

# SOUTHEAST • ASIA CONSTRUCTION

MARCH - APRIL 2020

## Cover Story: Kömürhan Bridge in Turkey

### Features:

Encore Melaka Theatre

Cat GC-series hydraulic hammers

Infrastructure Asia: TOD projects in Indonesia

The Kobelco logo is displayed in white, bold, uppercase letters on a teal rectangular background in the top left corner. The background of the entire advertisement is a photograph of a large teal and black crawler crane on a construction site at dusk or dawn, with a cloudy sky and a dark horizon.

# INSPIRING THE NEXT GENERATION OF MACHINES WITH POWER, SPEED AND RELIABILITY.

Engineered specifically for robust and high cycle foundation applications

The BMS and FS series are equipped with a wet-type disc brake with free fall and wide, large-capacity drums which are indispensable for foundation work. Combined with a large hydraulic tank for duty cycle work, a variety of foundation application can be achieved easily with power and speed. In addition, due to Kobelco's unique systems and structures designed with foundation jobs in mind, hoisting and slewing during continuous high cycle work can be carried out without causing fatigue or stress on the operator.

## **BMS 800**

Max. Lifting Capacity (80t x 3.6m)

## **BMS 1000**

Max. Lifting Capacity (100t x 3.8m)

## **BMS1200HD**

Max. Lifting Capacity (120t x 5.0m)

## **7120S<sub>FS</sub>**

Max. Lifting Capacity (120t x 5.0m)



**KOBELCO INTERNATIONAL (S) CO., PTE. LTD.**

Tel: +65-6268-1308 <http://www.kobelco-cranes.com/southeast-asia/>

**PT. DAYA KOBELCO CONSTRUCTION MACHINERY INDONESIA**

Tel: +62 (21)-2214-3080 <https://www.dayakobelco.co.id/>

**KOBELCO CONSTRUCTION EQUIPMENT INDIA PVT. LTD.**

Tel: +91-120-4079900 <https://www.kobelco-in.com/>

**KOBELCO CONSTRUCTION MACHINERY MIDDLE EAST AND AFRICA FZCO.**

Tel: +971-4-298-2020 <https://www.kobelco-mea.com/>

**KOBELCO CONSTRUCTION MACHINERY INTERNATIONAL TRADING CO., LTD.**

Tel: +81-45-834-9994 <https://www.kobelco-kenki.com/kit/eng/>

**KOBELCO CONSTRUCTION MACHINERY CO., LTD.**

<https://www.kobelco-cm-global.com>

# Hillhead2020



## Quarrying + Construction + Recycling

23 – 25 June 2020  
Hillhead Quarry | Buxton  
Derbyshire | UK

Live demonstrations  
550+ exhibitors  
Free entry



Order your free entry badge online at [hillhead.com](https://www.hillhead.com)



# QI442 IMPACTOR THE NEXT GENERATION



Sandvik QI442 mobile impact crusher is a pioneering solution offering primary and secondary crushing in one unit. This upgraded 2-Series model features the newly developed CI621 Prisetec technology which comes with a host of innovations for improved efficiency and greater safety during maintenance. It offers you the flexibility to work in open or closed circuit, with the optional double deck hanging screen enabling rapid set-up in less than 30 minutes. Fitted with My Fleet remote monitoring system as standard, the QI442 offers one of the most flexible and efficient mobile crushing solutions for large scale operators worldwide.



**International  Construction Week**

**futurebuild**  
southeast asia



**23 - 25 JUNE 2020**

**MALAYSIA INTERNATIONAL TRADE AND EXHIBITION CENTRE (MITEC), KL**

**ASEAN's Leading Event for the Built Environment**



[www.futurebuildsea.com](http://www.futurebuildsea.com)  
[www.super8asean.com](http://www.super8asean.com)

SUPPORTED BY



Ministry of Works, Malaysia

HOSTED BY

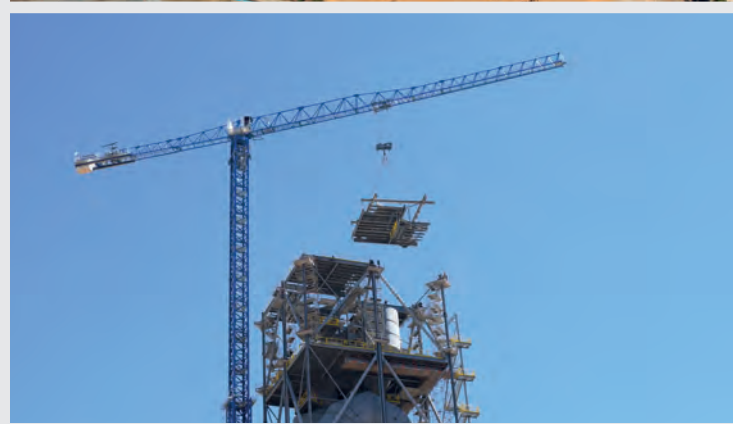


ENDORSED BY



ORGANISED BY





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

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

**+20,000 CRANES**  
manufactured by COMANSA

**COMMITTED  
TO LIFTING  
EVOLUTION**

**COMANSA.COM**

**ASIA**  
Hangzhou - P.R. China  
+86 571 8299 5555  
sales@comansacm.com.cn

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

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



**OPEN FOR  
BOOKING**

# LAOBUILD'20

LAOS INTERNATIONAL BUILDING AND CONSTRUCTION EXHIBITION

**LAOS' BIGGEST  
INTERNATIONAL BUILDING,  
CONSTRUCTION AND  
M&E INDUSTRY SHOW**

**11 12 13 JUNE 2020**

 **NATIONAL CONVENTION CENTRE,  
VIENTIANE**

To book your booth at the Expo, contact:

 [youthxay@ambtarsus.com](mailto:youthxay@ambtarsus.com)

 **+856-30-5451894**

Co-located with:



Hosted by:



Organised by:



 laobuild  
[www.laobuild.com](http://www.laobuild.com)



# SmartFLY

by Link-Belt

## Nobody does it better!

### Simple one-person erection and storage technology that minimizes work at height

Fly assist cylinder launches and stows fly at zero boom angle.



Fly interlock system ensures proper procedure. Boom head speed screws allow for simple, efficient assembly/disassembly.



Ground level controls eliminate need for operator in cab, actuate boom and launch boom from one station.



#### AUTHORIZED LINK-BELT DEALERS

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

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

**PAKISTAN**  
Premier Commercial Corp.  
Karachi  
+92 215874533

**PHILIPPINES**  
Asia Industries Material  
Handling Equipment Corp.(AIMHEC)  
Pasay City  
+63-2-851-4778

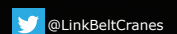
**SINGAPORE**  
Tat Hong Heavy  
Equipment (PTE) Ltd.  
Singapore  
+65-6269-0022

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

# Link-Belt

## CRANES

Lexington, Kentucky, USA | [www.linkbelt.com](http://www.linkbelt.com)



# CAMBODIA'S BIGGEST INTERNATIONAL BUILDING, CONSTRUCTION AND M & E INDUSTRY SHOW

# CAMBUILD'20

CAMBODIA BIGGEST INTERNATIONAL BUILDING & CONSTRUCTION INDUSTRY SHOW

**2 3 4** SEPTEMBER 2020  
KOH PICH, PHNOM PENH

OPEN FOR  
BOOKING

To book your booth  
at the Expo, contact:

 [somaly@ambtarsus.com](mailto:somaly@ambtarsus.com)

 023 901 579 / 089 714 700

Co-located with:



**CAMBODIA ARCHITECTS  
FORUM 2020**  
2 SEPT 2020 - KOH PICH, PHNOM PENH

Endorsed by:



Ministry of  
Commerce  
Cambodia

Hosted by:



Board Of  
Architects  
Cambodia

Organised by:

**M**AMBTarsus  
EVENTS GROUP





Quality you can rely on



# Earth Moving Refined

Komatsu's HM400-3 redefines what you expect from an articulated dump truck. Komatsu Traction Control System (KTCS), enables you to feel a difference from the conventional limited slip differential in both turning and travel performances in soft ground conditions. As KTCS works automatically, you can focus on driving, while enjoying superb visibility. Certified for EPA Tier 4 Interim/EU Stage 3B, the HM400-3 offers you excellent fuel economy compared to the preceding model, while increasing productivity with a 40-metric ton payload. Why not get fuel economy, productivity and safety, all in one?

For the regions other than North America and Europe, we offer the models compliant with respective local emission regulations.

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

**KOMATSU**<sup>®</sup>

[www.komatsu.com](http://www.komatsu.com)

# Contents



**On the cover:**

Construction of K m rhan Bridge in Turkey

(page 70)

**Cover designed by**

Fawzeeah Yamin

**Publisher**

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

**Associate Publisher**

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

**Editor**

Fabia Sugandy (seac@tradelinkmedia.com.sg)

**Marketing Manager**

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

**Head of Graphics Department/  
Advertisement Coordinator**

Fawzeeah Yamin (fawzeeah@tradelinkmedia.com.sg)

**Graphic Designer**

Siti Nur Aishah (siti@tradelinkmedia.com.sg)

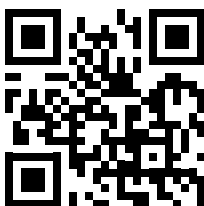
**Circulation**

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

## NEWS

NEWS IN ASIA PACIFIC	12
NEWS IN ASIA PACIFIC & THE MIDDLE EAST	36
GLOBAL NEWS	38
IPAF HIGHLIGHTS	46

## EVENTS

CALENDAR OF EVENTS	42
INDUSTRY EVENTS	44

## PRODUCTS

NEW IN INDUSTRY	48
MIXED CATEGORY	52



# 150



**Years of  
Innovation**  
Since 1869



# THE MOST VALUE FOR YOUR MONEY

## BASIC OR ADVANCED? YOU DECIDE

The Ammann ABC ValueTec Asphalt-Mixing Plant is the perfect fit for business owners who want straightforward processes – and the ability to further customise with options. The plant can range from very basic to much more advanced, based on your preferences.

### What can a ABC ValueTec Plant bring to your business?

- The lowest product life cycle cost of all plants in the 80 to 260 tonnes per hour production segment.
- Customised options that include utilisation of up to 40 per cent to 45 per cent RAP.
- Direct coupled gear motors that reduce fuel and maintenance costs.
- An efficient burner and baghouse that ensure suspended particulate matter (SPM) levels are within limits and the carbon footprint is minimal.
- A future-ready design that enables the seamless addition of upgrades.

Call us today for more information on how to choose the options that are best for you.

# Contents

## PROJECTS & SPECIAL FEATURES

APPLICATIONS ON SITE	54
SPECIAL FEATURE	60
PRODUCT FEATURE	64
COMMERCIAL PROJECT	66
INDUSTRIAL PROJECT	70
FOCUS ON EUROPE	74



56



66



60



58



64



74



54



78



76

### SOUTHEAST ASIA CONSTRUCTION is published six times a year by:

Trade Link Media Pte Ltd. RCB Registration no: 199204277K  
 Address: 101 Lorong 23, #06-04 Prosper House, Singapore 388399  
 Tel: +65 6842 2580, Fax: +65 6842 2581 / +65 6745 9517  
 Website: <http://seac.tradelinkmedia.biz>  
 Email: [info@tradelinkmedia.com.sg](mailto:info@tradelinkmedia.com.sg)

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

Printed in Singapore by Refine Printing Pte Ltd.  
 MCI (P) 043/06/2019 • ISSN 2345-7082 (Print) and ISSN 2345-7090 (E-Periodical) • KDN No: 1560 (1271)-(6)

Clause: The editor reserves the right to omit, amend or alter any press release submitted for publication. The publisher and the editor are unable to accept any liability for errors or omissions that may occur, although every effort has been taken to ensure that all information is correct at the time of going to press. No portion of this publication may be reproduced in whole or part without the written permission of the publisher.

Disclaimer: Advertisers and contributors must ensure that all promotional material and editorial information submitted to our publication are free from any infringement on patent rights and copyright laws in every jurisdiction. Failure of which, they must be fully liable and accountable for all legal consequences (if any) that may arise.

Views and opinions expressed or implied in this magazine are contributors' and do not necessarily represent those of Trade Link Media Pte Ltd, Southeast Asia Construction and their staff.

### INTERNATIONAL SALES OFFICE:

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

# SAMBO C.M.C HEAD OFFICE

## Trench Cutter #1~#12(SC40+HDS80 & CSC40+HDS80)



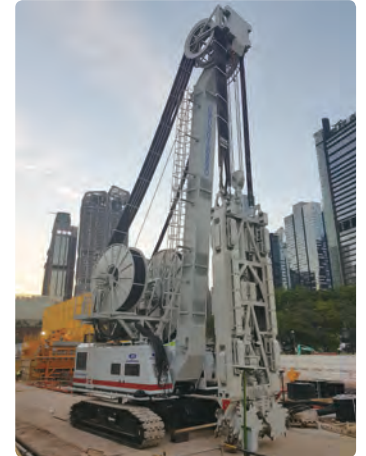
CSC40+HDS60 in KOARU Efficiency Apartment Project in SOUTH KOREA



CSC40+HDS80 in T312 Sungei Bedok Station Project in SINGAPORE



CSC40+HDS80 in SOGO Department Store Project in HONG KONG



CSC40+HDS80 in Contract C886-CCL6 Project in SINGAPORE



SC40+HDS80 in Contract C883-CCL6 Project in SINGAPORE



SC40+HDS80 in Contract C883-CCL6 Project in SINGAPORE



SC40+HDS80 in Contract T7 Project in SINGAPORE



SC40+HDS80 in Contract T10 Project in SINGAPORE



SC40+HDS80 in SOGO Department Store Project in HONG KONG



SC40+HDS80 in C886 Tunnel at Marina Bay Project in SINGAPORE



SC40+HDS80 in UGS Construction Project in SINGAPORE



SC40+HDS80 in Gwang Ann Construction Project in SOUTH KOREA



65, Mieumsandan 4ro, Gangseogu, Busan, SOUTH KOREA

Tel : +82-51-717-0581 Fax : +82-51-717-0582

E-mail : sambo@sambocmc.com Web Site : www.sambocmc.com

# Toyota to build prototype 'city' of the future

Toyota Motor Corporation has revealed its plans to build a prototype 'city' of the future on a 175-acre site at the base of Mt. Fuji in Japan. Called the Woven City, the development will be a fully connected ecosystem powered by hydrogen fuel cells.

