by exploring the use of alternative green raw materials such as fly ash, which will enhance production efficiency, reduce the amount of cement used, and maintain the compressive strength and quality of ready-mix concrete. This is also expected to position Shah Cement as a pioneering ready-mix concrete producer in Bangladesh, utilising waste materials such as fly ash as a sustainable substitute in its ready-mix concrete production, and thus reflecting the company's commitment to achieving net zero by 2050.

Abhijit Datta, managing director of SCG International, said the signing of the agreement "emphasises our commitment to advancing the construction industry in Bangladesh and other markets through innovative solutions. The initial phase of this collaboration focuses on cost-saving in the production of ready-mix concrete by reducing cement usage, which can help decrease carbon dioxide emissions and be more environmentally friendly." ■

Image: SCG International

Abhijit Datta, managing director of SCG International (left) and Nahid Ullah, RMC business unit head of Shah Cement at the contract signing ceremony.

JP Nelson

website: www.jpnelson.com.sg

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

Your Reliable Partner in Equipment Solutions

Singapore HQ address: 30 Benoi Road Singapore 629900

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

Sole Distributor SUNWARD

Boring Rig

Sole Distributor SUNWARD

Excavator

Sole Distributor SUNWARD

Hydraulic Grab

Sole Distributor SUNWARD

Hydraulic Trench Cutter

Generator

Sole Distributor junttan

Hydraulic Pilling Hammer

XCMG

Micro Pile

Sole Distributor PVE

Hydraulic Vibro Hammer

ANTAR CRANES SERVICES PTE LTD

安達起重機服務私人有限公司

ANTAR

Subsidiary of JP Nelson Group

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

Exclusive Distributor ZOOMLION

Crawler Crane with luffing jib

Exclusive Distributor ZOOMLION

Crawler Crane

Exclusive Distributor ZOOMLION

Crawler Telescopic Crane

Exclusive Distributor ZOOMLION

Aerial Working Platform

Sole Distributor MAEDA Mini Cranes

Mini Telescopic Crawler Crane

Sole Distributor MAEDA Mini Cranes

Mini Crawler Crane

Smart Lift

Glass Smart Lift

Singapore's construction demand projected to reach S$32-$38 billion in 2024

The Building and Construction Authority (BCA) projects the total construction demand in Singapore to range between S$32 billion and S$38 billion in nominal terms in 2024.

The public sector is expected to contribute about 55% of the total demand, reaching between S$18 billion and S$21 billion, mainly from public housing and infrastructure projects. Some of the major projects scheduled to be awarded in 2024 include the Housing and Development Board's (HDB) new build-to-order (BTO) developments, additional Cross Island MRT Line contracts (Phase 2), infrastructure works for the future Changi Airport Terminal 5 (T5) and Tuas Port developments, as well as other major road enhancement and drainage improvement works.

The private sector construction demand is forecast to be between S$14 billion and S$17 billion in 2024. This is anticipated to come primarily from residential developments under the Government Land Sales, expansion of the two Integrated Resorts, redevelopment of commercial premises, and development of mixed-used properties and industrial facilities.

According to BCA, the preliminary construction demand for 2023 reached S$33.8 billion, due to an uptrend in tender prices, expediting of construction awards for several private residential projects and ramping up of HDB's public housing projects. This exceeded the forecast of S$27 billion to S$32 billion in January 2023.

The public sector construction demand reached S$19.5 billion in 2023, driven by major projects including the Cross Island MRT Line (Phases 1 and 2), institutional building developments and HDB's BTO developments. The private sector construction demand also improved from S$12.5 billion in 2022 to S$14.3 billion in 2023, due to residential developments under the Government Land Sales and past en-bloc sales sites, integrated developments and major hotel refurbishment projects.

Outlook for 2025-2028

BCA expects a steady improvement in construction demand over the medium term. It is projected to range between S$31 billion and S$38 billion per year from 2025 to 2028. The public sector will continue to lead the demand and is expected to contribute S$19 billion to S$23 billion per year from 2025 to 2028, with building projects and civil engineering works constituting about 70% and 30% respectively.

Besides public housing developments, the public sector construction demand over the medium term will be supported by a number of major developments, such as MRT projects including the Cross Island Line (Phase 3) and Downtown Line Extension to Sungei Kadut, Alexandra Hospital redevelopment, a new integrated hospital at Bedok, Toa Payoh Integrated Development, Siglap South Integrated Development and redevelopment of various Junior Colleges.

Meanwhile, the private sector construction demand is expected to remain stable in the medium term at between S$12 billion and S$15 billion per year from 2025 to 2028.

Based on the contracts awarded in the past few years and considering the construction demand forecast for 2024, the total nominal construction output (i.e. the value of certified progress payments) in 2024 is projected to increase to between S$34 billion and S$37 billion, from the estimated S$34.8 billion in 2023. This continued uptrend is expected to be supported by a consistent level of construction demand in the last few years and the anticipated increase in 2024 demand.

Improvements to public procurement framework

Standard Consultancy Agreement

BCA has reviewed the Standard Consultancy Agreement (SCA), which is a common contract form used for public sector construction-related consultancy tenders across different disciplines, i.e. architectural, engineering, quantity surveying and project management.

This review is part of a regular effort aimed to ensure that the procurement approach remains fair and progressive. BCA has worked with the relevant trade association and chambers as well as various consultancy firms to identify common pain points and develop a suite of proposed enhancements to tackle these issues. The intended outcomes are as follows:

a). A clearer definition of scope of services for consultants upfront, so that agencies and consultants are aligned in their understanding of the consultants' roles and responsibilities, and consultants can accurately size the expected effort and price their tender bids accordingly.

b). Maintain a fair and timely remuneration for consultants, which commensurates with the scope of work provided, e.g. by making clear that consultants may request for fee adjustments for additional services required by agencies during a project, or by updating the man-hour rates used to compute the fee adjustments.

c). A more balanced allocation of risk, e.g. providing cost sharing in the event of significant construction delays, where the delays are due to issues beyond the consultant's control.

BCA plans to implement these enhancements later this year.

Quality Fee Method

BCA has also refined the Quality Fee Method (QFM) framework, which provides government agencies guidelines on the evaluation of construction-related consultancy tenders. To place greater emphasis on quality, BCA will make the following enhancements to the QFM, among others:

a). Enhance the framework for temporary suspension of consultancy firms that are found to have poor performance, so that it prevents them from taking on additional public sector projects and encourage firms to uphold high standards in their existing projects.

b). Require more projects to be shortlisted for tender via evaluation of quality scores instead of through balloting.

c). Enhance differentiation in quality scores by revising the quality scoring formula and creating wider spread in tenderer's quality scores.

In addition, BCA will explore how to further encourage sustainable bidding behaviour by piloting a revised fee-score formula. This will disqualify unsustainably low-fee bids and reduce the score for bids that are substantially lower than other tenderers in public sector projects. ■

Malaysia's MFE Formwork Technology now part of Doka

Doka has acquired Malaysia-based MFE Formwork Technology, a market leader in monolithic aluminium formwork systems. Together they are now a major player in the Asia Pacific region, capable of providing customers with various solutions from a single source.

With this acquisition, Doka has achieved another significant milestone in its strategic growth plan and thus strengthened its position in Southeast Asia and the Pacific region, an important growth market for the company alongside North America.

"We have been in a sales partnership for many years, which we are now taking to the next level. MFE is an experienced company with great expert know-how and state-of-the-art production facilities. Its innovative and high-quality products are highly appreciated by its customers," said Robert Hauser, CEO of Doka GmbH.

Founded in 1991, MFE has become a global leader in monolithic aluminium formwork solutions. Using monolithic formwork allows elements such as slabs and walls to be formed in a single pour, resulting in a seamless, jointless structure. This technique is particularly suited to projects with less complex and repetitive geometric requirements.

Meanwhile, Doka is a specialist for steel formwork in combination with timber and offers solutions in the large-scale sector, for example in high-rise, infrastructure or power plant construction. The company has an extensive global sales network and is active in over 60 countries with more than 170 locations.

"By joining our forces, we create a unique one-stop-shop formwork portfolio for our customers," continued Mr Hauser. "With the right formwork solution for every project and size at hand, we can now respond to our customers' needs even better.

LEFT AND BELOW: **Headquartered in Malaysia, MFE Formwork Technology is a market leader in monolithic aluminium formwork systems. The company is now part of Doka.**

Additionally, we offer scaffolding solutions from a single source, making us unbeatable."

Jim Robinson, group chairman of MFE Group of Companies, said this acquisition "opens up new horizons for collaboration and enhances our ability to reach a wider audience globally. Together, we look forward to leveraging our combined strengths and expertise to drive innovation and provide unparalleled solutions to our customers around the world." ■

'First wind project' for Cambodia

Singapore-based renewable energy developer The Blue Circle and Cambodian conglomerate Royal Group have signed a memorandum of understanding (MOU) to develop, finance, build, own and operate a 100-MW wind project located in the eastern province of Mondulkiri, about 280 km from Phnom Penh, the capital of Cambodia.

This is the first wind project in the country, according to The Blue Circle. The company has been measuring the wind since 2019 with a 120-m met mast and various Spidar equipment.

Based on the average wind speed recorded, the project's site is considered "one of the top wind sites in Cambodia and in all of Southeast Asia," said The Blue Circle. "The particular wind pattern in this part of the lower Mekong region would drive potential power production mainly during the dry season, from November to April."

The company added, "This seasonal monsoon particularity would ideally supplement hydro power production which represents more than 45% of the energy mix in Cambodia and is providing power mainly during the wet season, from May to October."

With this new partnership, The Blue Circle and Royal Group aim to contribute towards Cambodia's 2050 carbon neutral target set by the Ministry of Environment in 2022. ■

Newtecons starts construction on new urban complex in Ca Mau, Vietnam

Vietnamese contractor Newtecons has commenced construction on a new urban complex in Ca Mau city, located in the province of Ca Mau, Vietnam. Covering a total area of 23 ha, this major development is a strategic project under a cooperation agreement between the People's Committee of Ca Mau province and T&T Group.

When completed, it will feature 7.5 ha of low-rise buildings for residential, commercial and service needs; 2.5 ha of high-rise mixed-use housing; 4 ha for educational, medical and service needs; and 9 ha for technical and transportation infrastructure.

The Ring City, encircled by a river, is the centrepiece of the project. According to Newtecons, the surrounding river and the canal system serve as a design inspiration and facilitate the connection of traffic and material transportation. However, these features also present challenges for the construction team due to several factors, including surface poor foundation, flooding, inadequate infrastructure, and more. Such issues could impede development and thus necessitate additional fixes and contingency plans to ensure the success of the project. ■

Teppo Voutilainen named new CEO of Elematic

Finland-based global manufacturer of precast concrete plants and technologies, Elematic Oyj, has appointed Teppo Voutilainen (pictured) as its new CEO, effective 2 May 2024 at the latest.

Mr Voutilainen has a long experience in various strategic leadership positions at Kone Corporation. He started his career at Kone in 2010 and has since held several leadership positions related to product strategy, global new equipment volume elevator business, and most recently he has taken the role of vice president strategy, transformation and marketing, Europe.

Prior to Kone, Mr Voutilainen worked as a management consultant at McKinsey & Company. He has lived extensively in Asia, including China, Singapore and Japan.

"Teppo will bring a strong strategic acumen to driving Elematic to the next level of performance. He has extensive experience working in customer-centric ways to develop offerings and go-to-market strategies," said Kai-Petteri Purhonen, chair of the board of directors at Elematic. "Teppo also shaped ambitious initiatives to drive pricing and productivity impact across a global scale, through local teams. The passion, energy and enthusiasm he radiates is something we look forward to embracing with the team at Elematic."

"I am humbled to join the team of experienced professionals at Elematic. At the same time, I am delighted to contribute to the growth story of a Finland-based innovator which has reached a world-leading presence in the precast concrete domain," said Mr Voutilainen. "Having engaged with construction industry customers from around the world in my past roles, I see we have a duty to enable a step-change in the construction phase productivity and to improve the carbon footprint of construction on a global scale." ■

Bauer involved in research project to develop climate-neutral drive concept for specialist foundation equipment based on fuel cell system

Bauer Maschinen GmbH recently hosted a kick-off event for a research project with the potential to catapult the carbon footprint of specialist foundation equipment to a whole new level. The goal is to achieve a climate-neutral operation based on a fuel cell system.

The consortium partners include Bauer Maschinen GmbH along with the Professorship for Fluid Systems Technology and the Chair for Fluid Mechanics at the Friedrich-Alexander University of Erlangen-Nuremberg.

Over the next three years, the project partners will work together to develop a concept for operating construction equipment in specialist foundation with zero CO2 emissions. The plan is to integrate a drive system comprising a hydrogen fuel cell, along with all necessary peripheral components ('balance of plant'), into a special foundation machine from Bauer Maschinen. The fuel cell system along with other required components – such as H2 storage unit and cooling unit – are designed as a plug-in module for universal use.

Image: Bauer Group

The kick-off event for the research project was held in October 2023 at Bauer Maschinen's headquarters in Schrobenhausen, Germany. The project partners will work together to develop a concept for operating construction equipment in specialist foundation with zero CO2 emissions.

Reducing noise emissions

Within the project, operating strategies for fuel cells and backup batteries are evaluated with regard to the technical requirements. Another focus of research is the targeted influencing of noise emissions, which negatively impact both equipment operators and the environment during the operation of construction equipment. With the aid of aeroacoustics simulations and resulting measures to reduce noise, the aim is to significantly reduce emissions compared to conventional, diesel-powered equipment. At the end of the project, the plug-in module will be installed on a Bauer machine and tested in a practical application.

The research project planned for three years, with its official title 'Modular drive system with fuel cells for applications in specialist foundation engineering' (MABAS), has received funding from the Federal Ministry for Economic and Climate Action as part of the 7th Energy Research Programme, a grant of approximately €2.5 million.

The project represents another logical step towards the goal of sustainability. Following Bauer's previous contributions to sustainable construction with the cable-bound eBG 33 and battery-powered eBG 33 H all electric, the use of hydrogen technology in the form of a fuel cell is a logical enhancement. A hydrogen-powered machine can be used anywhere a cable connection is impossible or specific services are required that cannot be provided to the necessary extent using only batteries. ■

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.