Envisioned as a 'living laboratory,' the Woven City will serve as a home to full-time residents and researchers who will be able to test and develop technologies such as autonomy, robotics, personal mobility, smart homes and artificial intelligence (AI) in a real-world environment.

"Building a complete city from the ground up, even on a small scale like this, is a unique opportunity to develop future technologies, including a digital operating system for the city's infrastructure. With people, buildings and vehicles all connected and communicating with each other through data and sensors, we will be able to test connected AI technology - in both the virtual and physical realms - maximising its potential," said Akio Toyoda, president of Toyota Motor Corporation.

According to Toyota, the company will extend an open invitation to collaborate with other commercial and academic partners and invite interested scientists and researchers from around the world to come work on their own projects in this one-of-a-kind, real-world incubator.

"We welcome all those inspired to improve the way we live in the future, to take advantage of this unique research ecosystem and join us in our quest to create an ever-better way of life and mobility for all," said Mr Toyoda.

For the design of Woven City, Toyota has commissioned Danish architect Bjarke Ingels Group (BIG). "A swarm of different technologies are beginning to radically change how we inhabit and navigate our cities. Connected, autonomous, emission-free and shared mobility solutions are bound to unleash a world of opportunities for new forms of urban life," said Bjarke Ingels, CEO of BIG. "With the breadth of technologies and industries that we have been able to access and collaborate with from the Toyota ecosystem of companies, we believe we have a unique opportunity to explore new forms of urbanity with the Woven City that could pave new paths for other cities to explore."

## Design of the city

The masterplan of the city includes the



ALL IMAGES:  
Artist's impressions  
of the Woven City - a  
prototype 'city' of the  
future to be built on  
a 175-acre site at the  
base of Mt. Fuji in  
Japan.



All images © Bjarke Ingels Group

designations for street usage into three types: for faster vehicles only; for a mix of lower speed, personal mobility and pedestrians; and for a park-like promenade for pedestrians only. These three street types weave together to form an organic grid pattern to help accelerate the testing of autonomy.

The city is planned to be fully sustainable, with buildings made mostly of wood to minimise the carbon footprint, using traditional Japanese wood joinery, combined with robotic production methods. The rooftops will be covered in photovoltaic panels to generate solar power in addition to power generated by hydrogen fuel cells. Toyota plans to weave in the outdoors throughout the city, with native vegetation and hydroponics.

Residences will be equipped with the latest in human support technologies, such as in-home robotics to assist with daily living. The homes will use sensor-based AI to check occupants' health, take care of basic needs and enhance daily

life, creating an opportunity to deploy connected technology with integrity and trust, securely and positively.

To move residents through the city, only fully-autonomous, zero-emission vehicles will be allowed on the main thoroughfares. In and throughout Woven City, autonomous Toyota e-palletes will be used for transportation and deliveries, as well as for changeable mobile retail.

Both neighbourhood parks and a large central park for recreation, as well as a central plaza for social gatherings, are designed to bring the community together. Toyota believes that encouraging human connection will be an equally important aspect of this experience.

The development is scheduled to break ground in early 2021. Toyota intends to populate the Woven City with its employees and their families, retired couples, retailers, visiting scientists, and industry partners - about 2,000 people to begin with, adding more as the project evolves. ■

A JOHN DEERE COMPANY



WIRTGEN GROUP



# Unbeatable team.

[www.wirtgen-group.com/technologies](http://www.wirtgen-group.com/technologies)

CLOSE TO OUR CUSTOMERS

**ROAD AND MINERAL TECHNOLOGIES.** With leading technologies from the WIRTGEN GROUP, you can handle all jobs in the road construction cycle optimally and economically: processing, mixing, paving, compacting and then rehabilitation. Put your trust in the WIRTGEN GROUP team with the strong product brands WIRTGEN, VÖGELE, HAMM, KLEEMANN, BENNINGHOVEN and CIBER.

**WIRTGEN SINGAPORE Pte Ltd.** · No.5, Tuas Avenue 18A · S638854 Singapore

T: +65 6863 2533 · [wirtgen.singapore@wirtgen-group.com](mailto:wirtgen.singapore@wirtgen-group.com)

[www.wirtgen-group.com/singapore](http://www.wirtgen-group.com/singapore)

WIRTGEN / VÖGELE / HAMM / KLEEMANN / BENNINGHOVEN / CIBER

## Construction of Sky Bridge at HKIA in full swing

The main structure of Sky Bridge at Hong Kong International Airport (HKIA) has been placed onto its final position, concluding the prefabrication phase of its construction programme to mark an important project milestone.

Expected to be the world's longest airside bridge upon completion, which would allow the largest passenger aircraft (the A380) to pass underneath, the 200-m-long Sky Bridge will connect Terminal 1 and the North Satellite Concourse to reduce travelling time between the two buildings; passengers will no longer need to shuttle by buses. The Sky Bridge will also provide excellent views of the apron, further enhancing passengers' airport experience.

The Airport Authority Hong Kong (AA) said to minimise impact on HKIA's busy operations, the Sky Bridge was prefabricated in Zhongshan, mainland China. Three precast segments were transported to the assembly yard in the midfield area of HKIA from September to October 2019. The segments were then assembled to form the main structure of the bridge.

On 9 January 2020, the main structure of the bridge - weighing over 5,000 t - was transported over 3 km on HKIA's apron from the assembly yard to the bridge's final position. It was then erected on the bridge towers on 10 January 2020.

"We are pleased with the successful delivery of Sky Bridge's main structure, which concludes the prefabrication phase of its construction on schedule," said Ricky Leung, executive director of engineering & technology at Airport Authority Hong Kong. "This also marks the first time HKIA has transported such a mega structure within the apron area."



© Airport Authority Hong Kong

When completed, the 200-m-long Sky Bridge is expected to be the world's longest airside bridge.

Mr Leung added, "Employing great skill and techniques, the project team transported the gigantic structure by sea and along the apron. I must thank the project team, the participating teams at the AA and all the other parties who contributed to such an efficient delivery, while maintaining smooth operations of the airport."

With the Sky Bridge's main structure now in place, installation of facilities and renovation works will begin. The Sky Bridge is scheduled to commence operation in mid-2020. ■

## World Bank, Switzerland support Vietnam's new bus rapid transit corridor

The World Bank and Vietnam's Ministry of Finance have signed a financing agreement for a grant totalling US\$10.5 million to promote integrated urban development and transport connectivity along a new bus rapid transit corridor in Ho Chi Minh City.

The grant, provided by the Government of Switzerland through Swiss State Secretariat for Economic Affairs (SECO) and administered by the World Bank, comes as additional financing for the World Bank's ongoing Ho Chi Minh City Green Transport Development Project that is developing a new bus rapid transit corridor. This line, with 28 stations stretching along 23 km, would provide reliable mobility service between the city centre and its southeast and northwest peripheries.

The grant will help enable integrated and transit-oriented urban development around the new bus corridor. This will include creating a regulatory framework for transit-oriented urban development and boost private sector investment for such development. The new corridor can trigger urban renewal and create public spaces around the transit system, where it is scarce.

The grant will also help integrate the bus system with other transport modes, thanks to measures to maximise connectivity and ridership while also providing last-mile connections such as feeder bus services to carry people to and from the nearest bus station along the new line. In addition, the grant will finance capacity building for transport officials and urban planners.

The ongoing project aims to improve the performance and efficiency of public transport along a high priority corridor in Ho



© World Bank

The agreement signing ceremony between the World Bank and Vietnam.

Chi Minh City. The key economic benefits include reduction in travel times and vehicle operating costs and improvement of traffic safety. These benefits are estimated to total more than US\$120 million over the life of the project. The activities funded under the grant are expected to bring additional benefits in terms of improved livability and sustainability.

This first bus rapid transit line developed in Ho Chi Minh City is financed by an US\$124-million credit from the International Development Association of the World Bank, and a US\$13.45 million-contribution from the Government of Vietnam. ■

*PASSION for  
PROGRESS*



**MASCHINEN**

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

## San Miguel builds recycled plastic road in Philippines

Philippines conglomerate San Miguel Corporation is helping to address the country's waste problem by building roads from recycled plastic, in what is thought to be a first in the country. A pilot test was already conducted at the end of last year on a 1,500-sq-m road in General Trias, Cavite.

For the testing road, approximately 900 kg of plastic waste was used for the asphalt – equivalent to about 180,000 sachets and plastic bags. San Miguel's technology partner, global materials science company Dow, said that the recycled plastic waste acts as a binder together with bitumen in the production of asphalt. The company also pointed out that using recycled plastic can make roads more durable compared to conventional asphalt.

Independent lab testing done on San Miguel's recycled plastic road asphalt reportedly shows that it exceeds the standards of the Philippines' Department of Public Works and Highways.

"What we want to achieve is to help address an important environmental issue, and that is plastic waste. We want to create a sustainable use for waste plastics so that they don't end up in landfills and our rivers and oceans," said Ramon S. Ang, president of San Miguel Corporation.

According to San Miguel, pending further testing, the company is able to build recycled plastic roads in its facilities as well as major infrastructure projects. ■



Both images © San Miguel Corporation



ABOVE AND LEFT: A pilot test for the recycled plastic road was conducted at the end of last year on a 1,500-sq-m area in General Trias, Cavite.

## Barangaroo South: Australia's first carbon neutral precinct

Barangaroo South has been named Australia's first carbon neutral precinct. Lendlease, in partnership with the NSW Government, received the certification awarded by the Commonwealth Government.

From the outset, Lendlease was committed to achieve the highest sustainability credentials at the precinct. The buildings and infrastructure were all designed and delivered to contribute to and meet climate positive targets and carbon neutrality.

The basement, for example, serves the entire precinct and is as large as one of the 42-storey office towers that sits above it. It includes a district cooling plant that saves approximately 40 Olympic-sized swimming pools of water every year, and a waste management system that can divert over 5,400 t of waste from landfill in the past three years.

To reduce carbon at Barangaroo South, Lendlease focused on three strategies: Avoid – through better building design, efficient infrastructure, and education and behavioural initiatives; Reduce – implement on and off-site low carbon and renewable energy sources.; and Mitigate

– purchasing or providing conditions for carbon offsets to cover emissions.

The tenants at Barangaroo South and the investor community have supported Lendlease to achieve carbon neutrality at the precinct. Commercial tenants are increasingly using highly connected and sustainable workplace destinations as a way to attract and retain the best talent.

There are currently over 20,000 workers at Barangaroo South and many have embraced sustainability initiatives, such as reducing single use plastics and products from food offerings in the precinct, reducing disposable coffee cups and using compostable food packaging for takeaway.

There is also high demand for the precinct's end of trip facilities, which are one of Sydney's largest, and support active transport including cycling.

"We've been creating carbon neutral buildings and places long before it became industry practice. Our approach to sustainability is a key differentiator for us and has helped us secure our pipeline projects around the world which is now approaching \$100 billion," said Steve McCann, group CEO and managing director



© Lendlease

Barangaroo South has been designed and built to meet climate positive targets and carbon neutrality.

of Lendlease. "Our clients expect to work with a sustainable company and it's important to our investors." ■

# THE DEFINITION OF TOUGH



LiuGong keeps up with you. Through day and night, tight deadlines and harsh conditions, LiuGong machines are the reliable choice to never stop working.

LIUGONG MACHINERY ASIA PACIFIC PTE. LTD

12 Joo Koo Circle  
Singapore 629044  
+65 66863566

[www.facebook.com/LiugongMachineryAsiaPacificPteLtd](https://www.facebook.com/LiugongMachineryAsiaPacificPteLtd)

[www.liugong.com](http://www.liugong.com)

TOUGH WORLD. TOUGH EQUIPMENT.

# Singapore's construction demand 'to remain strong'

The total construction demand (value of construction contracts to be awarded) in Singapore is projected to remain strong in 2020, ranging between S\$28 and S\$33 billion, as announced by the Building and Construction Authority (BCA) at the recent REDAS-BCA Built Environment and Property Prospects (BEPP) Seminar. This positive outlook is due to sustained public sector construction demand, which is expected to reach between S\$17.5 and S\$20.5 billion, accounting for approximately 62% of the demand.

The public sector construction demand would include major infrastructure projects - which are larger and more complex in scale - such as the Integrated Waste Management Facility, infrastructure works for Changi Airport Terminal 5, Jurong Region MRT Line and Cross Island MRT Line.

The private sector construction demand is anticipated to reach between S\$10.5 and S\$12.5 billion this year, supported by projects such as redevelopment of en-bloc sale sites, recreational developments at Mandai Park, Changi Airport new taxiway and berth facilities at Jurong Port and Tanjong Pagar Terminal. BCA pointed out that the forecast for 2020 excludes any construction contracts by the two Integrated Resorts (IRs), pending confirmation on the timeline and the phasing of the expansion projects.

Last year, Singapore's total construction demand expanded by 9.5% to reach S\$33.4 billion, about S\$1.4 billion higher than the upper bound of BCA's 2019 forecast of S\$27 to S\$32 billion. This was mainly due to a stronger than expected increase in industrial construction demand for petrochemical facilities despite the slowdown in manufacturing sector, said BCA.

## Outlook for 2021 - 2024

Construction demand in Singapore is expected to hold steady over the medium term, according to BCA. Demand is projected to reach between S\$27 and S\$34 billion per year for 2021 and 2022, and between S\$28 and S\$35 billion per year for 2023 and 2024.

The public sector will continue to lead demand and is expected to contribute S\$16 to S\$20 billion per year from 2021 to 2024, with building projects and civil engineering works each taking up about half of the demand. Besides public residential developments, public sector construction demand over the medium term will continue to be supported by various mega infrastructure projects.

The private sector construction demand is expected to stay at a moderate level in view of the likely continued global economic uncertainties and the current overhang in the supply of private residential housing units. Nonetheless, the planned expansion of the two Integrated Resorts could provide further upside to private sector demand, depending on their eventual construction timelines and phasing.

Furthermore, Singapore's total nominal construction output in 2020 is projected to increase to between S\$30 and S\$32 billion, from the estimated S\$28 billion in 2019. The anticipated further pick-up in total construction output in 2020 is supported by the improved construction demand since 2018 following the slowdown in 2015 to 2017.

## Industry transformation with DfMA and IDD

Singapore's Minister of State for National Development and Manpower, Zaqy Mohamad, also urged the industry to continue to invest in a skilled and competent workforce with a strong local core, in order to sustain business growth and the good progress in transformation that have already been made.



Singapore's Minister of State for National Development and Manpower, Zaqy Mohamad, speaking at the BCA-REDAS BEPP Seminar in January 2020.

Since the Construction Industry Transformation Map was launched in 2017, the local industry has been using newer and more advanced technologies to improve construction processes and methods, and ultimately creating new and better jobs for those working in the sector. For example, more projects are adopting the Design for Manufacturing and Assembly (DfMA) method, where a substantial portion of work is now done in a controlled manufacturing environment before it is transported to site for assembly.

BCA revealed that the DfMA adoption rate by the local industry shows an improvement from 22% in 2018 to about 30% in 2019, making a good progress towards the target of 40% by 2020. The public sector, like HDB, will continue to take the lead in adopting DfMA in their building projects where 75% of all its units launched in 2020 will adopt DfMA methods, including prefabricated prefinished volumetric construction (PPVC) or advanced precast concrete system (APCS).

Besides DfMA, Integrated Digital Delivery (IDD) has been identified as another key transformation area for the built environment sector in Singapore. Those who implement IDD can expect to reap benefits such as productivity gains throughout the building life cycle, reduction of costs and waste by minimising reworks and improving site safety. For instance, BHCC Construction aims to achieve 30% time savings during the design of a project by using Virtual Reality (VR) collaboration system, and 25% time savings by digitalising its management of site safety records.

Similarly, the multi-disciplinary project team including the builder behind the Tuas Port Maintenance Base aims to achieve 20% time savings by using a cloud-based digital platform for managing defects and site safety during construction works. The team also expects to achieve a 20% productivity improvement in maintenance work by integrating data from BIM into its building management system when the building is completed.

These transformation efforts have reportedly led to the redesign or creation of new and better jobs, such as digital lead and DfMA production manager within the sector. To support the sector's transformation growth, BCA is also working with industry partners on initiatives to attract more fresh graduates and mid-careers into the sector, as well as a skills framework to chart out career progression pathways, which is scheduled to be launched later this year. ■

# VMAX

The most powerful model in  
our range of lighting towers!



 used equipment?  
contact: [@usedgmp](https://www.instagram.com/usedgmp)

**GENERAC**<sup>®</sup>  
MOBILE

Tel. +39 0382 567011 | [gmp.srl@generac.com](mailto:gmp.srl@generac.com)  
[generacmobile.com](http://generacmobile.com) | [generacmobileused.com](http://generacmobileused.com)

Made in Italy  


POWERFUL MOBILE LIGHTING TOWERS!

# Bintan to build greenhouse optimised for tropical climate

Singapore-based company Gallant Venture has partnered Japanese contractor Obayashi Corporation to pilot a technologically advanced eco-tourism focused greenhouse on Bintan Island, Indonesia. This cooperation was recently announced at the joint development agreement signing ceremony held in Singapore.

For the project, PT Persada Hijau Cemerlang (PHC) - a company owned by Gallant Venture and Salim Group - will work with Obayashi to fine-tune the latter's pioneering technology to build the Gallant Obayashi Green Agritech Park, a greenhouse optimised for the tropical climate using advanced environmental controls.

The Gallant Obayashi Green Agritech Park aims to cultivate premium crops with improved sustainability and higher yields. These crops will then be commercialised for export to Singapore and beyond. A visitor and education centre for tourists and students is also in the works to promote agri-technology.

According to Junya Noda, deputy general manager of new business department at Obayashi Corporation, construction work is expected to start in March and the facility is scheduled for completion by the end of the year. It will include both an open-ventilation and a closed-control type greenhouse.

"This latest collaborative venture touches the important topics of food security and sustainability, and its bigger impact on the environment. By raising more and more of the food needed in areas close or adjacent to the places of use, we not only create new local jobs, but also reduce the carbon footprint of transporting food long distances," said Eugene Park, executive director and CEO of Gallant Venture.

"As we want our farm to be as close to our customers as possible, the initial focus is to export the products to nearby places like Singapore and Johor Bahru (Malaysia)."

## Construction and agricultural expert

Most crops in the Southeast Asian region are grown on open farms, which need a high volume of water. Although current greenhouse technology can boost productivity, conventional structures require constant climate control in tropical climates, making their use costly and unsustainable. The upcoming tropical



LEFT AND BELOW LEFT: Artist's impressions of Gallant Obayashi Green Agritech Park.

BELOW: The agreement was signed by Frans Gunara (on the left), director of PT Persada Hijau Cemerlang and Yuichi Yamamoto, GM of technology business development division at Obayashi.

BOTTOM: The agreement signing ceremony took place in Singapore in January 2020.



agritech greenhouse in Bintan would address such challenges, combining Obayashi's construction expertise with agricultural know-how.

The new Gallant Obayashi Green Agritech Park will leverage on environmental controls to create optimal growth conditions for Japanese-grade cherry tomatoes and kale. Tapping on Obayashi's technology and experience in understanding plant physiology, the high-tech greenhouse will also utilise heat and air flow analysis. The greenhouse will be equipped with a complex environmental control system that regulates temperature, humidity and light intensity to maximise crop production and quality as well as reduce water usage.

"As part of the Obayashi Sustainability Vision 2050, we have begun several new initiatives including developing a proven model cultivating premium cherry tomatoes at our greenhouse in Katori City, Japan," explained Yuichi Yamamoto, managing executive officer at Obayashi Corporation and the company's general manager of technology business development division.

"To expand our Sustainability Vision 2050, several sites across the region were evaluated. Bintan emerged as the choice location with its rich resources and close proximity to Singapore. We are excited to partner Gallant Venture to customise this technology for Southeast Asia's environmental conditions and bring our laboratory simulations to life."



All images © Gallant Obayashi Green Agritech Park

## Eco-tourism destination

The Gallant Obayashi Green Agritech Park is expected to further increase Bintan's appeal as a tourist destination with wide-ranging experiences for various types of visitors including families, adventure-seekers, photography enthusiasts, MICE and business travellers, students and more.

It is also destined to become an eco-tourism destination. The visitor and education centre will offer educational tours to deepen the public's knowledge of urban technology-driven cultivation.

Mr Park said, "The Agritech Park offers visitors opportunities to learn about this innovative solution and will join a slew of attractions that visitors can experience at our award-winning integrated tropical beach resort destination. In line with Gallant Venture's sustainability mission, other features such as solar panels will also be installed at the Gallant Obayashi Green Agritech Park to support the daytime energy consumption of the greenhouse." ■

# NO FRILLS NO FUSS JUST BREAK!

## NEW CAT GC-SERIES HAMMERS.



© 2020 Caterpillar. All Rights Reserved. CAT, CATERPILLAR, LET'S DO THE WORK, their respective logos, "Caterpillar Yellow", the "Power Edge" and Cat "Modern Hex" trade dress as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission. [www.cat.com](http://www.cat.com) / [www.caterpillar.com](http://www.caterpillar.com)

**CAT**<sup>®</sup>  
LET'S DO THE WORK.™

# Aurecon focuses on Asia with two key appointments

Global engineering, design and advisory company Aurecon has appointed Stéphanie Groen as its director of coastal & climate change in Asia, and Andy North as director of growth strategies in Asia. Both are newly created roles, demonstrating the company's growing presence in the region.

Based in Singapore, Ms Groen will establish and lead Aurecon's coastal & climate change practice in Asia. She will leverage her 18 years of experience in water, marine and environmental consultancy to help clients mitigate the risk from climate change in this increasingly important area of engineering.

Over her career, Ms Groen has delivered many large marine environmental consultancy projects addressing land reclamation and infrastructure development in Asia, with the main focus on Singapore, Indonesia and the Philippines.

"As part of our commitment to engineer a better future for Asia, we created a new position to help our clients face the challenges and opportunities around climate change," said Stéphane Asselin, Aurecon's managing director for Asia. "Climate change is impacting people's lives, economics and the environment, so we are delighted Stéphanie is joining us to strengthen our coastal and environmental practice."

Ms Groen has progressed through her career, rising through the ranks with the environmental consultant DHI Singapore. Having started as a project manager she eventually went on to serve as the managing director from 2013 to 2019,



Stéphanie Groen (left) and Andy North.

overseeing the business performance and growth of the company. Some of the key projects Ms Groen has been involved include: the development of a climate change adaptation framework for Singapore's Building & Construction Authority (BCA); advising Singapore's government agencies (Maritime and Port Authority, JTC Corporation and Housing & Development Board) on marine dredging and reclamation works for the development of Tuas Port, Jurong Island, Pulau Tekong and Pasir Panjang Terminals; and the development of a disaster risk assessment for the state of Uttarakhand in India for the World Bank.

"At a time when we're seeing accelerating impacts which are related to climate change, proper risk assessment, planning and adaptation to long-term visions will be vital for companies in Asia to develop their projects for a more sustainable future," explained Ms Groen. "I look forward to creating a strong foundation for Aurecon's coastal & climate change practice in Asia and delivering human-centred designs that are both sustainable and future-ready."

Meanwhile, Mr North will develop new areas of business growth for Aurecon, including expanding into new countries, markets and business lines, as well as identifying opportunities for strategic partnerships and mergers & acquisitions.

"Asia is a key area of development for Aurecon. We have appointed Andy to help drive our growth and explore the opportunities around infrastructure and sustainability in the region," said Mr Asselin. "Andy is a proven leader with experience in identifying new markets, M&As, and foraging mutually beneficial partnerships in Asia."

Prior to joining Aurecon, Mr North served as chief operating officer at Atlas Industries, a leading BIM and digital delivery solution provider. Before that, he was senior vice president for strategic development and mergers & acquisitions at global engineering company AECOM.

Over his 35-year career, Mr North has also led major water sector projects around Asia Pacific, Europe and North America, including a US\$120-million wastewater treatment project in Xi-Lang, Guangzhou, China; a US\$46 million water treatment plant in Tianjin, China; and a US\$7.5 million tertiary wastewater treatment plant in Jasper, Canada.

"I'm excited to be joining Aurecon at a time when we are seeing numerous growth opportunities in Asia. I am also looking forward to helping Aurecon's clients develop innovative and technology-driven solutions to ensure their developments are future-ready," said Mr North. ■

## Dusit International to build new hotel in Hanoi

Thailand-based developer Dusit International has signed an agreement with Vietnamese developer General Technology Joint Stock Company to develop and operate Dusit Tu Hoa Palace, Hanoi. This new hotel will be located in the affluent Tay Ho District, at the northern end of the city's largest freshwater lake, West Lake. It is slated to open in the fourth quarter of 2023.

Lim Boon Kwee, COO of Dusit International said, "As a destination, Hanoi keeps going from strength to strength. Last year the city welcomed more than six million foreign visitors in the first 11 months – up 12% year-on-year. The country's strong GDP growth rate is also driving a rapidly growing segment of high-spending domestic tourists. With this in mind, now is the perfect time to expand our operations in Vietnam's capital city and strengthen our brand for further growth in Vietnam." ■



An artist's impression of the Dusit Tu Hoa Palace, Hanoi.