SCAN TO KNOW MORE

EVERYTHING'S **OK** WITH **MAPEI**

MAPEI®

Lintec & Linnhoff signs distributor agreements in Australia and Saudi Arabia

Lintec & Linnhoff has recently signed a distributor agreement with Tutt Bryant in Australia. The deal covers the full range of Lintec & Linnhoff's asphalt mixing and concrete batching plants. This includes the Lintec containerised CSM and CSD, Linnhoff TSD MobileMix and Lintec CDP continuous asphalt mixing plants. For concrete batching plants, the containerised Lintec CC, CCE, as well as the portable and stationary ECP, UCP and PCP are also of particular interest in the Australian market, due to the diverse and unique requirements of the construction industry in the country.

Christabel Chan, global business director at Lintec & Linnhoff, said, "After a thorough and diligent evaluation, we are excited to announce this alliance with Tutt Bryant. We are confident this partnership will help Lintec & Linnhoff better serve our customers thanks to their nationwide presence and market-leading customer support capabilities. We believe that this partnership will increase demand and access for our products, and we look forward to a long, successful and mutually beneficial relationship as we strengthen our presence in Australia."

Since its beginning in 1938 as a manufacturer and supplier of earthmoving and construction equipment, Tutt Bryant has grown to be one of Australia's leading industrial services organisations providing sales, hire, parts, service and engineering solutions to the construction, mining, engineering and trade sectors throughout the country. The company has more than 500 employees across approximately 30 locations in Australia.

Middle East expansion

In Saudi Arabia, Lintec & Linnhoff has signed an exclusive distributor agreement with Middle East Development Co Ltd (MEDCO). The deal covers the full range of Lintec & Linnhoff's asphalt mixing and concrete batching plants, including but not limited to the Lintec CSD containerised asphalt mixing plant and Lintec UCP Ultra concrete batching plants.

Tony Chakra, regional sales manager for Middle East and Africa at Lintec & Linnhoff, said, "As we participate in Saudi Arabia's largest construction event, Big 5 Construct Saudi, we can think of no better occasion to announce our partnership with MEDCO. The company has represented Lintec & Linnhoff in the Middle East region over the last two years and sold several Lintec CSD containerised asphalt mixing plants and Lintec UCP Ultra concrete batching plants. We are therefore confident that this partnership will help the company better serve our customers thanks to their unwavering commitment to the efficient delivery of equipment, support services and spare parts. We look forward to a highly fruitful relationship as we continue to build our business presence in the region."

MEDCO is a leading dealer of premium industrial and construction equipment in Saudi Arabia, with over 170 employees operating from eight branches and facilities across the country. The company was founded in 1967 by Sk. Saleh and Ibrahim A. Alfadl and is a 100% Saudi Arabian-owned business. A significant part of Saudi Arabia's infrastructure has been built with the quality brands that are represented by MEDCO and many airports, highways, and buildings have benefited from the premium and high-quality products supplied and supported by MEDCO. ■

Ng Chen Wei, Tutt Bryant's managing director (left) and Christabel Chan, Lintec & Linnhoff's global business director sign an exclusive distributor agreement for the Australian market.

The Lintec CC4500B containerised concrete batching plant at a job site in Australia.

In Saudi Arabia, Lintec & Linnhoff signs an exclusive distributor agreement with Middle East Development Co Ltd (MEDCO). Present at the signing ceremony were (from left): Tony Chakra and Christabel Chan from Lintec & Linnhoff, and Mohammed Khashoggi, Faisal Alfadl and Emad Mukhalalaty from MEDCO.

Denzai forms joint venture with FTE in Saudi Arabia

Denzai Arabia Co Ltd, a subsidiary of Japan-based Denzai K.K., and Fawaz Ali Alshammari Co for transportation (FTE) have established a joint venture (JV) company in Saudi Arabia.

Since the establishment of Denzai Arabia in 2023, Denzai Group has received many inquiries about wind power construction, crane operations and heavy lifting operations in the region. By establishing a 50-50 JV with FTE, a major local port and heavy lifting company, Denzai will be able to provide a stable supply of high value-added services. The JV is expected to be completed by June 2024.

Kohki Uemura, CEO of Denzai K.K, said, "The establishment of this joint venture with FTE Logistics, which has more than 25 years of experience in heavy lifting in Saudi Arabia, will enable us to provide integrated construction services in Saudi Arabia and the Middle East, from port transportation to installation work at project sites.

"In this country, large-scale projects are underway to break away from dependence on oil, and we hope to contribute to the optimisation of these projects by combining the management resources of the Denzai Group and FTE Logistics."

"The JV with Denzai, an international leader in wind farm and power plant installation, will enable the two companies to provide a world-class service to the regional market," added Fawaz Alshammari, CEO of FTE. "By teaming up with Denzai, FTE believe we can elevate the service standards within the industry." ■

The signing ceremony between Denzai and FTE was held in Dubai on 12 February 2024.

Tadano announces plans to realign European manufacturing operations

Tadano has announced intention to realign its European manufacturing operations as part of the company's mid-term management plan.

The intended changes will affect Tadano's European business operations and are aimed at establishing a framework that maximises the strength of the company's combined German and Japanese manufacturing capabilities.

The envisaged changes in production are designed to enable the company to better respond to the needs of the customers and to ensure that its products and services remain market-leading in the longer term. They will also serve to improve the speed of delivery in the production of cranes as well as repair and service work.

In an effort to streamline production capacity in Germany, Tadano intends to close the Wallerscheid production facility in Zweibrücken, and realign production accordingly. The management of Tadano's subsidiary Tadano Demag (TDG) will begin consultations with the works council. As a result of this planned realignment, items produced at the Wallerscheid facility will be moved to the TDG Dinglerstrasse factory, the Tadano Faun (TFG) Lauf factory, and a Tadano factory in Japan.

Tadano has maintained production facilities in Germany for more than 30 years, and they have become a strong pillar of the company's culture and ambition to deliver high quality and innovative solutions for its global customers. The management of Tadano recognises the great potential of its German production sites, and thus both TDG and TFG will continue to play a key part for the success of the global Tadano production network in the future. ■

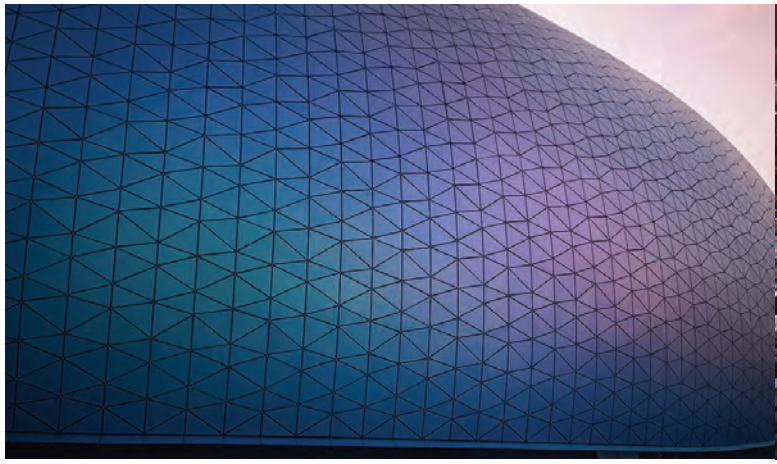
‘Pearl of the Orient’: Kai Tak Sports Park completes main stadium facade

The Kai Tak Sports Park project in Hong Kong has reached another milestone with the completion of its main stadium facade. Designed with the theme ‘Pearl of the Orient’, the building features a multi-layered facade consisting of approximately 27,000 triangular aluminium panels. The ‘pearlescent’ colours of the facade can change from mountain blue to metallic purple, metallic silver and other colours depending on the brightness of natural daylight.

Throughout the design and construction process, the project team employed various digital technologies for incorporation into a comprehensive building information model (BIM). This model served as a robust platform for data analysis and verification, seamlessly integrating all facets of the exterior facade, including the external structure, dimensions of triangular panels, and other building-related components such as glass wall and LED facade lighting.

With meticulous adjustments and refinements to the actual dimensions and installation positions of the triangular panels, the team managed to reduce the panel quantity from over 47,000 to just 27,000. This was achieved by adhering to the ‘3S’ concept of Standardisation, Simplification and Single Integrated Element during the planning, design and construction process, which aims to enhance efficiency of work execution, minimise the need for extensive field works and ensure effective budget control. As a result of these measures, the installation of the facade panels only took eight months.

TOP AND ABOVE: **Designed with the theme ‘Pearl of the Orient’, Kai Tak Sports Park is now in its final stage of construction.**

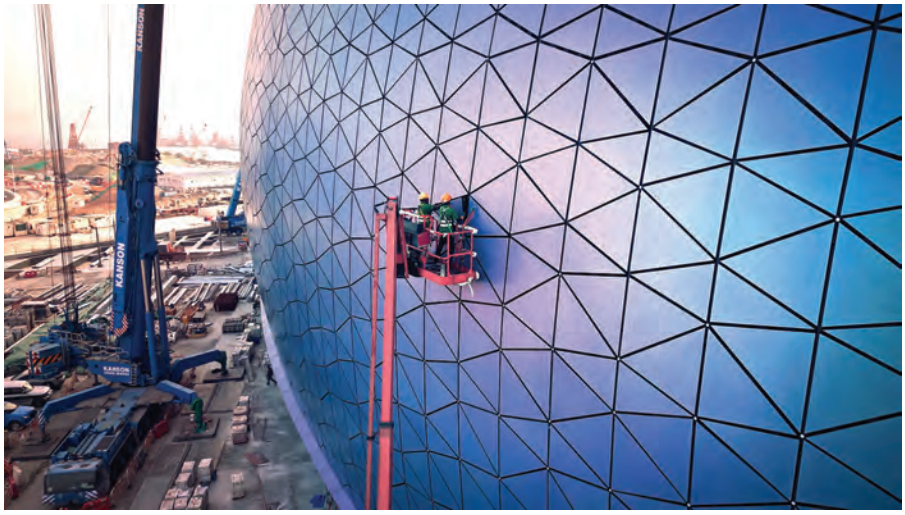


LEFT AND RIGHT: **The main stadium facade consists of approximately 27,000 triangular aluminium panels.**

Construction work on the project is now nearly 85% complete, according to Kai Tak Sports Park. The major facilities within the precinct are expected to be completed in phases by the end of 2024 for opening in 2025.

Kai Tak Sports Park is currently the largest sports infrastructure project in Hong Kong. Upon completion, this 28-ha complex will comprise a 50,000-seat main stadium with a retractable roof, an indoor sports centre with the flexibility to host community sports and events of up to 10,000 seats, and a public sports ground with a capacity of 5,000 seats. In addition, there will be public open spaces for events and leisure together with retail and harbourfront dining areas. ■

All images: Kai Tak Sports Park



ABOVE: **The installation of these facade panels took only eight months.**
TOP: **Various digital technologies have been used in the design and construction of Kai Tak Sports Park, which is currently the largest sports infrastructure project in Hong Kong.**

LEFT AND RIGHT: **The major facilities within the precinct are expected to be completed in phases by the end of 2024.**

CALENDAR OF EVENTS

// Events in Asia

Trenchless Asia
16 to 17 July 2024
World Trade Centre Metro Manila
Metro Manila, The Philippines
Website: www.trenchlessasia.com

World of Concrete Asia
14 to 16 Aug 2024
Shanghai New International Expo Centre
Shanghai, China
Website: https://en.wocasia.cn

CBA Expo (ConsBuild Asia)
22 to 24 Aug 2024
Bangkok International Trade & Exhibition Centre
Bangkok, Thailand
Website: www.consbuildasia.com

BCT Expo (Building Construction Technology Expo)
18 to 20 Sept 2024
Impact Exhibition and Convention Centre
Bangkok, Thailand
Website: www.bct-construction.com

BuildXpo Malaysia
22 to 24 Oct 2024
Malaysia International Trade and Exhibition Centre
Kuala Lumpur, Malaysia
Website: www.buildxpo.com.my

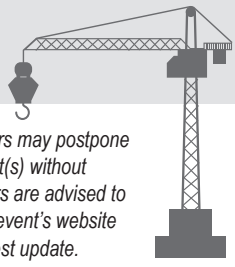
Philconstruct
7 to 10 Nov 2024
SMX Convention Centre Manila &
World Trade Centre Metro Manila
Metro Manila, The Philippines
Website: www.manila.philconstructevents.com

bauma China
26 to 29 Nov 2024
Shanghai New International Expo Centre
Shanghai, China
Website: www.bauma-china.com

// Events outside Asia

World of Concrete
21 to 23 Jan 2025
Las Vegas Convention Centre
Las Vegas, USA
Website: www.worldofconcrete.com

bauma
7 to 13 Apr 2025
Munich Trade Fair Centre
Munich, Germany
Website: www.bauma.de



Note: *The organisers may postpone or cancel their event(s) without prior notice. Readers are advised to visit the respective event's website regularly for the latest update.*

WORLD OF CONCRETE ASIA

informa markets

WORLD OF CONCRETE ASIA

More information? VISIT: en.wocasia.cn

THE LEADING
CONCRETE EXHIBITION IN ASIA
you can not miss!

2024.8.14-16
Shanghai New International Expo Centre,China

SAVE THE DATE!

Contact Us

Exhibiting Inquiry
James Xiao
E: james.xiao@informa.com
T: +86 10 6562 3326

Visitor & Media
Sophia Li
E: Sophia.li@informa.com
T: +86 21 6157 7284

Booth booking

Singapore to host 47th IFAWPCA Convention in April 2025

Singapore Contractors Association Limited (SCAL) has assumed the chairmanship of the International Federation of Asian and Western Pacific Contractors' Associations (IFAWPCA) for the new term 2023-2025, and will be hosting the 47th IFAWPCA Convention, scheduled to take place at the Sands Expo and Convention Centre in Singapore from 7 to 11 April 2025.

This significant regional gathering brings together industry leaders, stakeholders and experts from the construction sector across Asia and Western Pacific. The last edition was held in November 2023 in Kathmandu, Nepal.

According to SCAL, the IFAWPCA Convention 2025 will be themed 'Embracing Construction of Tomorrow', which reflects Singapore's commitment to exploring transformative ideas and technologies, sustainable practices, and collaborative solutions that will help shape the industry's future.

The event will include a business forum featuring a diverse range of topics as well as panel discussions and an exhibition showcase aimed at exploring emerging trends, fostering partnerships and promoting sustainable practices within the construction sector. Another highlight is the Emerging Young Leaders programme, which will bring together aspiring individuals and foster their growth and impact within their respective communities.

IFAWPCA comprises the fraternity of builders from 18 member countries and regions in Asia and Western Pacific. The organisation plays a critical role in promoting international fellowship and cooperation; in developing beneficial relationships between governments and contractors in the region; and in establishing cooperative working arrangements in the furtherance of civil and building construction projects. ■

Website: https://ifawpca2025.scal.com.sg

Image: potshots/Pixabay

Themed 'Embracing Construction of Tomorrow', the 47th IFAWPCA Convention is planned to be held from 7 to 11 April 2025 at the Sands Expo and Convention Centre in Singapore.

World of Concrete concludes semi-centennial edition

World of Concrete (WOC) has concluded its 50th anniversary edition, which took place from 23 to 25 January 2024 in Las Vegas, the US. Covering more than 700,000 sq ft of indoor and outdoor space, the event drew nearly 60,000 registered professionals – a 23% increase from 2023 – and over 1,400 exhibitors. There were 450 international exhibitors and 325 first-time exhibitors.

"Every year, World of Concrete serves as the cornerstone where concrete and masonry professionals exchange knowledge and hone skills that propel businesses forward. We are proud to host the global meeting point that resources the tradespeople who are building the future of America," said Jackie James, vice president of World of Concrete. "We emphasise creating real-world scenarios, hands-on situations to try and test products and share expertise, which is what makes WOC so unique and our community so special."

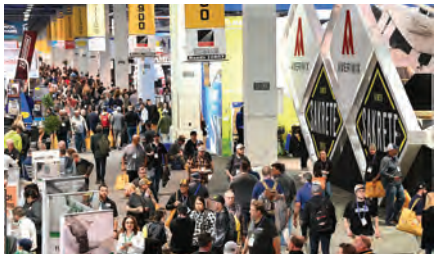
WOC 2024 held 185 education sessions, featuring a wide variety of topics. Another highlight was the Concrete Industry Management (CIM) live and silent auctions, raising a collective US$1.8 million for the CIM programmes at five public universities.

In addition, the Spec Mix Bricklayer 500 Championship competition gathered bricklayers from around the country, competing for the grand prize after a series of annual regional events. Winners of this year's competition were Wisconsin duo Michael Schlund and tender Aaron Kowalski, who laid 752 bricks in one hour to defend their title as the World's Best Bricklayer for the second consecutive year.

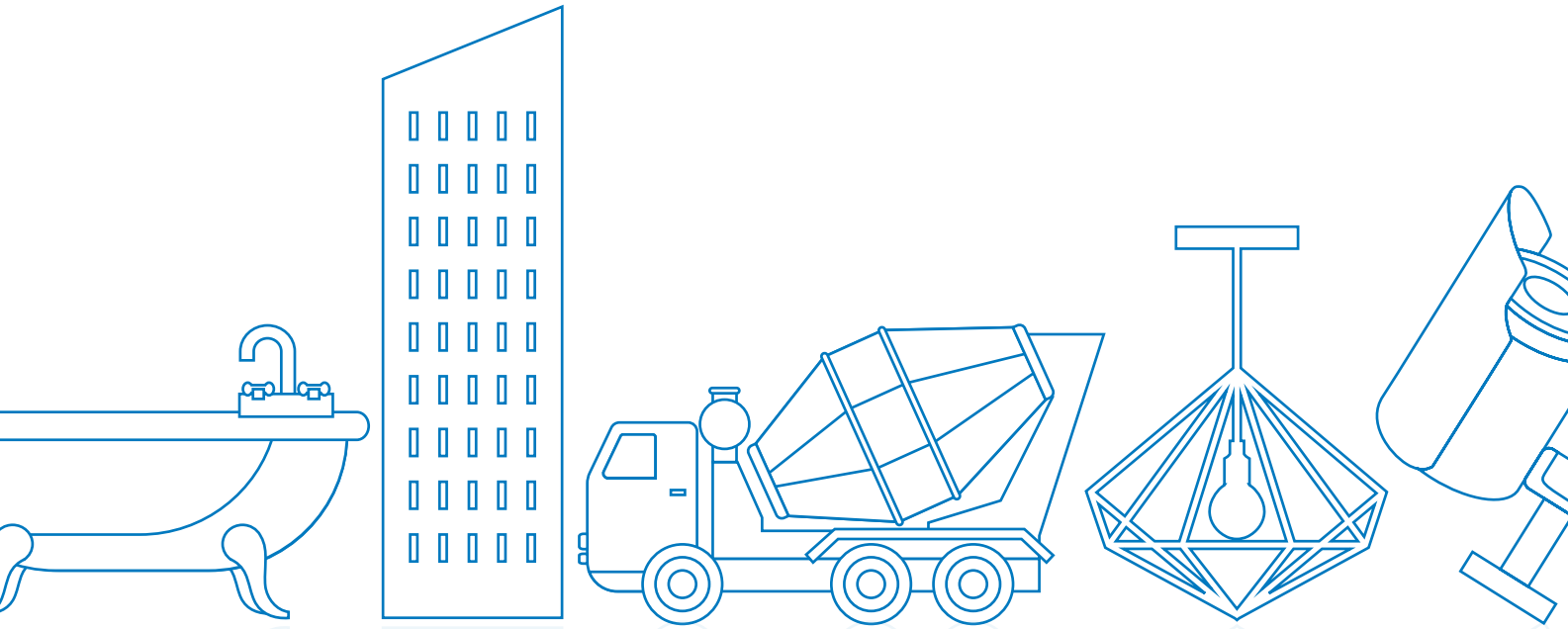
In honour of the 50th anniversary, WOC also donated 50 trees to the Las Vegas Tree Initiative. This ongoing programme aims to lower the urban heat island effect that currently makes Las Vegas the fastest-warming city in the US.

World of Concrete will once again return to the Las Vegas Convention Centre from 21 to 23 January 2025. ■

Website: www.worldofconcrete.com



ALL IMAGES:
Celebrating its 50th anniversary this year, WOC 2024 drew nearly 60,000 registered professionals and over 1,400 exhibitors.



bathroom + kitchen today

SEAB
SOUTHEAST ASIA BUILDING

lighting today

SOUTHEAST • ASIA CONSTRUCTION

SECURITY SOLUTIONS TODAY

We reach out to various segments of the professional readers within the building, construction, security and lighting industries across Asia-Pacific region with our specialised publications in print and digital formats as well as on social media platforms.

Visit our website **www.tradelinkmedia.biz** for more information.

Scan to visit our website

TRADE LINK MEDIA PTE LTD

1 Paya Lebar Link, #04-01, Paya Lebar Quarter 1 (PLQ 1), Singapore 408533 | Tel: (65) 6842 2580
info@tradelinkmedia.com.sg | www.tradelinkmedia.com.sg

IPAF unveils enhanced ePAL app 2.1

The International Powered Access Federation (IPAF) has introduced its updated ePAL app, bringing the ability to conduct, record and share pre-use checks for mobile elevating work platforms (MEWPs). These checks play a crucial role in ensuring the safe operation of powered access equipment.

Building on the success of the previous ePAL release in October, which introduced a way for MEWP operators to record their machine familiarisation status, ePAL continues to reinforce its status as an indispensable daily tool for those who work in the powered access industry.

New and existing features of the ePAL app:

• **Guided and Non-guided MEWP Pre-Use Checks:** Streamlined digital versions for comprehensive assessments in adherence to manufacturer guidelines.

• **Exportable Pre-Use Checks:** Operators can now export and maintain records of their checks.

• **Visual Warning for Failed Checks**: Immediate alerts if a machine fails the Pre-Use Check, enhancing safety measures.

• **Digital Logbook:** Provides an overview of operating experience on various powered access machines.

• **Machine Familiarisation Record:** Keep a record of machine familiarisation, enhancing operator proficiency. Share machine work logs using device sharing tools, such as email and messages.

• **Safety Guides Access:** Operator and site safety guides are readily available through the safety section of the app.

• **Digital Training Records:** A digital wallet to store and share IPAF powered access licences and qualifications, including the PAL Card for MEWP, mast climbing work platform (MCWP) and construction hoist operators.

• **Reporting Accidents and Near Misses:** Quick and anonymous access to report any accidents and near misses involving powered access machines, which helps IPAF to gather vital industry safety data.

"The latest update to ePAL reaffirms our commitment to providing cutting-edge solutions for the powered access industry," said Peter Douglas, CEO and managing director of IPAF. "We believe these enhancements will empower operators, ensuring they have the latest safety information available, while simplifying crucial processes in their daily operations."

Available for both new and existing IPAF licence and qualification holders, the ePAL app is accessible on iOS via the Apple Store and on Android through Google Play. ■

Website: www.ipaf.org/ePAL

IPAF and Platformder partner in Turkey

As a result of a collaboration that started three years ago with a basic memorandum of understanding (MOU), the International Powered Access Federation (IPAF) and Platformder, the Turkish Mobile Elevating Work Platform Rental, Manufacturer and Dealer Association, have now signed a transformative agreement aimed at enhancing safety, training and standards within the Turkish powered access industry. The agreement, formalised in December 2023, came into effect in January 2024.

This marks a historic moment for IPAF, as it signifies the organisation's first agreement designating a national association as an IPAF dealer/agency in its respective country. The collaboration underscores IPAF's strategic initiative to integrate with local associations, fostering a dual-local and international presence.

"We are honoured to be the first national association that IPAF has chosen to partner with in this unique capacity. This agreement represents an opportunity for Platformder to provide our Turkish members with access to world-leading guidelines in the mobile elevating work platform (MEWP) sector and deliver top-quality training programmes," said Saruhan Gunaydın, president of Platformder.

The collaboration encompasses a range of initiatives, including the co-branding of training materials, translation of essential documents, and the adaptation of IPAF's training portal for the Turkish audience. Abdullah Tuncer, deputy secretary-general of Platformder, has been appointed as the IPAF Turkey country manager, reinforcing local representation. This appointment ensures more personalised support for existing members, who will benefit from closer assistance, and tailored services in terms of language, pricing and the personalisation of services. Among the materials IPAF aims to gradually make available is the digital card, accessible via the ePAL app, slated for release in Turkish in 2024.

"IPAF is enthusiastic about this landmark collaboration with Platformder. As a non-profit organisation, our shared mission is to promote the safe and effective use of powered access equipment. This partnership allows us to integrate with local associations, bridging the gap between global standards and local expertise," remarked Romina Vanzi, head of regional development at IPAF.

"Sharing is essential for growth. Local associations should leverage the wealth of knowledge and resources developed by IPAF through its committees. While we acknowledge our strengths, we also recognise the challenges of being present in over 80 countries. Agreements like these signify maturity, unifying efforts and messages, steering associations towards a common direction," said Peter Douglas, CEO and managing director of IPAF.

The agreement strategically positions Platformder as a pivotal player in advancing safety practices and training programmes within the Turkish powered access industry, offering local members a gateway to international best practices. ■

Brokk's SmartPower+ generation of demolition robots

Brokk has introduced its SmartPower+ generation of demolition robots, which was recently unveiled at the World of Concrete 2024. Two of the models, the Brokk 170+ and Brokk 200+, were displayed at the show.

This new range of SmartPower+ robots provides high endurance by increasing operational uptime with consistent power delivery over time, resulting in excellent performance. According to Brokk, the machines are built with rugged components, making them resistant to shock, temperature and vibrations. The new robots and control boxes are also dust and water protected to an IP65 equivalent.

In addition, the SmartPower+ generation features a 87% reduction in cables and connectors, reducing weak points while also facilitating servicing and troubleshooting, which in turn increases the lifespan of the robot.

The new, ergonomically designed control box (weighing less than 3 kg) has tilted joysticks, easier-to-reach features and faster dual charging. The SmartPower+ control box incorporates the Brokk QuickSwitch and intuitive settings for an improved operating experience.

Equipped with intelligent systems, the SmartPower+ robots elevate the operator-machine interaction. Visual status updates through incremental light indicators allow the operator to focus their attention on the demolition work at hand while simultaneously monitoring the status of the machine. A two-way communication system delivers the status back to the operator in real time, and customised features enhance the operating experience.

What's more, these demolition robots are capable of alerting the operator about any unwanted power supply or machine statuses, further contributing to higher uptime and overall reliability. Fast and simple settings, an increase in sensors, as well as the addition of individual tool presets, all contribute towards a more user-friendly and efficient operator interface. ■

Website: www.brokk.com

The Brokk 200+ (above) and Brokk 170+ (below) are two of the new SmartPower+ demolition robots.

BELOW: **The SmartPower+ robots provide high endurance by increasing operational uptime with consistent power delivery over time.**

BELOW RIGHT: **The new, ergonomically designed control box (weighing less than 3 kg) has tilted joysticks, easier-to-reach features and faster dual charging.**

Liebherr launches LTR 1150 telescopic crawler crane

Liebherr has expanded its range of telescopic crawler cranes with a 150-t model, the LTR 1150, which is positioned between the LTR 1100 and the LTR 1220. Although the new crane offers around 50% more lifting capacity than the LTR 1100, it can be transported just as easily and economically as its 100-t sibling – complete with crawler carriers with a total weight of only 60 t and a transport width of 3.5 m.

Optionally, the LTR 1150 can be transported with a width of 3.0 m – the crawler carriers are removed to allow this, which reduces the crane's transport weight to only 38 t. This variant requires a jack-up erection support consisting of four swivelling cylinders, which support the crane on the ground while the tracks are removed and the low-loader positions itself under the crane. This method has been applied to the 100-t LTR 1100. New on the LTR 1150 is an automatic support system that assists the operator; this was developed to enable faster and easier assembly and disassembly of the crawler carriers.

The two crawler carriers, each weighing 11 t, can be transported together on a standard semi-trailer with a width of 2.55 m. The integrated access steps are folded in during transport.

In terms of ballast distribution, Liebherr has also focused on ensuring economical transport worldwide. With only four lifts, the entire counterweight can be ballasted on the crane: two lifts for the two 11-t central ballasts and two for the maximum slewing platform ballast of 41 t. As with the Liebherr LTM cranes, this is attached to the slewing platform using a hydraulic ballasting device. Liebherr-AutoBallast supports the crane driver during this process. The support for the slewing platform ballast is integrated in the central ballast.

The VarioBase variable supporting base not only provides greater safety for telescopic mobile cranes, but also allows significantly higher load capacities, especially for lifts directly over the supports. The system determines the optimum load capacity in real time depending on the fixed track width and the variable rotation angle. The biggest advantages in terms of load capacity are achieved when performing lifts over the corners of the tracks, especially with reduced track widths. The maximum track width of 5.8 m, a reduced width of 5.0 m and a narrow 3.5-m track width are available.