# JP Nelson

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

## Your Reliable Partner in Equipment Solutions

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

Singapore HQ address: 30 Benoi Road Singapore 629900

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

Sole Distributor  
**PVE**



**Hydraulic Vibro Hammer**  
Standard/ High Frequency/ Variable Moment  
(2 - 51 Ton)

Sole Distributor  
**SUNWARD**



**Boring Rigs**  
Rotary Torque Capacity  
(40.8 - 600 KN)

**MAT**



**Boring Rigs**  
Rotary Torque Capacity  
(233 - 360 KN)

Distributor  
**Manitowoc**



**Lattice Boom Crawler Crane**  
Lifting Capacity  
(80 - 3200 Ton)

Sole Distributor  
**ICE**



**Hydraulic Vibro Hammer**  
Standard/ High Frequency/ Variable Moment  
(2 - 15 Ton)

Sole Distributor



**Mini Telescopic Crawler Crane**  
Lifting Capacity  
(4.9 - 8 Ton)

Sole Distributor



**Mini Crawler Crane**  
Lifting Capacity  
(1 - 8 Ton)

**ZOOMLION**



**Crawler Crane**  
Lifting Capacity  
(55 - 3200 Ton)

Sole Distributor  
**Junttan**



**Hydraulic Pilling Hammer**  
Operating Force  
(5 - 28 Ton)

**Genie**



**Boom Lift**  
Working Height (6 - 41 Metres)

**Genie**



**Scissors Lift**  
Working Height (6 - 18 Metres)

**FUWA**



**Crawler Telescopic Cranes**  
Lifting Capacity  
(4.9 - 100 Ton)

**WELDING GENERATOR**  
Welding Set (250 - 700 AMP)



**Miller 600X**



**Denyo DAW500S**



**LED Lighting Tower**  
(2 X 400 W) . (4 X 400 W) . (4 X 1000 W)

**GENERATOR**  
Soundproof (10 - 1500 KVA)



**Containerized Generator**  
1000 - 1500 KVA @ 50 - 60 Hz



**Denyo DCA1100SP**  
10 - 1100 KVA @ 50 - 60 Hz

**Atlas Copco**



**Atlas CopCo Air Compressor**  
190 - 1150 CFM / 7 - 25 Bar



2004  
Celebrating Singapore's  
Entreprising Spirit  
THE TENTH YEAR



Certificate No.: AJAB/6988

Certificate No.: AJAC/01-01147

30 Benoi Road Singapore 629900  
Tel: + 65 6368 9991  
Fax: + 65 6367 9991  
E-mail: enquiry@jpnelson.com.sg

website: www.jpnelson.com.sg

## LTA awards three contracts for Singapore's JRL project

Singapore's Land Transport Authority (LTA) recently awarded three civil contracts – totalling S\$596.0 million – to build four MRT stations for the Jurong Region Line (JRL) project in the country.

The first JRL contract was awarded to China Communications Construction Company Limited (Singapore Branch), valued at S\$172.0 million. It comprises the design and construction of Boon Lay station and a 0.8-km viaduct along Jurong West Street 64. It also includes addition and alteration works to the existing Boon Lay station on the East-West Line to provide a seamless connection to the new JRL station. The new station is expected to be completed in 2026.

The second JRL contract, at a cost of S\$226.6 million, was awarded to Sembcorp



Artist's impressions of Boon Lay station (above) and Jurong East station.



Both images © LTA

Design and Construction Pte Ltd. It involves the design and construction of Gek Poh and Tawas stations (currently working names) and two viaducts for a total length of 1.3 km – one along Jurong West Street 75 and another between the two stations. These two stations are slated for completion in 2026.

The third JRL contract, totalling S\$197.4 million, was awarded to Daelim Industrial Co Ltd. It comprises the design and construction of Jurong East station and a 0.5-km viaduct at the station. It also consists of addition and alteration works to the existing Jurong East station on the North-South and East-West Lines, to integrate it with the new JRL station. This new station is scheduled for completion in 2027. ■

## LiuGong establishes new subsidiary in Indonesia

LiuGong has opened a new subsidiary in Indonesia, strengthening its presence in the local market and Asia Pacific. Based in the country's capital Jakarta, the newly established PT LiuGong Machinery Indonesia will focus on sales, customer support, spare parts services and marketing in Indonesia and the Asia Pacific region.

"The opening of the Indonesian subsidiary shows our confidence in this market and reinforces our long-term commitment to our customers in Indonesia and the Asia Pacific region," said Luo Guobing, vice president of LiuGong Machinery Co Ltd. "It will bring our customers better economic support, faster parts turnover, more professional services and more comprehensive solutions, and create greater value for our customers in the whole life cycle of the equipment."

The opening ceremony for the new Indonesian subsidiary took place on 8 January 2020 at the Jakarta International Expo, attended by more than 400 guests including LiuGong customers, dealers, senior management and local dignitaries.

"Today, the establishment of PT LiuGong Machinery Indonesia is undoubtedly an important milestone for LiuGong's overseas development. This will open a new chapter for LiuGong's local development. Our vision in Indonesia and the Asia Pacific region is strong and clear. We are going to train and build a localised team and eventually form a new overseas centre with R&D, manufacturing and post market capabilities in Indonesia," said Chen Hao, president of LiuGong Asia Pacific.

"We are going to constantly improve the product support in both service and spare parts. Lastly, we are going to work closely with our partners and dealers, together we are going to provide customers with more comprehensive solutions to ensure the success of their business."

Randi Anwar, a representative of the Indonesia Investment Coordinating Board (BKPM) commented, "This investment not only shows LiuGong is a responsible company who strives to fulfill its commitment to the customers, but also demonstrates a



ABOVE AND LEFT: The opening ceremony for PT LiuGong Machinery Indonesia was held in January 2020.

positive China image and contributes to the friendship of China and Indonesia. We also hope, with the development of 'OBOR' initiative, more and more Chinese enterprises will come here and achieve their own success like LiuGong."

LiuGong has been active in the Indonesian market since 2003, developing new products and technologies that meet the extreme and complex needs of the environment and improving its service capability to ensure the efficient operation of LiuGong equipment. The company has always regarded Indonesia as one of its strategic markets, which is not only crucial to its success in the Asia Pacific region but also of strategic significance to its global ambitions. ■

# Elastocolor Paint Plus



**ELASTOMERIC, CRACK-BRIDGING FLEXIBLE PAINT  
THAT PROTECTS AND DECORATES RENDERS.**

- 🔗 Long lasting elasticity
- 🔗 Mould and alkali resistant
- 🔗 Low dirt-retention
- 🔗 Protecting concrete structures subject to deformation
- 🔗 Certified according to EN 1504-9, EN 1504-2 standards
- 🔗 Wide range of colours

## Mapei Far East Pte Ltd

28 Tuas West Road, Singapore 638383  
T: +65 6862 3488 E: [mapei@mapei.com.sg](mailto:mapei@mapei.com.sg)  
Learn more on [www.mapei.com.sg](http://www.mapei.com.sg)

    Mapei Singapore



 **MAPEI**<sup>®</sup>  
ADHESIVES • SEALANTS • CHEMICAL PRODUCTS FOR BUILDING

# Kobelco celebrates 111,111th mini excavator production

Kobelco Construction Machinery Co Ltd (KCM) has held a special event at its Ogaki factory in Gifu Prefecture, Japan to celebrate the production of the 111,111th mini excavator that rolled out from the facility. The Ogaki factory manufactures all Kobelco mini excavators for both domestic and overseas use.

KCM (formerly the construction machinery division of Kobe Steel Ltd) entered into mini excavator business in 1988 and commenced the production of 4- to 5-t machines in Hiroshima in 1990. Later, the company outsourced the production of 1- to 3.5-t machines to Shinko Engineering Co Ltd - a group company of Kobe Steel - and started to produce mini excavators at the current Ogaki factory in 1992.

In 2006, KCM established the mini excavator production framework - which is in use today - by taking over the mini excavator business from Shinko Engineering and relocating the production of 4- to 5-t machines from Hiroshima to the Ogaki factory. With a manufacturing capacity of 7,300 units per year, the Ogaki factory made a cumulative total of 111,111 units



BOTH IMAGES: Kobelco celebrates the production of its 111,111th mini excavator (pictured above) from the Ogaki factory.



in January 2020 since the commencement of outsourced production.

“The cumulative production of 111,111 units is a milestone attained in strong headwinds,” said Kazuhide Naraki, president and CEO of KCM. “I would like to pay respect to the capabilities in development, manufacturing, sales, marketing, and services that our predecessors have established, and I would also like to recognise the efforts and hard work of employees by properly carrying on the legacy. I hope that you will continue to develop mini excavators that meet the expectations of customers around the world.” ■

## Kobelco appoints TRT as new crane distributor in Oceania

In another development, KCM has appointed Tidd Ross Todd Ltd (TRT) of Hamilton, New Zealand, as its new distributor for Kobelco-branded cranes in Oceania, covering New Zealand, Australia, Papua New Guinea, New Caledonia and Fiji. TRT and its Queensland-based subsidiary, TRT Australia Pty Ltd, will provide its customers in the region with technical information, parts supply, and sales of Kobelco cranes.

This new partnership reflects both organisations' commitment to outstanding customer service and support

throughout the Oceania region. KCM will combine TRT's strong customer support and expertise in Kobelco cranes - which are valued in the industry for their high performance, having earned a reputation as the most 'reliable brand of crawler cranes on the market.'

Established in 1967, TRT operates across Oceania and has built up many decades of expertise in the crane industry. The company is highly respected and very experienced with crawler cranes, including Kobelco machines. ■

## Indonesia's Muara Laboh geothermal plant reaches commercial operation

The Muara Laboh geothermal plant in West Sumatra Province, Indonesia, has reached commercial operation. This US\$ 580 million facility has been developed by a consortium between PT Supreme Energy, ENGIE and Sumitomo Corporation, with financing through a syndicated loan from the Japan Bank for International Cooperation, the Asian Development Bank, Mizuho Bank, Sumitomo Mitsui Banking Corporation and MUFG Bank. Mott MacDonald is the lenders' technical and environmental advisor on the project.

Indonesia hosts approximately 40% of the world's geothermal reserves. The country aims to increase its geothermal power generation from around 2 GW at the end of 2019 to 6.6 GW

by 2028, to meet increasing electricity demand and achieve its commitments to reducing CO2 emissions.

The 85 MW Muara Laboh power plant will use 100% geothermal energy to provide electricity to households via the Sumatra grid. According to Mott MacDonald, building the plant required the drilling of over 10 geothermal wells and the construction of a steam gathering system and associated infrastructure.

Mott MacDonald has been involved with the project since 2016, initially carrying out a due diligence assessment, followed by monitoring during the construction period. The company said it will continue to monitor operations of the plant throughout the loan period. ■

# Sembcorp to build floating solar farm in Singapore

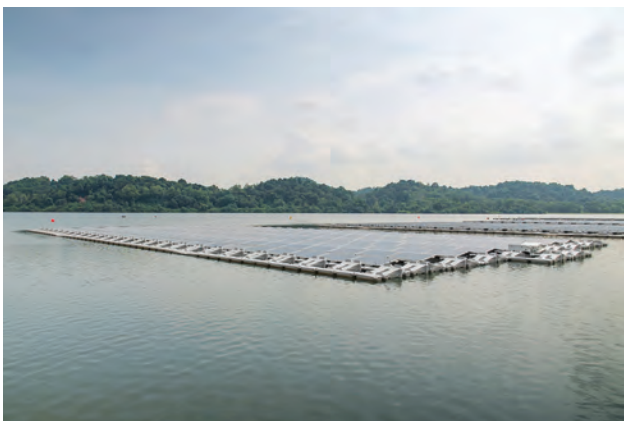
Singapore's national water agency PUB has commissioned Sembcorp Solar Singapore Pte Ltd to build the country's largest floating solar photovoltaic (PV) system on Tengeh Reservoir. With a solar capacity of 60 megawatt-peak (MWp), it is also set to be one of the world's largest single floating solar PV systems when completed in 2021.

PUB launched a request for proposal (RFP) on 6 June 2019 for private sector companies to design, build, own and operate (DBOO) a large-scale floating PV system (at least 50 MWp in capacity) for 25 years on Tengeh Reservoir. The RFP attracted bids from four local and overseas companies.

According to PUB, Sembcorp Solar Singapore has proposed the use of highly efficient PV modules and optimised layout to maximise energy generation within the specified area. At 60 MWp, the floating solar farm is expected to generate enough energy to power approximately 16,000 four-room HDB flats (Singapore's public housing), and reduce around 32 kilotonnes carbon emissions annually – which is believed to be the same as taking 7,000 cars off the roads.

PUB plans to use the green energy produced to power its water treatment processes, thus reducing its carbon footprint. Covering an area equivalent to about 45 football fields, the system can produce enough electricity to meet 7% of PUB's total energy needs.

Sembcorp Solar Singapore - a subsidiary of Sembcorp Utilities Pte Ltd - is an experienced solar player with 240 MWp of contracted solar projects across more than 1,500 sites. This latest appointment is the second DBOO project that PUB has collaborated with Sembcorp - which also runs and operates the Sembcorp Changi NEWater Plant that opened in 2010. ■



ABOVE AND LEFT: The testbed for the floating solar PV system on Tengeh Reservoir.



## Formwork on the next level

Based on your project's unique requirements, Doka provides comprehensive formwork solutions for all cast-in-place concrete components in your highrise project.



Doka Formwork Pte. Ltd. | German Centre | 25 International Business Park  
#02-128 | Singapore 609916 | T +65 6897 7737 | F +65 6897 8606  
singapore@doka.com | [www.doka.com](http://www.doka.com)

The Formwork Experts.