LEFT: **The new LTR 1150 complements Liebherr's portfolio of telescopic crawler cranes. This 150-t model is positioned between the LTR 1100 and the LTR 1220.**

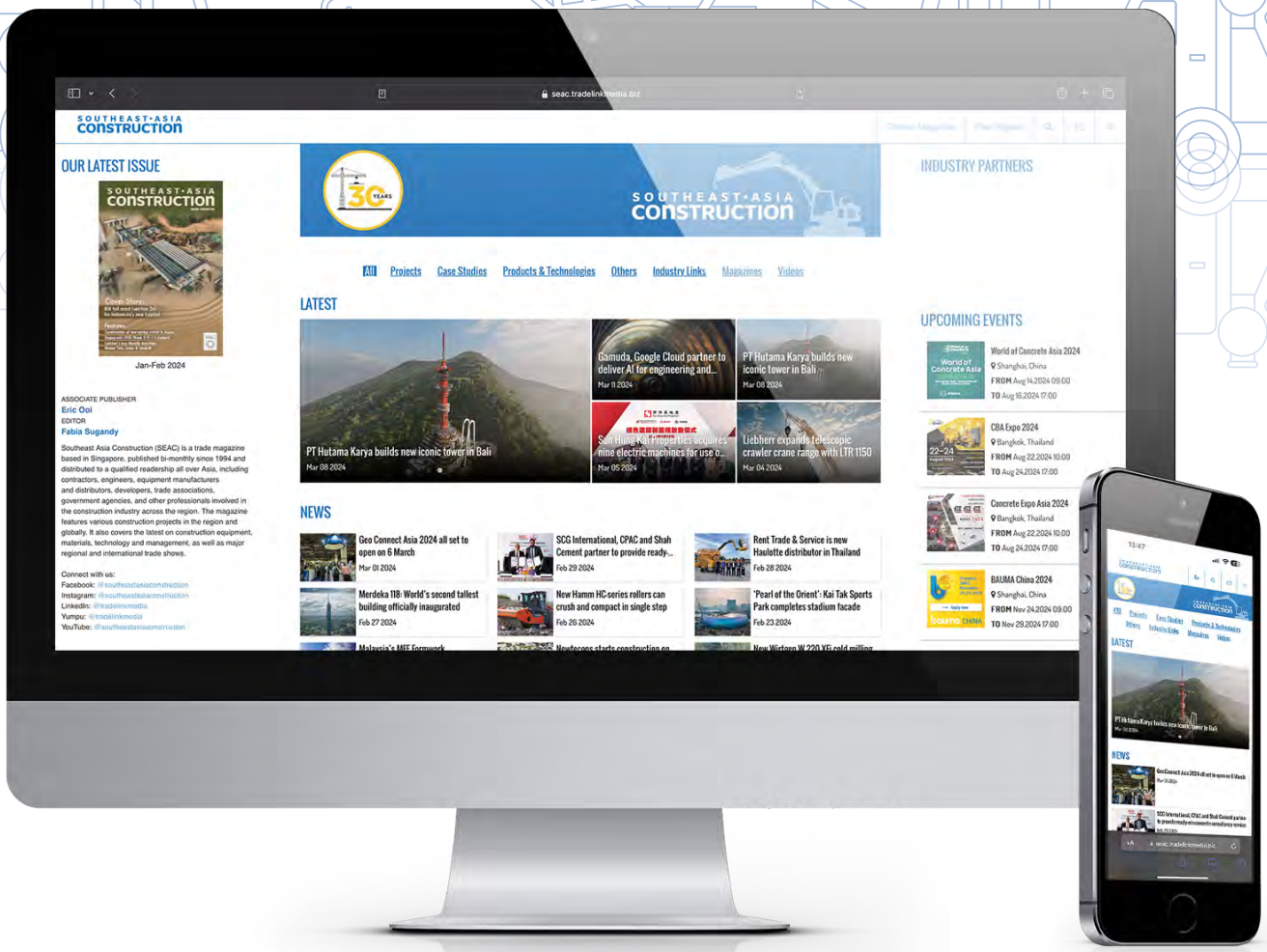
BELOW: **The LTR 1150 can be transported complete with crawler carriers on a low-loader with a total weight of only 60 t and a width of 3.5 m.**

As with the other Liebherr LTR cranes, the LTR 1150 is also equipped with load charts for slopes up to a maximum of 4° – in gradations of 0.3°, 0.7°, 1.5°, 2.5° and 4°. Liebherr has calculated 'WindSpeed Load Charts' for the new LTR 1150, which make it possible to work safely and flexibly at higher permissible wind speeds of up to 15.6 m/s – even with the full load capacity in many boom positions.

Thanks to its high performance and excellent pick & carry characteristics, the LTR 1150 is ideal for auxiliary tasks in the assembly of wind turbines. It is capable of assembling crawler cranes up to the 1,000-t class and can move components weighing over 60 t. Wind turbine components such as nacelles and hubs are in a similar weight range. Besides unloading these parts from the transport vehicles, the LTR 1150 can drive them around the construction site without any load restrictions.

In addition, the LTR 1150 is suitable for other construction projects where many lifts need to be carried out in different places, for example in the construction of industrial buildings. With the short, powerful erection jib and the additional hoist gear, the crane can move loads of up to 34.6 t into the desired position. The range of working equipment for the 52-m telescopic boom also includes a hydraulically adjustable double folding jib and telescopic boom extensions that enable hoisting heights of up to 83 m. ■

Website: www.liebherr.com



seac.tradelinkmedia.biz

Visit our website for the latest information

News In The Industry · Upcoming Exhibitions · Download Magazine Issues

ChemGrout CG-460 grout plant for hollow bars, tiebacks and ground anchors

The CG-460 High-Pressure Colloidal Series from ChemGrout is designed for the grouting of hollow bars, tiebacks and ground anchors. This versatile, skid-mounted grout plant has two high-shear, colloidal 265-l mixing tanks and a double acting, high-pressure plunger pump.

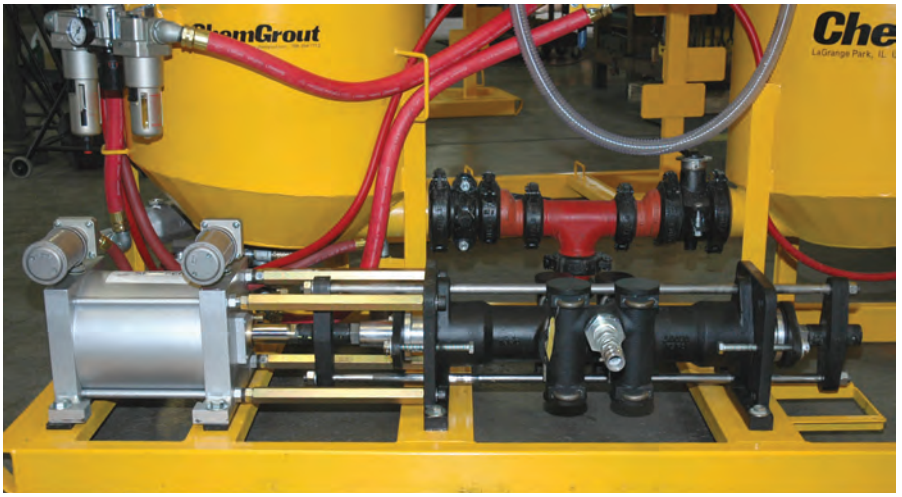
The dual colloidal mixing tanks allow for independent mixing of flushing and structural grouts. Each mixer is equipped with variable-speed, high-efficiency, high-shear disks, rotating at speeds of up to 3,000 rpm for rapid and thorough mixing. The large, 4-in butterfly-type tank outlet valves ensure full material flow into the pump suction.

The 2X8 high-pressure plunger pump delivers 57 l/min and 138 bar. It features fasteners that significantly reduce disassembly time for quick cleaning and maintenance.

The CG-460 Series is available in a variety of power options, including air, hydraulic, electric/hydraulic (25 hp electric motor), and diesel/hydraulic (49 hp Kubota engine). Both electric and diesel models require a separate skid-mounted power pack.

The plant's heavy-duty frame can withstand tough conditions on the job site. The operator controls are centrally located for efficient production, and all components are easily accessible for operating, cleaning and maintenance. ■

Website: www.chemgrout.com



TOP: **The ChemGrout CG-460 grout plant has two high-shear, colloidal 265-l mixing tanks. These allow for independent mixing of flushing and structural grouts.**

ABOVE: **The CG-460 is also equipped with a double acting, high-pressure plunger pump, which delivers 57 l/min and 138 bar.**

LEFT: **The CG-460 working on a project. The plant's heavy-duty frame can withstand tough conditions on the job site.**

‘Dream Team’: Tadano cranes perform challenging operation at cement plant in India

Indian crane hire company Steel Carriers was recently tasked with lifting a 50-m-long, 50-t steel structure for a DPC (deep pan conveyor) to a height of 60 m between two silos at a cement plant in Gujarat, India. The team had to perform the lift at a radius of up to 40 m, which clearly called for a tandem lift. To deliver the job, Steel Carriers chose its Tadano AC 1000-9 and AC 500-1 all-terrain cranes.

The job was part of a project to repair cyclone damage at the cement plant. One part of the conveyor bridge had been so badly damaged that it had to be completely replaced.

“Obviously, we could have used one of our big Tadano lattice boom crawler cranes for this job,” explained Sunil Makad, director of Steel Carriers. “But in this case, the all-terrain cranes proved to be the better option. That’s partly because we could get them to the site quicker, and partly because they were easier to position in the very limited space available at the site.”

It took Steel Carriers three days to transport both cranes and 17 support trucks from its branch in Mumbai to the jobsite in Gujarat. Once arrived, the team had the cranes set up and ready for the lift in just two days. The AC 1000-9 was set up in the HA SSL configuration using the 100-m main boom and Sideways Superlift, since there was not enough space at the site to assemble a fly jib. For the AC 500 1, it was set up in the WIHI-SSL configuration.

“The differing crane configurations and the fact that they have differing lifting capacities made the tandem lift much more challenging for the operators to execute,” said Mr Makad. The two cranes lifted the 50-t load to the required 60-m height, then rotated it by 90 degrees and set it down in the required position with surgical precision.

Despite the challenges and complexities involved, Steel Carriers needed only a five-man team for this lift: two crane operators, two assistants and one site manager. Together they completed the entire operation – from setting the cranes up, to performing the lift, to dismantling the cranes afterwards – in just 15 days.

“It just goes to show how quickly and efficiently you can get even very difficult jobs done if you have a highly skilled and experienced team and the right cranes,” said Mr Makad. “That’s why, for me, the combination of our people and Tadano cranes always makes for the absolute dream team.” ■

Website: www.tadano.com

ABOVE: **Steel Carriers has deployed its Tadano AC 1000-9 and AC 500-1 all-terrain cranes to carry out a tandem lift at a Gujarat cement plant. The job was part of a project to repair cyclone damage at the facility.**

LEFT: **Both cranes were used to lift a 50-t load to a height of 60 m between two silos, at a radius of up to 40 m. Despite the challenges involved, Steel Carriers needed only a five-man team to complete this job.**

Terratec TBMs ready for Bangkok Metro Purple Line

In December 2023, Terratec celebrated the successful factory acceptance test of a new 6.39-m-diameter earth pressure balance tunnel boring machine (EPB TBM) which will be deployed for the construction of the Bangkok Metro Purple Line (C3) in Thailand. The second factory acceptance test for another EPB TBM is scheduled to take place in April 2024.

The Bangkok Metro Purple Line, spanning a length of 23.63 km and serving the northwestern area of Bangkok from Tao Poon to Khlong Bang Phai in Nonthaburi province, is the fifth rapid transit line in the city. Its southern extension, which comprises a 14.3 km underground section and a 9.3 km elevated section, commenced construction in August 2022 and includes a total of 17 stations.

The two Terratec EPB TBMs will be utilised to construct a total tunnel length of 3.12 km, connecting Phan Fa Station to Memorial Bridge Station across two metro stations.

The project encounters several challenges, said Terratec, particularly in navigating the TBMs through the historic area of the old Bangkok capital, which includes landmarks like the Grand Palace and old temple. Another significant aspect is the interchange station at Sam Yod, connecting the Purple Line with the existing Blue Line MRT.

The Purple Line will ingeniously pass beneath the operational Blue Line tunnels. Additionally, the TBMs will undergo an impressive feat by driving under the Chao Phraya River for a stretch of 150 m. The construction process necessitates meticulous planning and management to ensure minimal disruptions to the surrounding infrastructure and environment.

According to Terratec, the geological conditions along the tunnel alignments will encompass soft clay, stiff clay, dense clayey and silty sand. To accommodate these conditions, the TBM's soft ground cutterhead is equipped with a flat spoke type with copy cutters.

During the construction process, traditionally reinforced, 275 mm thick by 1,400 m wide, Universal reinforced concrete segments (5 + 1) will be installed as the machine progresses. Muck removal, segment transport, and the supply of consumables will be facilitated by rail-bound equipment using battery locomotives.

Terratec TBMs feature the Enzan laser guidance system, which allows for remote access to the complete tunnelling system, thus ensuring accurate control over the TBM operations. With this Enzan system, precise navigation of the tunnels is guaranteed to improve the efficiency and effectiveness of tunnelling projects. ■

Website: www.terratec.co

Two new Terratec EPB TBMs will take part in the Bangkok Metro Purple Line (C3) project in Thailand. The machines will be used to build a total tunnel length of 3.12 km.

Terratec TBMs feature the Enzan laser guidance system, which allows for remote access to the complete tunnelling system, thus ensuring accurate control over the TBM operations.

HAMM COMPACTORS

New HD CompactLine and HC-series with vibration crusher drum

HD CompactLine

Hamm has updated its product range in the compact roller segment with new models between 1.5 and 4.5 t for markets in Southeast Asia, Africa and the Middle East. The machines are powered by a Kubota engine that complies with Tier 3 emission standards.

These models include the HD 18 VV, HD 20 VV, HD 30 VV, HD 30 VT, HD 35 VV, HD 35 VT, HD 50 VV and HD 50 VT, with drum widths ranging from 0.8 to 1.38 m. All technical features have been tailored to meet the requirements of the respective markets.

The 'VV' version consists of rollers with two vibration drums, while those with 'VT' have one vibration drum and one set of tyres. Hamm also offers the HD 35 VO and HD 50 VO models, which are available with a vibration and an oscillation drum.

Thanks to the intelligent design of the engine hood, the area in front of the machine is highly visible. Plus, Hamm's typical 'wasp waist' design provides the operator with an unobstructed view of the drums and immediate surroundings.

ABOVE: **With drum widths ranging from 0.80 to 1.38 m, the HD CompactLine series covers various models targeted at Southeast Asian, African and Middle Eastern markets.**

BELOW: **The HD 30 and HD 35 are available in VV and VT versions. Additionally, the HD 35 VO offers a model with vibration and oscillation drums, featuring an operating weight of more than 2.7 t.**

OPPOSITE: **The HD 50 VV, HD 50 VT and HD 50 VO models are the heaviest rollers in this series with operating weights of up to 4.5 t.**

The HD 18 and HD 20 rollers have operating weights of between 1,590 and 1,680 kg, making them ideal for small jobsites.

The three-point articulation is one of the key factors for compaction quality. It ensures not only a uniform weight distribution over both axles, but also enables a very small turning radius along with excellent driving comfort. The low centre of gravity in combination with this three-point articulation makes the HD CompactLine rollers resistant to tipping, even in tight corners.

According to Hamm, the HD CompactLine rollers feature a high static linear load and generate very large centrifugal forces, contributing to a high compaction power. The machines' large-diameter drums also help to actively prevent the formation of fissures and bulges while promoting high compaction quality.

The HD 18 and HD 20 have a 'clear side', meaning that the drums are suspended only on one side in a way that no component protrudes beyond the working width on either side. As a result, they can compact right alongside walls and other boundaries. The drums on the HD 30 and HD 50 can be offset by up to 50 mm. All models come with foldable scrapers as standard.

The water sprinkling system is another highlight. In the HD CompactLine series, the water undergoes triple filtration with a self-cleaning water filter, a filter on the filler neck and filters before the sprinkling system, so the nozzles and the spray bars are always ready to use. The volume of sprinkled water can be adjusted during compaction via a button on the dashboard, and the operator can also activate continuous water sprinkling with the foot switch.

Furthermore, the HD CompactLine rollers are easy to operate, thanks to their self-explanatory operation and clear display of all important operating data using unambiguous symbols. The HD 18, HD 20, HD 30 and HD 35 can be easily loaded onto small transport vehicles using a central lifting point on the grab handle.

The new rollers are easy to maintain as well. For example, only one single manual operation is needed to completely drain the water tanks in the rear section, as the central water outlet is positioned at the lowest point on the machine. Other daily checks can also be swiftly dealt with since all maintenance points are placed on one side of the machine under the wide-opening engine hood. They are readily accessible without any tools.

HC-series with vibration crusher drum

The new Hamm HC 250 C VC (Tier 3) and HC 250i C VC (EU Stage V/EPA Tier 4f) compactors are able to crush and compact mixed soils, stones such as basalt and granite, and other construction

materials with comparable pressure resistance in a single step. The Tier 3 model will be available later this year.

Featuring Deutz engines and reinforced components around the front frame, three-point articulation and the underbody, the new compactors are well-equipped for tough applications. The initial 'VC' in the model name indicates vibration crusher, while the separate 'C' symbolises a reinforced drum drive, which is capable of inclines of up to 60%.

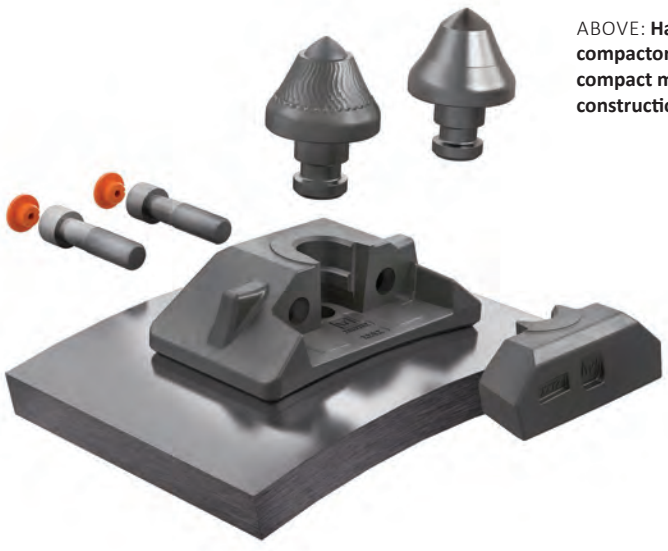
These 25-t machines come with heavy-duty tyres for rocky terrain and the Easy Drive operating concept. In the operator cab, the seat has an extended backrest for greater comfort and an air-sprung seat can be selected as an option.

A highlight of the new VC compactors is the newly designed tool holder system. This is compatible with round-shank cutting tools for stone, as well as wear-resistant heavy-duty cutting tools with carbide tips and hard facing for abrasive stone or hard stone.

The configuration of the tool holder system and the way the tool inserts attach have been designed to ensure assembly and removal are quick and easy with no need for specialist tools, thus keeping maintenance and servicing costs low. The existing machines (H 25i VC/3625 VC) can also be fitted with the new tool holder system by switching the drum. Transport rings are available for easy transport.

The new VC compactors are suitable for a wide range of applications. Besides the customary crushing and compacting of geological material to create a stable substrate, the machines are also deployed to level rubble in landfill sites. In addition, they can be used for road planning works in tunnel building and surface mining sectors, or to pre-crush and loosen stone. ■

Website: www.wirtgen.com



ABOVE: **Hamm offers new HC-series compactors that can crush and compact mixed soils, stones and other construction materials in a single step.**

LEFT: **The new HC-series compactors have a newly designed tool holder system. This is compatible with round-shank cutting tools for stone, as well as wear-resistant heavy-duty cutting tools with carbide tips and hard facing for abrasive stone or hard stone.**

VERMEER HG400 HORIZONTAL GRINDER

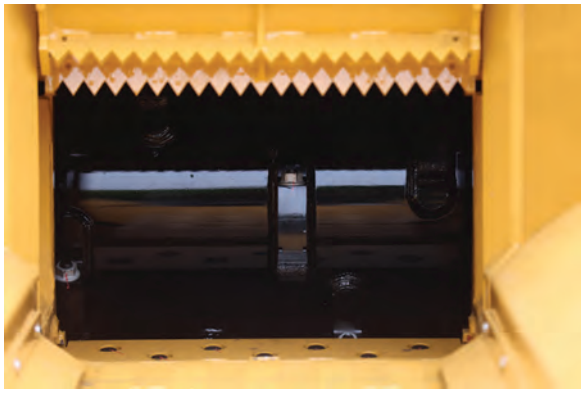
Vermeer has announced the launch of the HG400 horizontal grinder for customers in international emerging markets. It will be available in select countries across Latin America, the Middle East and Africa, Asia Pacific, and certain European nations.

Designed as an entry-level, small horizontal grinder, the HG400 offers simplicity, efficiency and reliability. The machine can handle a variety of materials including compost, pallets, construction debris, logs and green waste, making it suitable for industries such as mulching and recycling.

"This compact yet powerful machine embodies our longstanding tradition of not just producing machines, but providing practical solutions that empower our customers," said Colm Rafferty, vice president of developing markets at Vermeer. "We've received extremely positive feedback from our pilot customers. In fact, an early adopter from the mulch production industry reported

ABOVE AND LEFT: **The HG400 features the Vermeer Plus+1 control system, with four different speed options for more precise feed control. An optional wireless remote control is available for enhanced operating efficiency.**

FAR LEFT AND BELOW: **Designed as an entry-level, small horizontal grinder, the HG400 offers simplicity, efficiency and reliability. The machine is available in select countries across Latin America, the Middle East and Africa, Asia Pacific, and certain European nations.**



ABOVE AND LEFT: **The HG400 can handle various materials, such as construction debris, compost, pallets, logs and green waste, making it ideal for industries like mulching and recycling.**

BELOW: **The machine is powered by a 97-kW Cummins Tier 3 engine.**

that the HG400 has transformed their operations."

The HG400 is powered by a 97-kW Cummins Tier 3 engine and is available in both trailer and stationary configurations. The machine is equipped with a 2.1-m manually folding discharge conveyor for easy transportation. Furthermore, the HG400's convenient dual-screen side-load design allows for quick and efficient product sizing adjustments.

In addition, the HG400 has wide flared walls and a lowerable infeed tailgate to accommodate bulky and lengthy materials. Its steel conveyor, fitted with two drive rollers, effectively guides materials into the grinder. This innovative design enhances the machine's versatility, enabling it to handle challenging materials with ease.

The HG400 also features the Vermeer Plus+1 control system, with four different speed options for more precise feed control. An optional wireless remote control is available for enhanced operating efficiency. ■

Website: www.vermeersea.com

SUBSCRIPTION FORM

Email your order to:
yvonne.ooi@tradelinkmedia.com.sg

PRINT

Please (√) tick in the boxes.

☐ Southeast Asia Building
Since 1974

☐ Southeast Asia Construction
Since 1994

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

Singapore	○ SGD$70.00
Malaysia / Brunei	○ SGD$120.00
Asia	○ SGD$180.00
America, Europe	○ SGD$220.00
Japan, Australia, New Zealand	○ SGD$220.00
Middle East	○ SGD$220.00

PRINT

Singapore Interior Design Directory (SIDD)
Since 2023

DIGITAL

Bathroom + Kitchen Today
Since 2001

Lighting Today
Since 2002

Security Solutions Today
Since 1992

Bathroom + Kitchen Today
is available on digital platform.

http://bkt.tradelinkmedia.biz

Lighting Today
is available on digital platform.
To download free PDF copy, please visit:
http://lt.tradelinkmedia.biz

Security Solutions Today
is available on digital platform.
To download free PDF copy, please visit:
http://sst.tradelinkmedia.biz

Scan QR code to order

** Only for delivery within Singapore.*

Personal Particulars

Name: _____

Position: _____

Company: _____

Address: _____

_____

Tel: _____ 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

☐ Bank transfer payable to:
Trade Link Media Pte Ltd
Bank Details

Account Name:	Trade Link Media Pte Ltd
Account Number:	033-016888-8
Name of Beneficiary Bank:	DBS Bank
Address of Beneficiary Bank:	12 Marina Boulevard, DBS Asia Central, Marina Bay Financial Centre Tower 3, Singapore 018982
Country:	Singapore
SWIFT Address/Code:	DBSSSGSG

☐ PAYNOW to:
Trade Link Media Pte Ltd

PAYNOW option is applicable for **Singapore companies only**.

Company Registration Number: 199204277K

* GST inclusive (GST Reg. No: M2-0108708-2)

Indonesian contractor PT Hutama Karya (Persero) has adopted various digital technologies to build the iconic Turyapada Tower in Bali, Indonesia. With efficiencies gained in the team's planning process, it was able to reduce expected carbon emissions by nearly 14%.

TOWERING OVER *Bali*

Bali is Indonesia's crown gem and a highly popular tourist destination. In some areas, the island is significantly developed, with luxury hotels lining its southernmost shores. However, its northern reaches are quieter and less trafficked by tourists – as well as have limited access to internet and cell communications.

To boost tourism on the north side of the island, Bali's government commissioned PT Hutama Karya (Persero), a state-owned contractor charged with promoting Indonesian infrastructure, to build a major telecommunications tower in the Buleleng district. When completed, the 142-m Turyapada Tower will provide cell signal across much of Bali, including the Jembrana and Karangasem districts, as well as Buleleng. The tower's signal range will reach 4.6 sq km.

In addition to enabling cell communications, digital television broadcasts and internet access, Turyapada Tower will be a new

high-rise tourism destination. Its interior will include a planetarium, a skywalk, a rotating restaurant and a convention space. A museum that showcases Balinese technology and culture from various historical eras will also be a partner.

Positioned prominently atop a hill at 1,562 m above sea level, Hutama Karya believes that the Turyapada Tower's visibility and striking design will make it an iconic, world-class tower, on the level of the Eiffel Tower, Tokyo Tower, or Macau Tower.

"Turyapada Tower, in our opinion, will be a new destination for tourism, creating job opportunities, promoting local business and attracting investment in North Bali," said Robby Kurniawan, Hutama Karya's building information modelling (BIM) manager who is overseeing the project.

Harnessing height

Choosing to build Turyapada Tower at a substantial elevation in Pegayaman Village, a highland area of Buleleng, had two major benefits: first, to maximise the reach of communication signals emitting from the tower, and second, to make the tower a more visible landmark. However, the site also came with its challenges.

"We faced steady rain and extreme weather changes that had the potential to delay construction progress," said Mr Kurniawan. In this area, fog frequently rolls in and disappears without warning, and winds sweep through at velocities of up to 35 km an hour. Additionally, the steep mountain site only had narrow road access, making it difficult to mobilise heavy equipment and materials.

To mitigate these challenges during the initial planning phases, Hutama Karya used drones to map the area. The team processed the data collected through unmanned aircraft systems (UAS) with Bentley's reality and spatial monitoring software. This information was then embedded into Hutama Karya's existing GIS dashboard so that project managers could review the project in real time, whether they were present on site or working remotely.

As construction commenced, Hutama Karya also leaned on Bentley's infrastructure construction management software to digitise project processes. Bentley's 4D modelling solution facilitated the modelling of multiple interactive simulations of different work method scenarios, offering a visual representation of how each option could impact the project schedule depending on variables like weather changes. The software also has precise measurement capabilities for assessing the slope and contour of mountainous terrain, which enabled the team to avoid slippage and accidents while using heavy equipment.

Hutama Karya saw significant benefits, including improved project outcomes, reduced cost and enhanced collaboration across disciplines – all while creating sustainable and resilient infrastructure. "The engineering team's plan optimised the project and gained us an efficiency of 61 days and helped us avoid potential delays, saving around US$82,000," said Adi Zulhadi, a site engineering manager for the project.

'Tri Hita Karana'

While creating a tourism draw in Bali, Hutama Karya needed to be careful to adhere to 'Tri Hita Karana,' the Balinese spiritual philosophy of maintaining harmony among God, people and nature. This philosophy guided the project's environmental priorities as the team worked to minimise ecological impacts and avoid disrupting sacred Balinese sites.

With efficiencies gained in Hutama Karya's planning process, the team was able to reduce expected carbon emissions by nearly 14%. This achievement also aligned with Indonesia's current sustainable development goals, a set of targets for the country to adhere to as it undergoes the most rapid growth and development of any time in its history. These goals champion green energy promotion and environmental protection alongside efforts to add good jobs and advanced infrastructure to Indonesia – objectives that Mr Kurniawan believes the Turyapada Tower embodies.