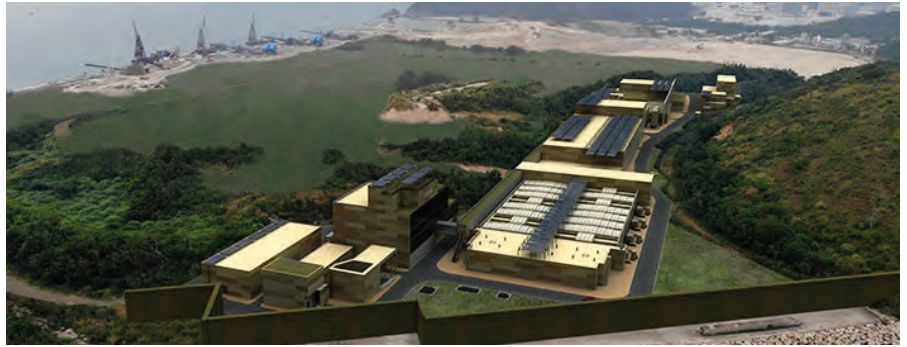
## Acciona to build desalination plant in Hong Kong

Spanish company Acciona is part of a consortium that has been awarded a contract by the Hong Kong Water Supplies Department to design, build, operate and maintain the first phase of the Tseung Kwan O desalination plant. The HKD 9.018 billion project includes the construction and operation of the plant for a duration of 10 years. The facility will also equip the city to face the challenges of climate change and the low level of rainfall in the area.

Construction and design work were expected to commence in January 2020 and the plant is scheduled to be operational in 2023. Its initial output will be 135,000 cu m per day. The operation contract will be valid for 10 years, with the possibility of a five-year extension.

Hong Kong has chosen to use reverse osmosis technology for the facility's desalination process, which is believed to be the most advanced and most effective way to produce drinking water, contributing to sustainable use of water as a scarce commodity.

Acciona carried out its first project in Hong Kong in 1993, participating in the



The plant is scheduled to be operational in 2023, with an initial output of 135,000 cu m per day.

construction of the 1,177-m-long Ting Kau bridge - one of the longest cable-stayed bridges in the world that was completed in 1998. Since then, the company has undertaken landmark projects such as the Kowloon station (one of the largest in Asia) and Kam Sheung Road station, the Lai Chi Kok viaduct, and a number of infrastructures for the KCRC railway, such as the Ma On Shan line.

Acciona strengthened its footprint in the Asia region last year. In Vietnam, the company was awarded a contract to

design and build the Nhieu Loc Thi Nghe wastewater treatment plant (WWTP) in Ho Chi Minh City, as well as to operate and maintain it for five years, with the possibility of a five-year extension.

In 2016, Acciona was awarded a contract for the Putatan 2 brackish drinking water plant in Muntinlupa, south of Manila, in the Philippines, serving a population of six million. In 2017, the company obtained a contract to build a cable-stayed bridge in Cebu, also in the Philippines, totalling US\$400 million. ■

## Mitsubishi and Nomura join Vietnam's Grand Park township project

Mitsubishi Corporation and Nomura Real Estate Co Ltd have acquired a majority share (80%) in Phase 2 of the Grand Park project in Ho Chi Minh City, Vietnam – which is being undertaken by Vinhomes, Vietnam's largest developer and a subsidiary of the country's largest conglomerate Vingroup.

Phase 2 of the project will feature a housing development covering 26 ha and over 10,000 condominium units. The total cost has been estimated to reach 100 billion yen, with completion and delivery scheduled for 2022.

The Grand Park project is a township development covering approximately 271 ha in total. Upon completion, it will have offices, residences, sports and commercial facilities, schools, hospitals, and parks, creating a new town for a residential population of approximately 200,000.

The project aims to provide Vietnam's middle class with high-quality housing optimised to local conditions. It is located in the District 9 of Ho Chi Minh City, with a distance of about 20 km from the city centre. It offers convenient access to the Long Thanh Highway, Hanoi Highway, and Route No. 3 (to be completed in 2021). City authorities are also promoting the development of high-tech parks and industrial parks in and around District 9.

Moving forward, Mitsubishi Corporation and Nomura Real Estate will pursue opportunities to develop smart cities that take full advantage of the latest technologies and facilities, thereby generating economic, societal and environmental value through its businesses.



Phase 2 of the project will cover 26 ha and over 10,000 condominium units.

As announced in Midterm Corporate Strategy 2021, Mitsubishi Corporation is strengthening its service and downstream businesses to optimise its business portfolio. Through this project, the company intends to not only develop condominiums, but also combine various services and functions that will enhance the town's value and its own urban-development operations.

Nomura Real Estate is looking to aggressively expand its own overseas businesses, both by breaking into new countries and stepping up developments in countries where it already has a strong presence, such as Thailand, Vietnam, the Philippines and China. ■

# PanU and Eugene Corporation team up for AiR platform

Singapore-based company Pan-United Corporation Ltd (PanU) - through its technology subsidiary AiR Digital Solutions Pte Ltd - has signed a Memorandum of Understanding (MoU) with a leading ready-mix concrete company in South Korea, Eugene Corporation, to explore opportunities for the adoption of PanU's intelligent optimisation platform called AiR (Artificial Intelligence for Ready-Mix Concrete).

This strategic agreement will facilitate information-sharing between the two companies, allowing Eugene Corporation to assess and evaluate the utility of tapping on the AiR platform to accelerate its digital transformation in the construction and logistics space.

The AiR platform employs artificial intelligence, data analytics, algorithms and sensor technologies to optimise vertical operations along the entire value chain. AiR can be plugged into existing operations to optimise every stage of a user company's operational supply chain - from replenishing raw materials, managing customer orders and deploying capacity at batching plants right up to facilitating quality control checks and e-billing. Benefits include streamlining day-to-day operations, improving productivity, reducing manpower wastage and producing substantial cost savings.

Offered in the form of a software as a service (SaaS), the AiR platform is modular and customisable depending on each user company's operations, logistics requirements and existing supply chain structure. Parameters can be set based on factors such as cost versus time, truck assignments or priority customer projects. Algorithms and machine learning are built into AiR to seamlessly overcome operational 'pain points'.

"By bridging technology with strong domain knowledge from our two decades in the cement and ready-mix concrete industry, PanU has developed a new technology offering that can be commercialised and offered to other regional and global players. The launch of the AiR platform bears testament to PanU's ability to not only remain agile and future-proof our business in a sustainable manner, but also accelerate our entire industry's



The MoU was signed by Chung Jin-hak, CEO of Eugene Corporation (left) and Ken Loh, COO of PanU and director of AiR Digital Solutions.

digital transformation," said Ken Loh, chief operating officer of PanU. He mentioned that the AiR platform has elevated PanU's service standards and yielded 45% in costs savings since the implementation of the first basic prototype in 2014.

Chung Jin-hak, CEO of Eugene Corporation said, "In this age of smart disruption, we see a growing need for increased efficiency and data operability to better serve customer demands and drive cost savings at the same time. Through this partnership with PanU, we seek to digitalise our entire end-to-end operations." ■

## Innovative Lifting Solutions

**SPIDER CRANES**

**MC Series**

MC104C / 0.995t x 1.1m  
 MC174C / 1.72t x 1.0m  
 MC285C / 2.82t x 1.4m  
 MC305C / 2.98t x 2.5m  
 MC405C / 3.83t x 2.7m

**CRAWLER CRANES**

**CC Series**

CC423 / 2.93t x 1.5m  
 CC985 / 4.9t x 2.1m  
 CC1485 / 6.0t x 2.6m

**KNUCKLE BOOM**

**MK**

MK1033C / 0.995t x 1.3m

Some models are not available depending on the area.

**MAEDA ASIAN DEALER NETWORK**

- SHANGHAI KANEKURA MACHINERY ENGINEERING CO., LTD.  
[www.kanekura.com.cn](http://www.kanekura.com.cn)
- MAEDA CRANE KOREA  
[www.minicrane82.com](http://www.minicrane82.com)
- K B CRANE LTD  
[www.chimkeegroup.com.hk](http://www.chimkeegroup.com.hk)
- AKTIO TAIWAN Co.,Ltd.  
[www.aktio.com.tw](http://www.aktio.com.tw)

[www.maedaminicranes.com](http://www.maedaminicranes.com)

- TUYET NGA COMPANY LIMITED  
[www.tuyetnga.com.vn](http://www.tuyetnga.com.vn)  
[vietnamrental.com.vn](http://vietnamrental.com.vn)
- JP Nelson Equipment Pte. Ltd.  
[www.jpnelson.com.sg](http://www.jpnelson.com.sg)
- Italthai Industrial Co.,Ltd.  
[www.italthaiindustrial.com](http://www.italthaiindustrial.com)
- MULTICRANE PERKASA  
[www.multicraneperkasa.com](http://www.multicraneperkasa.com)
- SIN LOY HENG ENGINEERING SDN.BHD.  
[www.sinloyheng.com.my](http://www.sinloyheng.com.my)

**MAEDA SEISAKUSHO CO., LTD.**

# Arup tackles challenges in Singapore's TEL1 project

Singapore's Thomson-East Coast Line 1 (TEL1) finally came into full service on 31 January 2020. Arup led the design team and worked on the three stations (Woodlands North, Woodlands and Woodlands South), a crossover track, 2.5 km of mainline twin tunnels and 4 km of reception tunnels.

Just over 4 km long and completely underground, the first stage of the new mass rapid transit (MRT) line has three ultramodern and spacious stations, including an interchange station for the existing North-South Line (NSL).

The station designs were centred around convenience for travellers, improving connectivity to centres such as the Republic Polytechnic and the wider developing Woodlands region, home to more than 250,000 people. Arup's innovative solutions also included optimising the alignment for Woodlands interchange station, saving commuters' time when transferring between platforms and providing ease of access via a transfer link bridge that was constructed under challenging site conditions.

Tan Yoong Heng, office leader of Arup Singapore explained, "The project team overcame many short-term challenges for long-term gains, as Arup worked closely with the Land Transport Authority to implement several design solutions. Not only will these solutions bring value to the



LEFT AND BELOW: Arup has played an important role in Singapore's TEL1 project, which recently came into full service. This new MRT line includes three stations: Woodlands North, Woodlands and Woodlands South.

overall precinct accessibility, they will also positively impact end-users, developers and spaces in the future."

Arup provided multidisciplinary services including civil and structural engineering, geotechnics, tunnel design, alignment, transport consulting, geographic information systems, acoustic consulting, risk, security and resilience consulting and environmentally sustainable design.

Opening in stages by 2024, the full 43-km TEL will comprise 32 stations, including seven interchange stations linking to the five existing railway lines. The completed line will enhance connectivity in Singapore's north, central and east, and strengthen the resilience of Singapore's rail



Both images © Arup

network, providing commuters with more travel route options.

Arup is also playing an integral role in the challenging third and fourth stages of the Thomson-East Coast Line, which will pass through the central business district and along the east coast respectively. ■

## Singapore engineers and architects join Construction Declares

Arup has also joined 11 other engineers and architects in Singapore to sign up to Construction Declares - a global petition uniting all strands of construction and the built environment.

Construction Declares is a public declaration of our planet's environmental crises and also a commitment to take positive action in response to climate breakdown and biodiversity collapse. Singapore is the first Asian country to join Construction Declares with both structural engineers and architects as founding signatories.

The founding members of Construction Declares include: five structural engineers (Arup, DP Engineers, RSP, Web Structures and WSP), and seven architects (CSYA, DP Architects, Forum Architects, Guz Architects, Hassell, SCDA and Woha).

"Shaping a better world with social purpose has always been the foundation of Arup's philosophy and work. Naturally, we are proud and motivated to support Construction Declares," said Tan Yoong Heng, office leader of Arup Singapore.

"It is important that engineers and architects come together as a collective and commit to put positive environmental outcomes at the core of our working practices. I hope this

initiative will inspire others in Singapore and the region, to strive for a more sustainable and resilient future."

Arup explained that although Singapore is somewhat protected by its equatorial location and 'City in a Garden' policies, the country has been experiencing the twin crises of climate breakdown and loss of biodiversity with increasing periods of drought and higher temperatures. "The Climate Emergency is the most serious issue of our time, and buildings and construction play a major part - accounting for nearly 40% of energy-related carbon dioxide (CO2) emissions while also having a significant impact on our natural habitats," said the company.

The Climate Declaration is a call to action for everyone working in construction and the built environment to meet the needs of our societies without breaching the earth's ecological boundaries. "This will demand a paradigm shift in behaviour," stressed Arup. "If we are to reduce and eventually reverse the environmental damage we are causing, we will need to re-imagine our buildings, cities and infrastructures as indivisible components of a larger, constantly regenerating and self-sustaining system." ■

## Noble partners U City for residential project in Bangkok

Noble Development Public Company Limited and U City Public Company Limited - an affiliate of BTS Group Holdings Public Company Limited - have entered into a 50:50 joint venture agreement to develop a residential project in Bangkok, Thailand.

The new THB 2 billion condominium, to be developed under Ratchada Alliance Co Ltd, will be located in the Ratchada-Lat Phrao area close to two mass rapid transit (MRT) lines: approximately 70 m from the Ratchada station (Yellow Line) and 180 m from the Lat Phrao station (Blue Line).