"This project has the potential to make a positive impact," said Mr Kurniawan. "The tower supports telecommunication by evenly distributing broadcasts in North Bali. Thus, the development of Turyapada Tower can support the economic growth as well as improving sustainability and tourism in North Bali." ■

Website: www.bentley.com

Constant adaptation is key to success in growing Indonesian construction industry: Robby Kurniawan

Over the past 10 years working with Hutama Karya, BIM manager Robby Kurniawan has overseen building information modelling activities on a range of projects, from modern office buildings in Jakarta to an airport outside Java, Indonesia. Throughout all of this work, he has leaned on innovative digital technologies to improve workflows and is constantly on the lookout for new digital skills to add to his arsenal.

"With the experience of six years in the field and four years working from the office, I have perfected the knowledge that got me here today," said Mr Kurniawan. "But still, we should keep learning."

Construction is a booming industry in Mr Kurniawan's rapidly developing home country of Indonesia, which, in the past decade, has made a massive US$4.197 trillion commitment to invest in 245 critical national infrastructure projects, from roads to dams to airports.

To keep up the pace of developing these essential projects, Mr Kurniawan believes the added efficiency and adaptive problem-solving capabilities provided by digital assets, such as UAS mapping technology and virtual reality modelling, are crucial. For instance, during Hutama Karya's recent work on North Bali's Turyapada Tower, Mr Kurniawan's team employed drones outfitted with 3D scanning capabilities during the design phase. Therefore, the team used less heavy equipment on the site's steep and volatile terrain, saving time in the process.

Mr Kurniawan keeps this focus on innovation at the fore in guest lectures to civil engineering students and construction professionals. "I provide them with knowledge about the pace of change in the construction industry and the importance of technological skills," he said. "[I let them know] that they will have to adapt in the future."

Mr Kurniawan observes that the construction industry is growing not just in Indonesia, but in other developing countries across the globe. This growth is also true in more developed countries that are in the process of replacing ageing infrastructure with new, greener alternatives. As this happens, he says engineers with the most advanced digital experience will be in high demand.

"The need for workers that are aware of digitalisation needs to be increased. If you have these skills, you'll get a place in the construction global market – so as a student, you should continue to learn and explore many new things," he said. ■

Image: PT Hutama Karya (Persero)

The bridge pylons on the western banks of the Batang Lupar River to the southeast of Kuching city.

TRANSFORMING *Sarawak*

A flexible formwork solution helps 'shape' Batang Lupar Bridge No. 2

Located in northern Borneo, Malaysia's largest state of Sarawak is in transformation. It is actively pursuing the industrialisation of its agricultural sector, thus supporting farmers and rural communities, in line with the government's initiatives to improve productivity and strengthen supply chains.

As part of this strategy, the region also requires infrastructure including the development of bridges and highways to traverse its numerous rivers. Among the latest projects is the Batang Lupar Bridge, which separates Simanggang, the capital of Sri Aman, from its neighbouring agricultural communities of Jalan Utama Kedua and Jalan Pasisir.

Doka's Ringlock and Automatic Cimbing Formwork SKE 100 plus systems in action as progress continues on the western pylons.

Doka's Automatic Climbing Formwork SKE 100 plus has already saved months from the project schedule.

Working with the main contractor, Naim Gamuda (NAGA) JV Sdn Bhd, Doka Malaysia was engaged to provide a flexible formwork solution for the cable-stayed Batang Lupar Bridge No. 2, in particular to cater to the unusual shape of the pylons. Initially awarded in 2019, the bridge was placed on a one-year hiatus during the pandemic, meaning Doka's solution also needed to play catch up without sacrificing safety or increasing cost.

Flexible formwork solution

For this project, Doka's formwork solution will need to deliver four 145.5-m-high slopping pylons with two crossbeams at 16.87 and 94.15 m respectively, and a two-sided cast-in-situ deck slab at 20.87 m in height. Using an Automatic Climbing Formwork SKE 100 plus for the casting work, Load-bearing Tower d3, Load-bearing Tower Staxo 40 and a Ringlock Shoring System were used to cast the crossbeams and deck slab.

The Ringlock system was also used to temporarily access the Automatic Climbing Formwork SKE 100 plus platform at height. Based on the project's remote location, the combination of Load-bearing Tower d3, Load-bearing Tower Staxo 40 and Ringlock resulted in a lower investment and transportation cost for the client, while Ringlock's multifunctional features enabled its dual-purpose use as both shoring and access scaffolding.

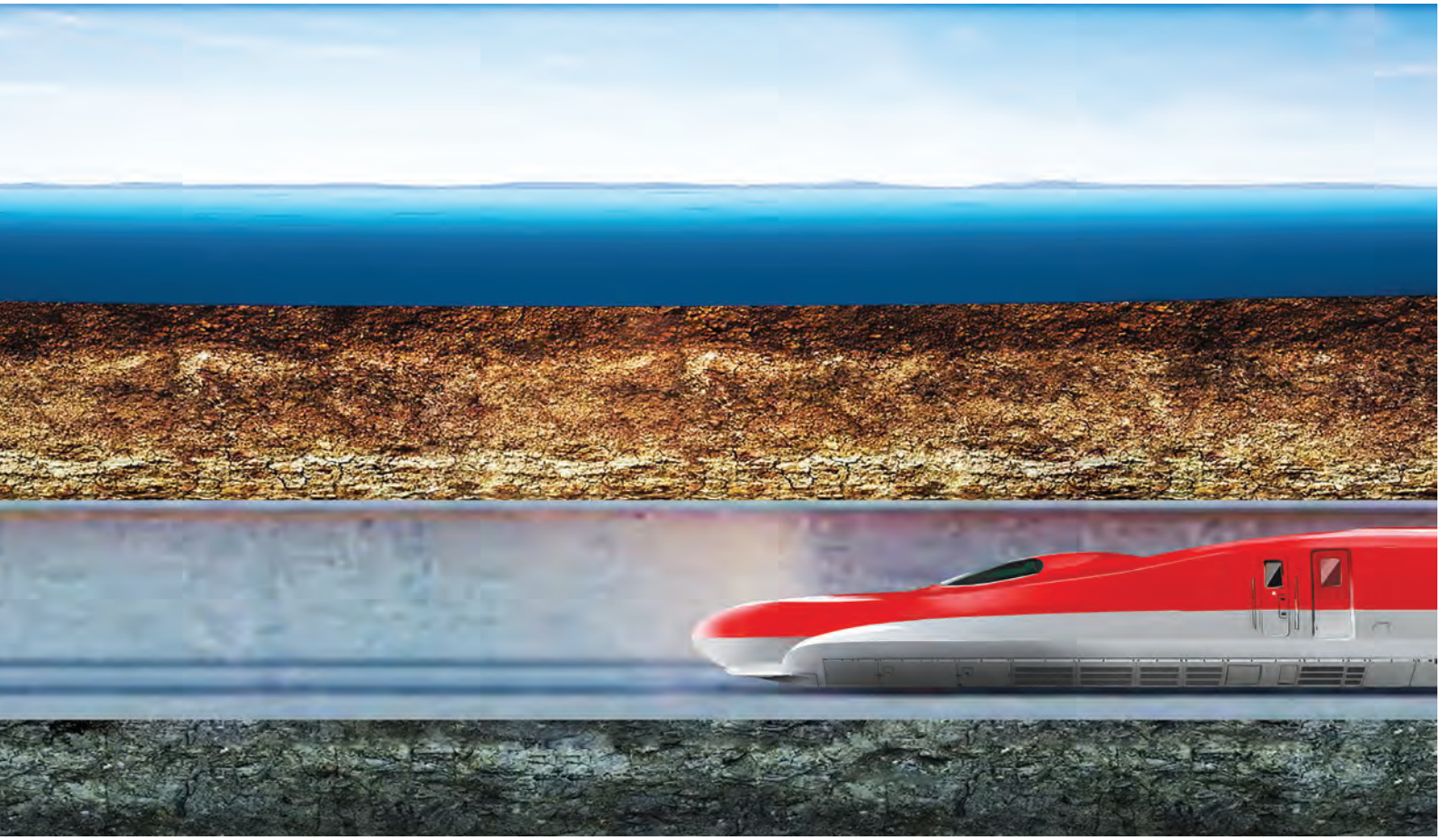
Arguably, the most essential feature of the project was the Automatic Climbing Formwork SKE 100 plus system's flexibility in shaping the pylons that gently taper until 94.15 m. Thanks to this craneless system, which also enabled the client to temporarily store materials on it to increase site efficiency, the project timeframe was reduced by two months, with the contractor optimistic that more time can be saved with an additional Automatic Climbing Formwork SKE 100 plus system commissioned for the remaining pylons on the other side of the river.

The project is currently in full swing and will likely be delivered within a year. Speaking on behalf of the main contractor, project manager Yii Hing commented, "Doka's reputation for delivering fast and efficient formwork solutions is well known in the region, and its work on the Batang Lupar Bridge No. 2 has been no exception. From the physical products and systems to the engineering and safety support on site, the project has progressed ahead of schedule with complete consideration of our assigned budgets." ■

Website: www.doka.com/ea/index

All images: Doka

UNDER *The Sea*



When completed, India's first undersea rail tunnel will feature approximately 7 km long, which forms part of a 21-km tunnel for the Mumbai-Ahmedabad High Speed Rail (MAHSR) corridor.

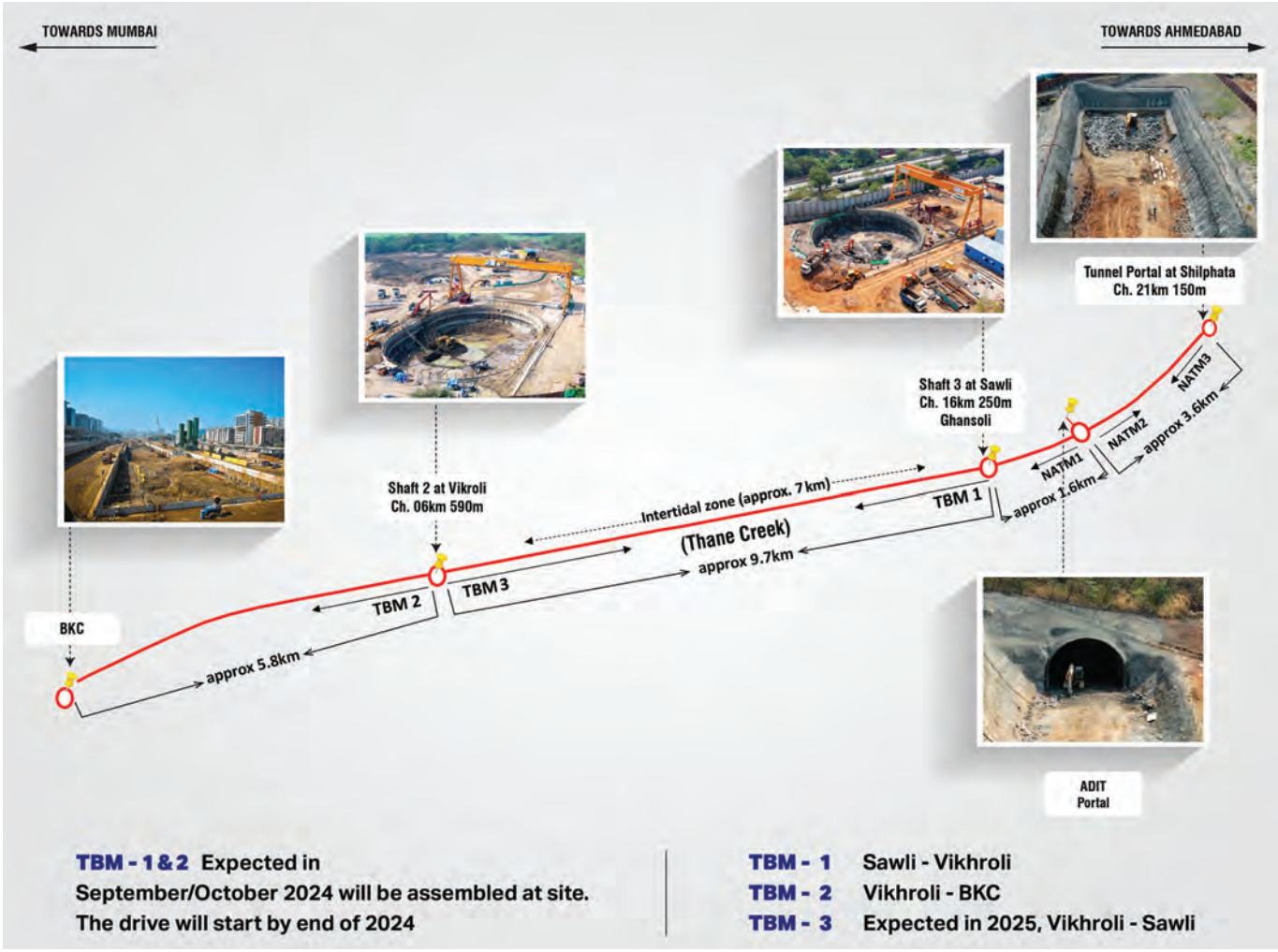
Work is currently underway on a 21-km-long tunnel in the state of Maharashtra, India, which includes the country's first undersea rail tunnel featuring approximately 7 km long, as part of the Mumbai-Ahmedabad High Speed Rail (MAHSR) corridor.

The tunnel runs between the underground station at Bandra Kurla Complex (BKC) and Shilphata, with the 7-km undersea tunnel at Thane Creek. According to the National High Speed Rail Corporation Limited (NHSRCL), three tunnel boring machines (TBMs) will be deployed to build about 16 km of the tunnel portion and the remaining 5 km will be adopting the New Austrian Tunnelling Method (NATM).

The construction work is taking place at several locations:
1.) Shaft 1 at BKC station construction site in Mumbai (shaft depth of 36 m): The secant piling work has been completed, while the excavation work is ongoing.
2.) Shaft 2 in Vikhroli (shaft depth of 56 m): The piling work has been completed, while the excavation work is ongoing. This shaft

ABOVE: **The shaft in Vikhroli has a depth of 56 m. It will be used to lower two tunnel boring machines (TBMs) in different directions, one towards Bandra Kurla Complex (BKC) and the other towards Ghansoli.**

BELOW: **Located in the state of Maharashtra, the 21-km tunnel runs between the underground station at BKC and Shilphata, with the 7-km undersea tunnel at Thane Creek.**



will be used to lower two TBMs in different directions, one towards BKC and the other towards Ghansoli.

3.) Shaft 3 in Sawli, near Ghansoli (shaft depth of 39 m): The excavation work is ongoing.

4.) Shilphata: This is the NATM end of the tunnel. The portal work has already begun at the site.

5.) ADIT (Additionally Driven Intermediate Tunnel) Portal: This portal will facilitate additional access to the underground/ undersea tunnel for faster construction progress.

The shafts are being built in areas with a high population density and adjacent utilities, such as various pipelines, electrical installation and other infrastructure projects like metro systems, highways, etc. Thus the construction work has to be carried out with minimal disruption to the public.

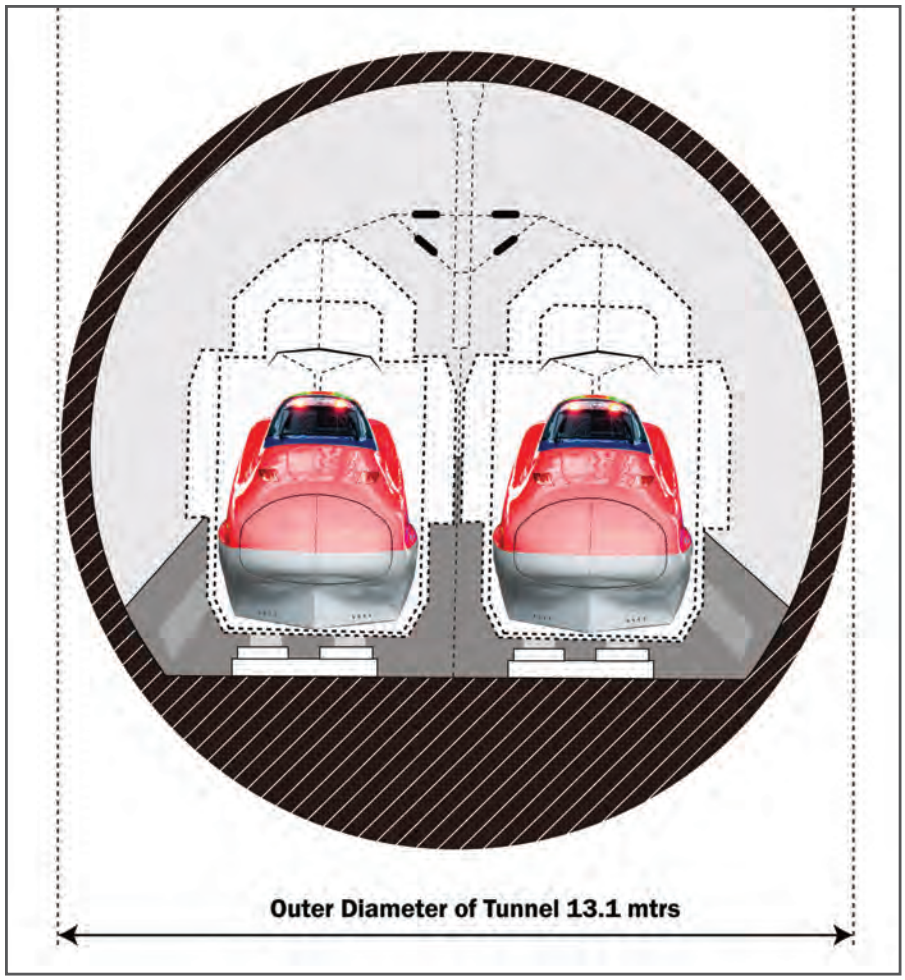
RIGHT: **The ADIT (Additionally Driven Intermediate Tunnel) Portal will facilitate additional access to the underground/undersea tunnel for faster construction progress.**

BELOW: **The shaft in Sawli, near Ghansoli, has a depth of 39 m.**

To build the 21-km tunnel, which has a diameter of 13.1 m, TBMs with a 13.6-m-diameter cutterhead will be used, said NHSRCL. This single-tube tunnel will accommodate twin tracks for both up and down track. A total of 39 equipment rooms will also be constructed, as part of the package.

The tunnel will be about 25- to 57-m-deep from the ground level and the deepest construction point will be 114 m below the Parsik hill.

The three shafts at BKC (under package C1), Vikhroli and Sawli at approximate depths of 36, 56 and 39 m respectively will facilitate the construction of the tunnel with TBMs. An inclined shaft of 42 m at Ghansoli and the tunnel portal at Shilphata will facilitate the construction of the approximately 5-km tunnel through the NATM method. ■



TOP: **Three TBMs will be deployed to build about 16 km of the tunnel portion and the remaining 5 km will be through the New Austrian Tunnelling Method (NATM). The Shilphata portal (pictured) is the NATM end of the tunnel.**

RIGHT: **The tunnel will be about 25- to 57-m-deep from the ground level, with a diameter of 13.1 m. It will accommodate twin tracks.**

All images: National High Speed Rail Corporation Limited

The new paediatric wing at the Haukeland University Hospital was built using a variety of digital tools. This facility has become the first 'paperless' hospital project in Norway, and was completed with a 30% reduction in construction costs compared to other hospital projects in the country.

REALISING TRUE DIGITAL CONSTRUCTION IN NORWAY

The recently completed paediatric wing at the Haukeland University Hospital – located in the city of Bergen, Norway – is at the forefront of digital construction in the Nordic region. Using a variety of digital tools centred around the digital collaboration platform StreamBIM, the project has achieved what in Norway is referred to as 'drawingless construction'. This has garnered a lot of attention, and the hospital has seen an increasing number of visits by interested contractors and consultants, from as far away as Japan.

Helse Bergen, the hospital owner, had a stated intention that the 50,000 sq m, US$330 million construction project would become the first 'paperless' hospital project in Norway, according to Tord Monsen, project manager for BIM and digital interaction at Helse Bergen. It was a target that was not just successfully met, but ended up being a financially sound choice as well.

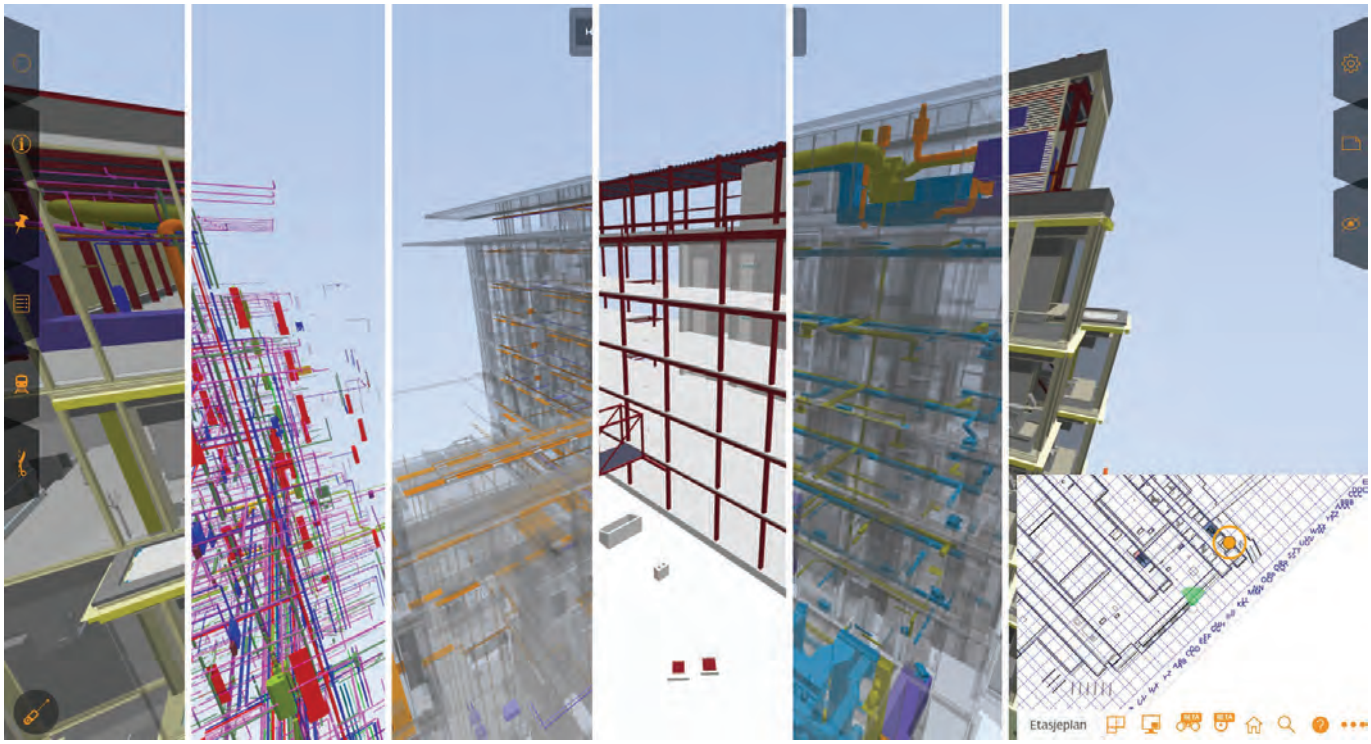
Higher efficiency and lower costs

"Early on in the project we, as the building owner, made it a requirement that all stakeholders were to use dRofus 2.0 and StreamBIM," said Mr Monsen. "In close cooperation with various consultants and suppliers, we found these software solutions the most suitable for a 'paperless', digital construction site."

A BIM and data-centric collaboration platform for the construction industry, StreamBIM is developed by Norwegian

ABOVE AND LEFT: **StreamBIM, a BIM and data-centric collaboration platform from Norwegian company Rendra AS, was chosen for the project. The platform can be accessed through computer browsers or Android/ iOS apps on tablets and mobile devices.**

BELOW: **StreamBIM helps streamline the process of managing BIM data and facilitating collaboration among stakeholders involved in construction projects.**

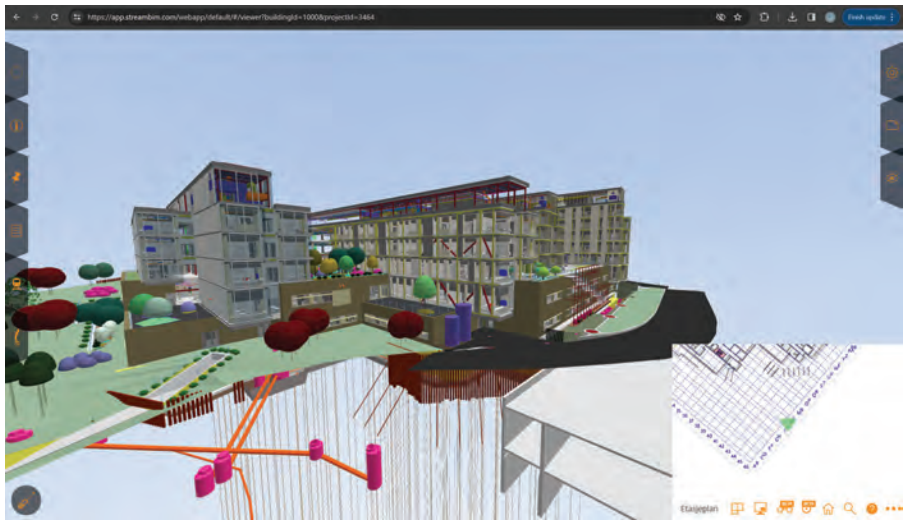


company Rendra AS, which is part of JDM Technology Group. The platform can be accessed through computer browsers or Android/iOS apps on tablets and mobile devices. "The core technology of StreamBIM is how we stream heavy BIM and point cloud data to ordinary handheld devices and make them available on the construction site," explained Jostein Edvardsen, head of StreamBIM's Tokyo office.

In addition to the many site tools in StreamBIM, the project has benefited from having integrations to various other parts of the Bergen Health Corporation's CDE (common data environment). One of these is dRofus, a database and BIM collaboration platform developed by Norwegian company dRofus AS, which is part of Nemetchek Group. The database – connected to StreamBIM through API accessible in an iFrame – is central, serving as the single source of truth for the project. It contains all relevant information and is connected to every single object and space by a unique ID. With this, Helse Bergen was able to streamline the design process and maintain control in a complex project.

Mr Monsen revealed that the adoption of digital tools has resulted in further benefits. It saved time and construction costs, reduced errors, and created a solid foundation for facility management over the entire lifespan of the building.

"From the start, we wanted to explore how the digital processes shape how we work in practice, and how we as an organisation can benefit from it. A key point of this was that we would end up with a digital twin of the building that we could



StreamBIM serves as a central hub for project teams to access, view, and share BIM and point clouds, documents, and project-related information in real-time.

The Japanese delegation had an opportunity to see the digital tools in action during a tour of the project.