“With Noble’s high experience and professional in real estate development, comprising more than 50 residential projects with a total value of more than THB 100 billion and a proven expertise in property management with strong financial standing of U City’s, an affiliate of BTS Group Holdings, this strategic joint venture will create the ideal synergy for successful collaboration,” said Thongchai



Thongchai Busrapan, chairman and co-CEO of Noble Development (third from left) shakes hand with Piyaporn Phanachet, CEO and executive director of U City.

Busrapan, chairman and co-CEO of Noble Development.

According to Mr Busrapan, both companies also plan to collaborate on more new projects to expand and reinforce their core business in residential developments located next to mass transit routes. “We believe our projects under this collaboration will complement all aspects

of urban living needs, and will contribute to outstanding performance of new projects under joint development,” he said.

Piyaporn Phanachet, CEO and executive director of U City said, “U City is experienced in investing in business management and real estate development that will generate long-term revenue for the company. As part of the company’s strategy in joining effort with outstanding business partners who are acclaimed for impressive branding and marketing, this collaboration with Noble will diversify the company’s management expertise and enhance the portfolio of U City’s residential projects for sale in addition to the current number of projects with Sansiri in a short time.

She added, “Noble’s diverse customer network also supports to broaden our customer base in Thailand and overseas, which will enable U City to advance access to real estate development opportunities.” ■

# POWERFULLY electrifying



**NEW ALL-ELECTRIC**  
**snorkel SL30RTE**  
**SPEED LEVELS**  
POWERED BY LITHIUM BATTERIES



FOR MORE INFORMATION CALL  
Snorkel™ at +44 (0) 845 1550 057  
or visit [www.snorkellifts.com](http://www.snorkellifts.com)

© 2020 Snorkel. All rights reserved.

**snorkel™**

# Construction of Toranomon Hills Business Tower completed

Japanese developer Mori Building has completed the construction of Toranomon Hills Business Tower – part of the Toranomon 1-chome Type 1 City Redevelopment Project in Tokyo – and is scheduled for opening soon in April.

Construction of the other buildings, Toranomon Hills Residential Tower and Toranomon Hills Station Tower (tentative name) are currently underway, which are slated for completion in January 2021 and July 2023 respectively.

The 36-storey Toranomon Hills Business Tower offers some 96,000 sq m of large-scale office space and around 7,600 sq m of retail space for shops and restaurants. The building is directly connected to the new Toranomon Hills station on the Hibiya subway line, which is planned to commence partial service from 6 June 2020. It is also connected to the Toranomon station on the existing Ginza subway line.

There is a bus terminal on the first floor serving various bus lines, including the Bus Rapid Transit service that will connect to the city centre, and waterfront areas and airport limousine buses connecting the Toranomon area directly to the Haneda airport. And when Loop Road No. 2 is fully opened, it will enhance accessibility to the Haneda Airport.

A new pedestrian walkway linking the business tower and the Toranomon Hills Mori Tower has also been constructed.



ABOVE: The Toranomon Hills Business Tower is set to open in April 2020.

BELOW: An artist's impression of the office tower entrance.



Together with the Shintora-dori Avenue built as a stretch of Loop Road No.2, this completes a new pedestrian network that will connect the entire Toranomon Hills area.

A sizeable incubation centre called ARCH, with an area of around 3,800 sq m, will host innovators involved in a wide range of fields and allow them to collaborate on new business ventures by large-scale enterprises. The ARCH centre aims to be a base for Japan's unique innovation ecosystem.

In order to facilitate the efficient use of energy and strengthen disaster prevention measures, the electricity plant in the office tower is equipped with a private power generator complex incorporating a gas cogeneration system and a highly efficient heat generation system, which utilises large-scale water tanks and waste heat utilisation facilities - thus creating an energy supply that is environment-friendly. A back-up system that can supply electricity and heat in the aftermath of a disaster has been installed as well, contributing to the safety and security of the building.

The Toranomon Hills Business Tower was designed by Ingenhoven Architects (exterior) and Wonderwall (interior). Contractors on the project are Obayashi Corporation, Kinden Corporation, Sanki Engineering Co Ltd and Saikyu Kogyo Co Ltd. ■

## Turner Construction celebrates achievements in India

Turner Construction continues to celebrate major project achievements in India, where the company is managing work at the first and third busiest airports in the country - Indira Gandhi International Airport in Delhi and Kempegowda International Airport in Bengaluru respectively.

Turner achieved a significant milestone in December 2019 at Kempegowda International Airport, with the 4,000 m x 60 m New South Parallel Runway and the cross-field taxiway becoming operational. The first flight that took off from the new runway flew from Bengaluru to Hyderabad. With the completion of the new runway, the Bengaluru airport is reportedly the first airport in India that enables aircrafts to land and take off simultaneously on both runways.

In addition, Delhi International Airport Limited has selected Turner as construction manager for Phase 3A works at Indira Gandhi International Airport. The project is the first phase of a massive phased expansion that will increase the airport's capacity from 60 million to 100 million passengers per annum. Phase 3A

will comprise of expanding the existing airport terminal (T1) to 192,985 sq m from the existing 64,140 sq m, and will include an architectural facade on the city-side. The scope also includes a multi-level car park, landscaping works, new pier building on the airside with additional contact stands, a fourth runway that will see 110 aircrafts move every hour, Eastern Cross Taxiway, apron and airfield ground lighting (AGL) works, and significant site works. According to Turner Construction, more than 3,000 personnel including indirect workforce are employed on the project, and 3.3 million safe work-hours have been achieved to date.

"Working on an airport brownfield project has its own challenges and innovative solutions," said Nikolaos Karagiannidis, Turner's project director. "Construction is progressing in phases to ensure that the airport operations continue with minimum interruptions. Turner's core values and processes are the foundations to the continuous improvement on our proactive approach to provide the best to our client on India's capital city airport." ■

## Skyjack expands presence in Korea with new facility

Skyjack is strengthening its commitment to the Asian market with the opening of a new 2,000 sq m facility in South Korea, located just outside of Seoul. The company has gradually gained a foothold in the region, with sales starting in 1994 and enhancing its service offerings by providing a dedicated service support since 2013.

“Asia is a growing market that can’t be ignored, and this facility is a testament to our commitment to help grow the access market abroad,” said Simon Cracknell, sales, operations, and market development director for Skyjack Asia. “As we did with the Chinese market, we started slowly with sales and service and now have a full team operating from our Gyeonggi-do, South Korea office led by general manager JC Chun. JC’s experience working with Doosan Bobcat in the US and Asia Pacific markets made him an excellent fit for our team.”

Skyjack explained that localisation of its business in Korea will better help meet the needs of its growing local customer base. According to the company, its longstanding customers including AJ Networks - the largest general rental company in South Korea - views a dedicated office for the South Korean market as a confident move by Skyjack showing them the global MEWP distributor is there to stay.

“The MEWP industry in Asia is relatively new and has a bright future as more people begin to see the benefit of MEWPs over scaffolding and other traditional methods of working at height,” said Mr Chun. “Our new Korean facility brings more convenience to our customers and amplifies Skyjack’s brand awareness in the South Korean market.”



ABOVE AND LEFT: Skyjack’s new facility in South Korea is located just outside of Seoul, aimed to meet the needs of its growing local customer base.

Skyjack accredits its success to equipment that is specifically designed for rental, which means robust, easy to maintain, and provides a high ROI for rental companies. Its easy-to-do business-with attitude has been a key contributor to the company’s growth in Asia so far, and is one of the driving factors behind its long-term relationships in the region. ■

## Tiong Woon acquires first Grove GMK6300L-1 in Southeast Asia

Tiong Woon Crane & Transport recently added a Grove GMK6300L-1 to its fleet and has deployed the unit to carry out a lifting work at Shell Jurong Island in Singapore - Shell’s largest refinery in the Asia Pacific region. Tiong Woon is the first company in Southeast Asia to take delivery of this crane model.

“The GMK6300L-1 is ideal for working in refineries as it has a boom length of 80 m with the option of a swingaway jib between 12 m and 21 m in length,” said Michael Ang, deputy CEO of Tiong Woon. “Our favourite feature on the Grove all-terrain crane is the boom length and its ability to travel with up to 21 t counterweight on board the crane, which opens it up to a wider range of jobs.”

The GMK6300L-1 all-terrain mobile telescopic crane is the successor to Manitowoc’s popular Grove GMK6300L. The new 300 t-rated GMK6300L-1 features a maximum tip height of 120 m when working with its full 80 m boom and 37 m of jib. When lifting with the main boom, it can lift up to 14 t at fully extended height and can handle this within a 14-28 m working radius, offering a flexible range of applications.

On the Shell Jurong Island project, the crane is configured with boom lengths between 40 m and 60 m, and handles loads at working radii between 20 m and 30 m. Typical loads for the crane are replacement parts at the industrial plant, with weights generally under 10 t.

“We selected Manitowoc cranes because of the quick lead time for crane delivery and the competitive pricing that Manitowoc offers,” said Mr Ang. “Besides, we previously purchased five



The first GMK6300L-1 all-terrain mobile telescopic crane in Southeast Asia has been delivered to Tiong Woon.

GMK6300L units, the predecessor of the GMK6300L-1, so there’s an existing relationship with Manitowoc and the crane has a proven track record with us.”

Like its predecessor, the GMK6300L-1 features Megatrak suspension, along with Manitowoc’s standard all-wheel steering. Its counterweight slabs and auxiliary hoist are interchangeable with the GMK5180-1, GMK5200-1, GMK5250L and GMK6300L.

Based in Singapore, Tiong Woon is a leading integrated heavy lift specialist and service provider that supports the oil and gas, petrochemical, infrastructure and construction sectors. It has also been reported as one of the world’s top 20 crane companies. ■

# Surbana Jurong attains new international building standard

Surbana Jurong has become the first company in Singapore - and also the first consultancy in Asia - to be awarded the new ISO 19650 accreditation for the digitisation of design and engineering data for buildings and civil engineering works, including building information modelling (BIM).

This new accreditation demonstrates the group's compliance with the highest BIM modelling standards in projects. Building authorities around the world, including Singapore's Building and Construction Authority (BCA), have identified BIM as a key technology for improving productivity and integration across disciplines in the built environment value chain.

Surbana Jurong's group CEO Wong Heang Fine said, "Greater adoption of BIM will rapidly transform the built environment industry in the coming years. BIM creates value from the combined efforts of people, process and technology. For Surbana Jurong, BIM has become a way of working. It enables our teams to make informed decisions at every stage of a project and work collaboratively and seamlessly to drive the best outcomes for our clients.

"With our in-house multidisciplinary skill sets, we are in a unique position to provide end-to-end BIM throughout the



ABOVE: **Ravikummar Jeevarathinam, VP of technology and innovation digital business at Lloyd's Register (on the left) and Wong Heang Fine, group CEO of Surbana Jurong.**

BELOW: **SunTec's new campus at Technocity, Pallipuram in India, is one of the projects where Surbana Jurong had leveraged its BIM capabilities.**



life cycle of the project - from design to operations - and extract every bit of value that BIM can bring. That is why it is paramount that we comply with international standards to set the bar for our BIM quality."

The ISO 19650 accreditation provides an assurance to clients that Surbana Jurong is able to provide effective and compliant BIM services of the highest standards to clients in every part of the world. Lloyd's Register, an ISO accrediting body, is supporting a number of government bodies, architecture firms and other building consultants in Asia in their efforts to attain the certification.

Fotis Kampouris, business director at Lloyd's Register said, "Surbana Jurong is one of the world's leading urban design consultancies and has always been ahead of the curve in its use of technology, so it comes as no surprise that it is the first organisation in Singapore to be awarded ISO 19650 certification. The accreditation, supported by the group's strong talent policies and risk management practices, should give its clients the greatest confidence in its building quality and standards."

Surbana Jurong is leveraging its BIM capabilities in all of its projects around the world, at every stage of the project lifecycle. Among them are Singapore Changi Airport Terminals 1, 4 and 5; SunTec's new campus at Technocity, Pallipuram in Kerala, India; a major station in the Sydney Metro, Australia; and Surbana Jurong Campus in Singapore which is under construction. ■

## Boskalis wins Pasay Reclamation Development Project in Manila

Dredging contractor Royal Boskalis Westminster NV has secured the design and construction contract for the Pasay Reclamation Development Project in Manila Bay, the Philippines, in collaboration with CHEC from China. Awarded by property developer SM Prime Holdings Inc (SMPHI), the project aims to create a new commercial and residential area in a densely populated part of Manila.

"We are delighted with the award of this large contract from SMPHI. As Boskalis, we have a rich tradition in land reclamation and we look forward to contributing to a modest incremental growth of the Philippines and to protect part of Manila against the effects of climate change. This has always been an important region for Boskalis and through this project, we have secured utilisation for the large dredging vessels for the coming years," said Peter Berdowski, CEO of Boskalis.

The Pasay Reclamation Development Project will offer a new, modern commercial and residential property development to be run by SMPHI. It will involve the reclamation of approximately 360 ha through the construction of three artificial islands according to international standards to ensure a safe living environment. The islands have been also designed to

withstand potential large earthquakes, said Boskalis. In addition, shore protection works are designed to withstand typhoons.

For the reclamation activities, Boskalis will deploy a number of trailing suction hopper dredgers over a period of two years including its mega hopper dredgers. To accelerate the soil settlement, 60,000 km of vertical drains will be installed and the entire reclamation area will be compacted with vibro- and dynamic compaction to ensure soil stability.

The outer perimeter of the islands will be protected with a combination of rock revetment and a concrete wave wall. Preparatory work is scheduled to commence immediately and work on site is expected to start within the first quarter of 2020. The reclamation activities are planned to be completed within three years and the total project duration including land development is five years.

Boskalis has been involved in other major land reclamation projects in Asia - in Singapore (multiple projects over many decades with currently the Tuas Terminal phase two and Tekong polder projects under development), South Korea (including Songdo International City), and Indonesia (recent development of five islands in Makassar), among others. ■

An Event of

**IEM**  
CONVENTION



**ENGINEER**™

1ST MALAYSIA ENGINEERING EXHIBITION AND CONFERENCE 2020



**MALAYSIA'S FIRST  
ENGINEERING CONVENTION  
AND EXHIBITION**

**23-26  
SEPT 2020  
10AM - 7PM**

**KLCC**  
KUALA LUMPUR  
CONVENTION CENTRE,  
MALAYSIA

Email or speak to us at: [info@engineermalaysia.com.my](mailto:info@engineermalaysia.com.my) or +603 – 7982 4668 on how you can be a part of this exciting platform to connect with your targeted audience.

[www.ENGINEERMALAYSIA.com.my](http://www.ENGINEERMALAYSIA.com.my)

Jointly Organised By:



CIS

# New large-scale transitional housing for Hong Kong

Sun Hung Kai Properties (SHKP) and the Hong Kong Sheng Kung Hui Welfare Council (the Welfare Council) have formed a partnership to develop a large-scale transitional social housing project – called United Court – in Tung Tau, Yuen Long, Hong Kong. Scheduled for completion in early 2022, it aims to deliver a comfortable home for 1,600 underprivileged families and ultimately benefit 5,000 families.

The two companies said that United Court is also intended to provide opportunities for residents to engage with the surrounding community, mutually benefitting one another, making it a distinctive transitional housing project in Hong Kong.

The 300,000-sq-ft development is located on Yuen Long Kau Hui Road near Shan Pui Tsuen. Apart from lending the lot for a minimum of eight years, SHKP will work on preliminary project planning and basic site formation, and provide property management consultancy upon completion. The Welfare Council will be responsible for project planning, construction, operation and management, and for providing residents with a variety of people-oriented community services.

According to both companies, the site has a proper rectangular shape and does not require government involvement in building large-scale infrastructure, such as roads. It is estimated that construction can be completed by the end of 2021, while the project will be ready for move-in by early 2022.

“The Welfare Council is glad to announce at the start of the year the collaboration with SHKP to develop this very meaningful transitional housing project, United Court, to help address the overcrowding living conditions of 1,600 underprivileged families. We estimate that up to 5,000 families will eventually benefit as they move in to United Court before being allocated public housing,” said Michael Lai, vice chairman of Hong Kong Sheng Kung Hui Welfare Council.

“SHKP understands the keen demand for housing in Hong Kong. We have therefore leveraged our resources to help improve the living conditions of underprivileged families. Earlier, SHKP had lent some village house flats in Tuen Mun to Yan Oi Tong via The Hong Kong Council of Social Service to develop into Green Garden, a transitional social housing project. The success of Green Garden has given us the confidence to take on a larger-scale transitional housing project,” explained Adam Kwok, executive director of Sun Hung Kai Properties.

Hong Kong’s Secretary for Transport and Housing Frank Chan commented, “Through the concerted efforts of many sectors of the society, the announced transitional housing projects, including the 8,000 flats announced earlier and the 2,000 flats announced today, have together achieved our goal of building about 10,000 transitional housing flats in the coming three years.” ■



ABOVE AND LEFT: SHKP and the Welfare Council join forces to develop a large-scale transitional social housing project, which could benefit up to 5,000 families.

## Delta Gulf takes delivery of first Demag AC 250-5 all-terrain crane

The first Demag AC 250-5 all-terrain crane has been acquired by Abu Dhabi-based crane service provider Delta Gulf. This new unit was handed over by Demag’s regional sales manager Sahil Shaikh.

According to Ayman Mousa Almalkh, CEO of Delta Gulf, the crane’s large lifting capacities and its compact design are crucial factors that influenced the purchase decision. In fact, the Demag AC 250-5’s compactness is considered highly advantageous for projects in the booming oil fields of Abu Dhabi.

“In addition, Demag is not only known for being one of the world’s most long-standing crane manufacturers, but also for the high quality of its products. And since quality is also one of the most important key factors when renting cranes, the AC 250-5 is a perfect match for our fleet,” said Mr Almalkh. “Moreover, Demag’s fast and outstanding after-sales service made it easy for the people at Delta Gulf to decide on the AC 250-5.” ■



Ayman Mousa Almalkh, CEO of Delta Gulf Group (left) and Sahil Shaikh, Demag’s regional sales manager.

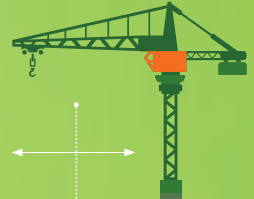
## OUR QUALITY, YOUR BENEFIT.

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

November 3-6, 2020,  
Gurgaon, New Delhi

**APPLY NOW**

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



**Our demand  
is to exceed  
yours.**

**Expect more  
in 2020**



### Facts and figures\*

**39,173**

Participants from  
63 countries

**668**

exhibitors from  
26 countries

**195,000 m<sup>2</sup>**

of exhibition  
space

\* Figures from 2018

### Exhibitor Profile



All around  
construction sites



Mining, extraction and  
processing of raw materials



Production of  
building materials



Component and  
service suppliers

### Visitor Profile

Contractors

Developers/  
Builders

Government/  
PSUs

Financial  
Companies

Manufacturers

Rental  
Companies

Channel  
Partners

to name few...



**Book your  
space now!**

→ [bit.ly/BK-bCI](http://bit.ly/BK-bCI)

Your Contact: Ms Kim Kumer  
Tel.: +49 89 949-20256  
[info@bcindia.com](mailto:info@bcindia.com)  
[www.bcindia.com](http://www.bcindia.com) [f](#) [in](#) [v](#) [t](#)

Partner Association



Joint Organizer



# LiuGong pushes into quarry and aggregates

LiuGong has formed a new international team responsible for developing its quarry and aggregate business. Leading the team is John Calder, director of quarry and aggregates.

Mr Calder has been working with LiuGong for the last two years in product support and brings extensive industry experience. Previously he was with International Harvester in Australia for five years, then joined Caterpillar in Geneva, Switzerland where he held a number of senior international positions in marketing, sales and dealer development over a 30-year career.

The newly formed team will focus on 'back to basics', lowering quarry and aggregate customers' costs and making them more productive and more profitable. "Based on feedback from many customers, the competition seems to be doing it the other way around, so we see great potential to grow internationally," said Mr Calder. "Our strategy is simple and is based on going back to four basic critical success factors: people, product, parts and service, and price."

According to LiuGong, the new international team is multicultural, able to converse in 10 different languages and consists of deep subject matter experts with sales, marketing, product development, product support, rental and used, finance and dealer development backgrounds. "Their primary role will be to work side by side with global dealers to ensure their teams are well trained and focused on the specific needs of quarry and aggregate customers," stated the company.

Kevin Thieneman, vice president of LiuGong Machinery said, "By focusing on the unique requirements of our quarry and aggregates customers, we want to develop enduring partnerships. John and his team are a great addition to LiuGong and are well placed to help LiuGong develop and maintain long-term relationships in this industry segment."

## New global rental and used equipment business

Furthermore, Graziano Cassinelli has joined LiuGong to lead the company's newly formed global rental and used equipment business. As director of the new unit, Mr Cassinelli brings a wealth of knowledge from years of experience in all aspects of the rental and used equipment business.

Mr Thieneman, who is also chairman of LiuGong North America



FAR LEFT: **John Calder**, LiuGong's director of quarry and aggregates.

LEFT: **Graziano Cassinelli**, LiuGong's director of global rental and used equipment.

BELOW: **LiuGong machines** working at a quarry.



and LiuGong Latin America said, "Rental is the largest segment for the construction equipment industry in Europe and North America, and is projected to become a leading segment in China. In addition, effective management of used equipment is an important element to ensuring end users enjoy lower total cost of ownership. This new endeavour will champion LiuGong's efforts to become a leader in rental and used equipment. Graziano has dedicated his career to rental and used. He has OEM experience at Caterpillar and CNH Industrial as well as dealer experience at CGT and Barloworld. LiuGong is fortunate to have a leader with such rich experience."

Mr Cassinelli commented, "With its tough equipment, LiuGong offers the type of machines and equipment that the rental market needs and wants. And the opportunity to spearhead this effort with LiuGong is one that I am looking forward to." ■

## Terex Tower and Rough Terrain Cranes join Terex Materials Processing segment

Terex Corporation has announced that its Tower and Rough Terrain Cranes businesses have become part of the Materials Processing (MP) segment, as of 1 January 2020. Marco Gentilini, vice president and general manager of the Tower and Rough Terrain Cranes businesses, respectively based in Fontanafredda and Crespellano, Italy, reports to Kieran Hegarty, president of Materials Processing.

Last year, Terex announced plans to align all of its business operations within two business segments, Aerial Work Platforms based in Redmond, Washington, the US and Materials Processing based in Dungannon, Northern Ireland, the UK. The alignment of the Tower and Rough Terrain Cranes into MP completes the transformation of Terex into a two-segment organisation.

"Consistent with our Focus, Simplify, and Execute to Win strategy, all of our businesses are now aligned with the potential for long-term profitable growth," said John L. Garrison, Jr., chairman,

president and CEO of Terex Corporation. "These crane businesses will be an excellent fit within the diverse MP portfolio of equipment businesses."

Mr Hegarty said, "Like our other MP businesses, Tower and Rough Terrain Cranes utilise distinct channels in their markets and will be a great addition to our portfolio. We plan to support their continued growth with investment in new products and global sales and marketing."

Tower Cranes is an efficiently operated participant in the worldwide tower cranes market. The business has launched five new products in the past two years along with a crane elevator (T-Lift) and new telematics features (T-Link). The Rough Terrain Crane business launched four new products in 2019, while expanding its engineering team as well as its global sales and service teams. ■



# MBAM ONEBUILD

21 ▶ 23 OCT 2020

KUALA LUMPUR CONVENTION CENTRE

MALAYSIA INTERNATIONAL CONSTRUCTION & INFRASTRUCTURE TECHNOLOGY EXHIBITION

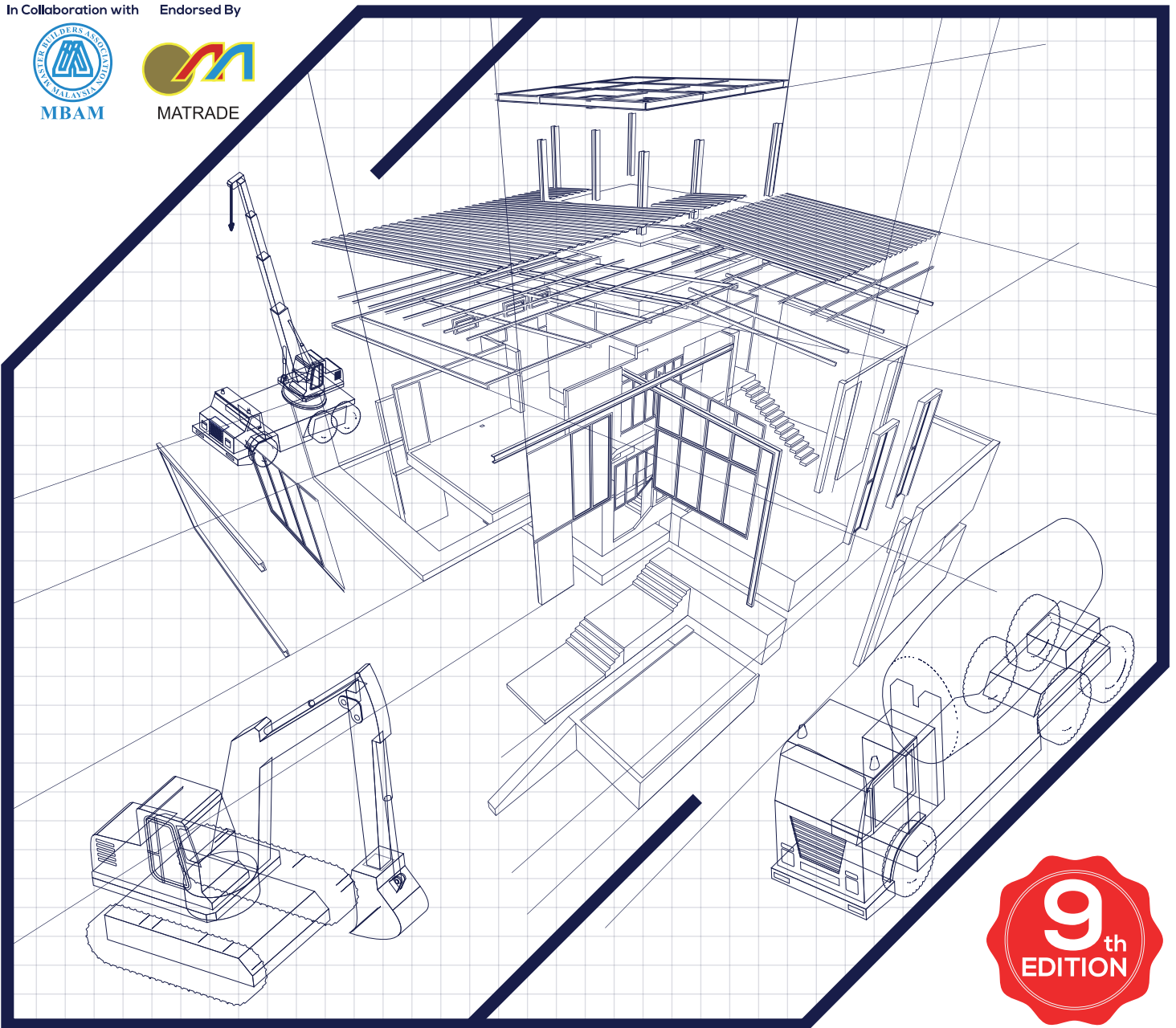
In Collaboration with Endorsed By



MBAM



MATRADE



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

Organised by

**MBAM**  
**ONEBUILD**

**MBAM OneBuild Sdn Bhd** 201701035635 (1249806-U)

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

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

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

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

# Korea's GS E&C joins forces with UK's Elements Europe

South Korea-based global construction company GS Engineering & Construction (GS E&C) has acquired a significant shareholding in Elements Europe, one of the UK's leading off-site manufacturers and contractors.