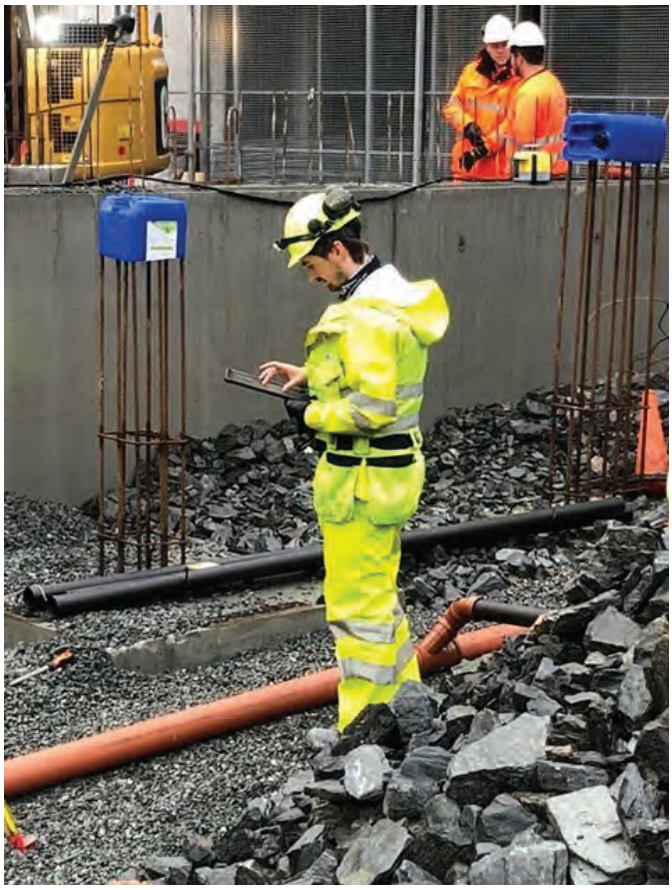
StreamBIM and dRofus

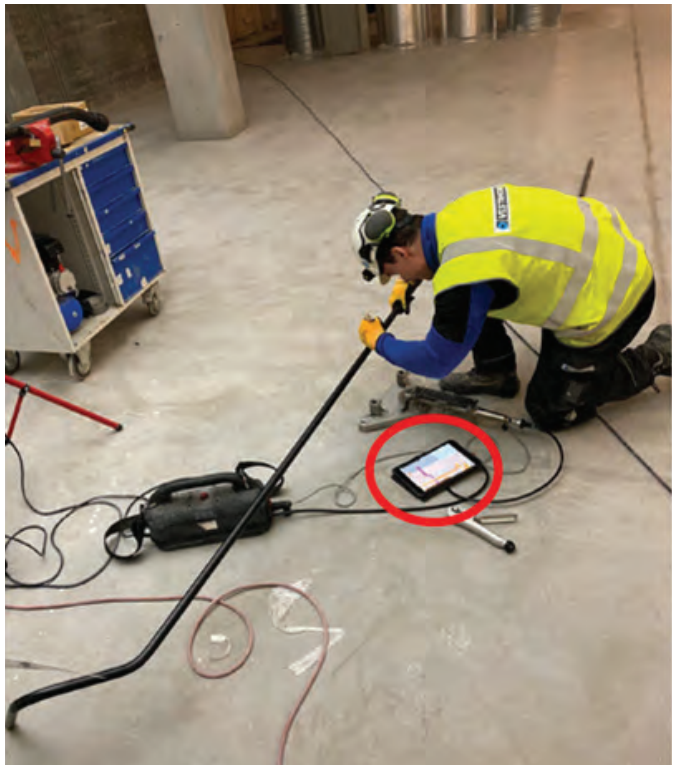
StreamBIM is a cloud-based platform that helps streamline the process of managing BIM data and facilitating collaboration among stakeholders involved in construction projects. The platform serves as a central hub for project teams to access, view, and share BIM and point clouds, documents, and project-related information in real-time. Available in the Asia Pacific market, StreamBIM has several main features:

- **BIM model viewing and navigation:** users can access the 3D model on handheld devices and get measurements and project information directly from the source.
- **Document management:** users can view all documents they have access to on site.
- **Search and structure BIM data:** users can use queries to find any data in the model to add information (e.g. checklists, manufacturing info, etc.) or export the information sets.
- **Issue tracking and resolution:** users can identify and document and track issues, conflicts and coordination issues in-app.
- **Project progress monitoring:** users can document the work, export reports to PDF and see real-time progress on dashboards and the TAKT planning module.
- **Integration with third-party software platforms:** ACC, Sharepoint, Box, PowerBI, etc.

dRofus is a planning and data management platform that enables users to plan, create and manage building data from all stakeholders and BIM objects throughout the building lifecycle. Available in the Asia Pacific market, dRofus has several main features:

- **Data management:** users can make a centralised repository project data, requirements, room data, equipment, etc.
- **Collaboration:** users can update and share project data in real-time with all stakeholders.
- **BIM support:** users can integrate data from dRofus into BIM models in other software platforms and vice versa.
- **Project planning:** users can create a structured approach to data organisation to ensure that project requirements are met. ■





ABOVE AND LEFT: **Vestrheim AS delivered and assembled the sanitary systems, technical rooms, cooling and heating systems, sprinklers and various specialist piping for the project. The company also adopted digital solutions to complete the job.**

use actively in facility management, and this I think we definitely achieved. Helse Bergen will continue to make digital construction a premise for all our future projects."

The new building, which was handed over to Helse Bergen on 23 August 2023, is said to have been completed with a 30% reduction in construction costs compared to other hospital projects in Norway. The BIM model and data accrued in the design and construction phases were carried over into facility management, where StreamBIM is now the FM platform – with API integrations to dRofus and building automation systems.

Mr Monsen shared three pieces of advice for other building owners who want to adopt a fully digital process in their projects. "First, make delivering a complete and scrutinously controlled BIM model a consistent and universal requirement for all consultants," he said.

"Second, make all requirements part of the contracts. For instance, what data the consultants must deliver or the role of the contractor(s), and make extensive digital interaction a prerequisite for participation. Lastly, make a BIM manual that describes the model delivery requirements in detail, define what the contractor(s) can expect from it, and ensure that it fills the needs and requirements of the building owner."

'Must not get in the way of work'

Vestrheim AS is a regional plumbing company that delivered and assembled the sanitary systems, technical rooms, cooling and heating systems, sprinklers and various specialist piping for the hospital.

"Having a top-notch digital site tool that is easy to use is paramount. The tool (or its limitations) must never get in the way of the actual work," said Christian Svendal, one of Vestrheim's key people at the Bergen hospital project.

"Working with a 3D model that is easy to access increases the workers' understanding of both the context of the job and the tasks that they have on any given day. Using the in-app measuring tool also allowed us to get the exact information we required, directly from the model. It is much more precise and efficient than using measurements on a paper drawing."

In this project, Mr Svendal managed to recreate a much more detailed version of the consultant's BIM model. Effectively a 100% accurate model containing all parts, this allowed it to be used as a basis for doing on-site pre-assembly of pipes using only StreamBIM, as well as a basis for secondary tasks such as ordering parts, QR code tagging for better logistics, and more.

Mr Svendal noted that a great deal of the efficiency gained came from using other features than the 3D, like the integrated issue management and checklist features. Using buildingSMART's open formats, one can communicate and interact in the BIM model via BCF (BIM Collaboration Format) without having to update the IFC files. Vestrheim connected all internal and external communication, minutes, checklists, etc. to objects or spaces in the model, and was able to reduce lead times, maintain project overview and export documentation of completed work, when needed, directly from StreamBIM.

The Bergen hospital project is a good example of what can be achieved with a Nordic-style, model-based digital construction. The lessons learned in Europe are now being gradually adopted in Asia Pacific, with a total of 5,800,000+ sq m of projects so far being run in StreamBIM all over the region. The majority of current projects are in Japan, New Zealand and Singapore. ■

Website: www.streambim.com / www.drofus.com

All images: Rendra AS

The Grand Paris Express is scheduled for completion in 2030. Here, Mapei supplied a variety of solutions for the underground work to help make tunnelling operations using TBMs flow more smoothly.

FRENCH CONNECTION

With 68 stations and 200 km of automated metro lines, the Grand Paris Express is the largest urban mobility project in Europe. It is scheduled for completion in 2030, weaving its way through major hubs such as airports, research centres, universities as well as urban and suburban areas that are currently difficult to get to.

The four new lines (15, 16, 17 and 18) and Line 14 – the latter is due to be extended in both north and south directions – will connect to Paris' existing transport system. Most of the new metro systems will run underground, passing through the areas covered by the Grand Paris project and linking them all together.

Thanks to this new infrastructure, it will be possible to go from one side of Île-de-France to the other without passing through Paris and make it much easier to reach the centre of the capital from the suburbs. The first important 'phase' of the project is expected to be completed in time for the Olympic and Paralympic Games in 2024.

Line 15 underground work

Line 15 of the Grand Paris Express will feature three sections: east, west and south. It spans 33 km long, running through 22 towns and districts. Construction of this line is divided into various lots, among which is Lot T2A, whose main contractor is the Horizon consortium. This lot includes four stations, the entrances to two tunnels, secondary works (emergency exits, access for emergency vehicles, etc.), a double tunnel and a single tunnel that connects the Infrastructure Maintenance Site (IMS) to the main line.

The excavation work for the tunnels started in February 2020 and was carried out using a variable density tunnel boring machine (TBM) in a 'slurry' mode. For the backfilling injection of the annular gap, created during the TBM advance between the soil and concrete segments lining, the Horizon consortium decided to use a two-component grout consisting of component A (grout made by water, bentonite, cement and a retarding agent) and component B (accelerant).

Mapei supplied three chemical products used to prepare the grout. One of them was the Mapequick CBS System 3 – a liquid accelerant which, when added to component A of the mix just before being injected into the annular gap, can quickly transform the grout into gel. In doing so, the mix sets and starts to develop its mechanical properties after a very short time, which is important for the stability of the excavated tunnel and concrete lining.

Apart from the accelerant, Mapei supplied two additional products required to make component A, namely Mapequick CBS System 1, a retarding agent, which helps to maintain and extend the initial workability of the grout (up to 72 hours after being prepared); and Mapebent API2 bentonite, which is needed to stabilise

TOP AND ABOVE: **Mapei products will also be used to prepare substrates and to install ceramic flooring in the new stations of the Grand Paris Express.**

component A, while also providing it with the rheological properties needed to make the pumping of the mix over long distances possible.

In addition, Mapei provided technical support to conduct the laboratory tests, which led to the development of two types of two-component mixes: one with very high mechanical properties, which the Horizon consortium required for specific areas of the tunnel (such as the entrances and exits of the stations), and one with more common properties, used in other areas of the tunnel.

Mapebent API2 bentonite was used for the preparation of the slurry used by the variable density TBMs. This bentonite slurry has a dual function: to maintain the stability of the tunnel face during TBM excavation (so that the TBM can advance safely), and to transport the excavated soil while keeping it in suspension inside the pipes running along the tunnel.

In certain phases of the tunnelling work, Mapedisp FLS was added to the bentonite slurry. This product is a liquid dispersing agent which allows TBMs to excavate smoothly, particularly in cohesive soil, by improving its fluidity and reducing its adhesion to the metal components of the TBM.

Effective flooring systems

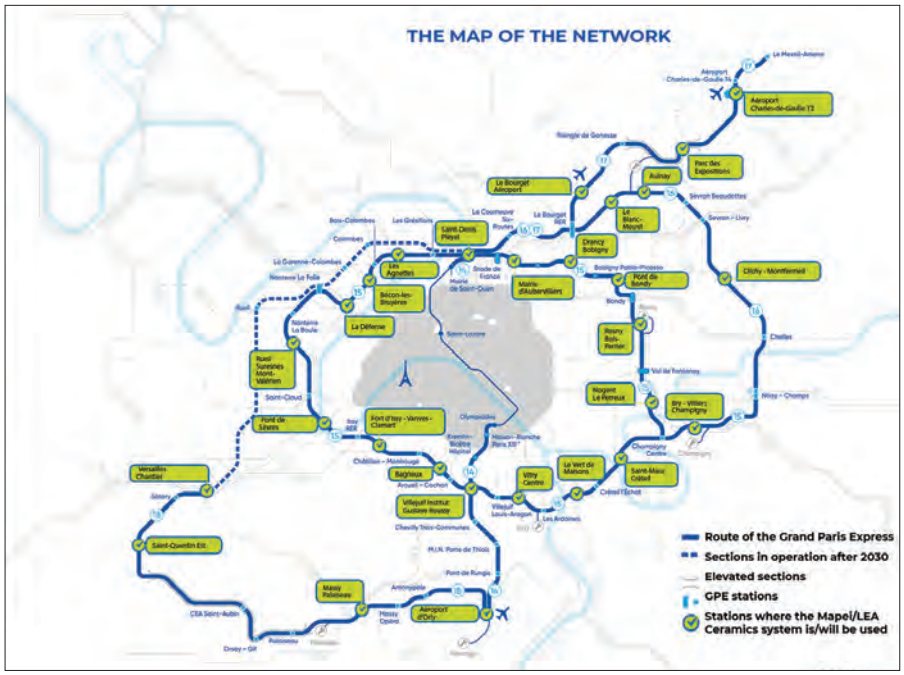
In collaboration with the tile manufacturer LEA Ceramiche, Mapei also developed a system to install the flooring in half of the 68 stations of the Grand Paris Express. Work at the site began in 2022 with the opening of the Orly airport station and is scheduled to complete in 2030. The system consists of a screed, adhesive, grout for tile joints and sealant for expansion joints by Mapei, ceramic tiles by LEA Ceramiche, expansion profiles by CS France and pododactile system by Pedrazzini.

The screeds will be made from new formulations, called Mapecem X'press or Mapecem Pronto X'press, of existing ready-to-use, pre-blended Mapei mortars that have been widely used for a number of years. Light-coloured porcelain tiles (37.5 x 75 cm) will be installed using Kerafluid HPR or Kerafluid N adhesives, before grouting the joints with Keracolor GG or Ultracolor Plus mortars to obtain a colour matching the colour of the flooring. The expansion joints will be sealed with Mapeflex E-PU21 SL, which is especially suitable for surfaces subjected to high levels of pedestrian traffic.

On Line 14, Mapei flooring systems have been applied at four new stations (Pont Cardinet, Porte de Clichy, Mairie de Saint-Ouen and Région Île-de-France). To install the tiles on 6,500 sq m of surface area, Mapei supplied a complete system that also included preparation of the substrates with Ultraplan Maxi Fibré self-levelling skimming mortar and repairs to certain sections of deteriorated concrete substrates using Planitop 400 F rapid-setting class R3 mortar.

The ceramic floors in the corridors were installed with Kerafluid N adhesive and the joints were grouted with Ultracolor Plus. The tiles for the walls were bonded with Ultralite Multiflex, while the tiles for the vaulted ceilings were installed with Ultralite S2 Quick. Keralastic T two-component polyurethane adhesive was used to bond tiles onto the steel doors. The adhesives chosen to install the ceramic flooring on the station platforms were Kerapoxy CQ and Granirapid. The tile joints were grouted with Kerapoxy Design. ■

Website: www.mapei.com.sg



With 68 stations and 200 km of automated metro lines, the Grand Paris Express is the largest urban mobility project in Europe. It will pass through many major hubs such as airports, research centres, universities as well as urban and suburban areas that are currently difficult to reach.

Ceramic floor and wall tiles were installed in the new stations along Line 14 using Mapei products such as Granirapid, Keralastic T, Ultralite S2 Quick and Ultracolor Plus.

Note: Some products mentioned in this article are available in the Singapore market. Please contact the customer service representative at Mapei Far East or visit the company's website for more information.

ADVERTISERS' INDEX

MESSE MÜNCHEN

OUR COMPETENCE, YOUR INNOVATION.

bauma CHINA, Shanghai, SNIEC
November 26–29, 2024

SHAPE THE INDUSTRY AND BE AN EXHIBITIOR

Apply now !

International Trade Fair for Construction Machinery, Building Material Machines, Mining Machines and Construction Vehicles.

www.bauma-china.com

bauma CHINA

Drill Bill

With the LB series, every mission is a success.
www.liebherr.com

LIEBHERR

Deep foundation LB 44