Through this investment, GS E&C is set for expansion and rapid scaling up of Elements Europe's existing capacity. "We are excited to invest into Elements Europe, they have 15 years of experience and a track record of delivery. Added to that, they have built a successful platform and invested heavily into the development of their products, technology, design processes and people in order to support rapid expansion plans," said Yoon-Hong Huh, president of GS E&C.

"We are confident that our investment in the business will enable substantial growth in Elements Europe's offering, maintaining and expanding their strong market position."

Elements Europe has successfully positioned itself as a leading organisation in the UK's off-site manufacturing and construction market, having delivered in excess of 20,000 pods and volumetric modules across the UK and sector leading projects. In addition to hotels and



The agreement signing ceremony between GS E&C and Elements Europe.

student accommodation, the company is regarded as a leader in off-site residential construction, having carried out over 500 apartments and homes in recent years including two 23-storey residential towers in Greenwich and Croydon.

Together with GS E&C, Elements Europe aims to increase output with the construction of a new facility in the Midlands and to open further factories throughout the UK, rapidly scaling up its capacity to provide a new generation of service to the construction industry. Its systems and processes are fully accredited by industry warranty providers and regulators. Elements Europe will also deliver more turnkey projects from concept

to completion and is actively seeking joint venture opportunities.

"The additional investment into our company will transform the capacity of our business and comes at a time when the market is in need of increased output in this sector," said Simon Underwood, CEO of Elements Europe. "Our volumetric module and pod solutions have never been in more demand. GS E&C brings substantial strength and an ongoing, long-term commitment to invest into the business to meet this demand."

He added, "2020 is the start of a new decade of opportunity for Elements Europe and GS E&C will be able to help the industry to move on from traditional methods. As demand continues to increase in the markets in which we operate, there is room for a new generation of organisation. We have always been at the forefront of this sector and look forward to the future with confidence in our ability to substantially increase output by investing in a smart way, embracing digital design and BIM technology, manufacturing in factories, and delivering solutions that can result in lower costs, higher quality, substantially quicker construction times and above all, a safer and greener environment." ■

## Maximus rebrands as RM Dungannon

As of January 2020, Irish screen manufacturer Maximus has changed its name to RM Dungannon. This step follows the company's acquisition by Austrian compact crusher manufacturer Rubble Master in 2018.

Founded in Northern Ireland, Maximus produces tracked mobile screens that complement the Rubble Master product range. Their collaboration in recent years has certainly resulted in a positive impact on the sales figures, as shown by a growth of 15% in 2019.

"Rubble Master has always promoted a company culture that brings people together - customers, suppliers and network partners. In recent years, this culture has enabled us to exchange knowledge with our location in Northern Ireland, develop and launch new products, and expand our expertise in all areas," said Gerald Hanisch, founder and owner of Rubble Master.

According to Rubble Master, a major focus was put on the restructuring of processes and market and product evaluation. In addition to customer benefits, various synergies have been employed over the years, such as shared suppliers and increased cooperation in innovation, product management and sales.

The initial partnership with Maximus has evolved much further, said Rubble Master. Over the last two years, two centres of excellence have emerged - the production site in Northern Ireland



Maximus has changed its name to RM Dungannon, following its acquisition by Rubble Master in 2018.

as the expert for tracked mobile screens, and the production site in Upper Austria as the world market leader for mobile crushers.

"We see the rebranding as the next logical step so that we appear on the market as a strong, full solution provider with one brand name - the RM Group," said Mr Hanisch. "With our two centres of excellence, we offer a lifetime support for all RM products worldwide - 24 hours a day, for the lifetime of the machine." ■

# GlobalData: ‘Construction markets to watch in 2020’

The global construction industry posted its slowest pace of growth in a decade in 2019, dropping to 2.6%, according to a leading data and analytics company GlobalData. The sluggish performance was primarily due to weakness in a number of advanced economies, including the US, the UK and Australia. However, GlobalData predicts that growth will edge up to 3.1% in 2020 – in part driven by a projected improvement in the global economy. This, in turn, relies on improvements in financial market sentiment and a stabilisation in some of the large currently-troubled emerging markets.

## The US, Canada and the UK

GlobalData forecasts that construction output in the US will recover to grow by 0.6% in 2020, following a contraction of 1% in 2019. The outlook for the US construction industry is looking slightly brighter in 2020 due to a recovery in residential construction and continued investment – especially in the transport and energy and utilities sectors.

Meanwhile, Canada’s construction output growth is expected to recover to 0.9% in 2020, improving from an estimated drop of 1% in 2019. Following several months of declines, Canada’s housing market finally appears to be coming out of recession thanks to relatively low borrowing costs, strengthening consumer spending and record levels of immigration.

The UK will be a key focus market in 2020, with uncertainty over Brexit negotiations continuing to constrain the pace of investment in new construction projects. Danny Richards, lead economist at GlobalData said, “The decisive outcome of the December 2019 general election will provide the industry with confidence that the new government will be in a strong position to push through its policy agenda, particularly on the vital issue of the UK’s exit from the EU. However, there will still be significant challenges ahead as the industry will need to adjust to operating outside of the EU under new trade and investment deals.”

## India, the Philippines, Turkey and Brazil

Renewed economic weakness and a liquidity crunch have heavily impacted construction activity in India, particularly in the residential sector, with reports of increasing numbers of new developments being put on hold as developers struggle to secure funding to reach completion.

Mr Richards added, “Although a bailout fund has been announced, further support could be required in 2020 to boost confidence and prevent a prolonged decline in the Indian construction market.”

In the Philippines, the pace of construction growth is expected to pick up in 2020, rising to 8.0%, having weakened in the first half of last year owing to a four-month delay in the enactment of the 2019 budget. The country’s construction industry is set to benefit from the revitalisation of a large-scale infrastructure investment programme.

As for Turkey, Mr Richards said, “Turkey’s construction industry is expected to recover in 2020 thanks to the government’s focus on developing transport, residential and energy infrastructure, as well as investments under its 11th five-year development plan 2019-2023. The government aims to boost economic growth by 2023, under which it aims to build 13,478 km of new roads, and 5,748 km of new highways by 2023.”

After five consecutive years of contractions, the construction industry in Brazil returned to growth in 2019. This year, the construction growth is expected to accelerate to 2.2% as record low interest rates, and a more favourable economic and investment environment, further boost domestic demand and business confidence across the country.

In addition, economic growth in Ethiopia will continue to support the expansion in construction, while the Egyptian Government is planning to boost capital expenditure with a focus on the power and transport sectors. Ghana, a small politically-stable emerging market, is accelerating growth in infrastructure investment. ■

A WIRTGEN GROUP COMPANY

**HAMM**

**HAMM rollers**  
POWERFUL SOLUTIONS FOR ROAD AND EARTHWORK CONSTRUCTION

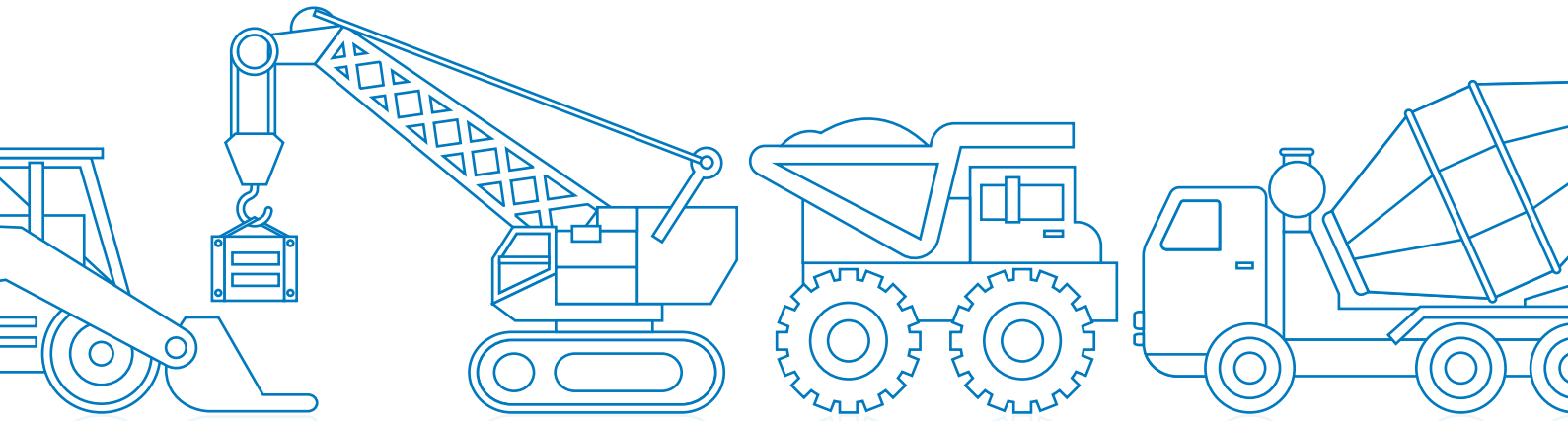
**CLOSE TO OUR CUSTOMERS.** High compaction power, ingenious power train concepts, user-friendly operation and perfect visibility - the persuasive arguments in favour of HAMM rollers. Worldwide.

[www.wirtgen-group.com/hamm](http://www.wirtgen-group.com/hamm)

HAMM AG · Hammstr. 1 · D-95643 Tirschenreuth · Tel +49 (0) 9631 80-0

Date	Events in Asia	Organiser & Contact
11 to 13 Jun 2020	Laobuild 2020 National Convention Centre Vientiane Laos	AMB Tarsus Events Group Sdn Bhd Tel: +856 30 5451894 Email: youthxay@ambtarsus.com Website: www.laobuild.com
6 to 8 Aug 2020	Lankabuild 2020 Sri Lanka Exhibition & Convention Centre (SLECC) Colombo Sri Lanka	AMB Tarsus Events Group Tel: +603 2692 6888 Email: ian@ambtarsus.com Website: www.lankabuild.org
1 to 4 Sept 2020	International Built Environment Week (IBEW) Sands Expo & Convention Centre Singapore	BCA / Reed Exhibitions Tel: +65 6780 4530 Email: ibew@reedexpo.com.sg Website: www.ibew.sg
2 to 4 Sept 2020	Cambuild 2020 Diamond Island Exhibition & Convention Centre Phnom Penh Cambodia	AMB Tarsus Events Group Tel: +855 023 901 579 Email: somaly@ambtarsus.com Website: www.cambuildexpo.com
9 to 11 Sept 2020	Intermat ASEAN & Concrete Asia 2020 Impact Exhibition and Convention Centre Bangkok Thailand	Comexposium & Impact Exhibition Management Tel: +662 833 5315 Email: info@asean.intermatconstruction.com Website: asean.intermatconstruction.com
3 to 6 Nov 2020	bauma Conexpo India 2020 Huda Ground Gurgaon, New Delhi India	Messe München Tel: +49 89 949 20251, Fax: +49 89 949 20259 Email: info@bcindia.com Website: www.bcindia.com
17 to 18 Nov 2020	Trenchless Asia 2020 Kuala Lumpur Convention Centre Kuala Lumpur Malaysia	Westrade Group Ltd Tel: +44 1923 723990 Email: pharwood@westrade.co.uk Website: www.trenchlessasia.com
19 to 21 Nov 2020	Myanbuild 2020 Myanmar Expo Hall Yangon Myanmar	AMB Tarsus Events Group Tel: +95 1 2301311 (ext 2075) Email: ei@ambtarsus.com Website: www.myanbuild.net
24 to 27 Nov 2020	bauma China 2020 Shanghai New International Expo Centre Shanghai China	Messe München Tel: +49 89 949 20251, Fax: +49 89 949 20259 Email: info@bauma-china.com Website: www.bauma-china.com
24 to 25 Mar 2021	Geo Connect Asia 2020 Suntec Convention and Exhibition Centre Singapore	Montgomery Asia Email: effie@montgomeryasia.com Website: www.geoconnectasia.com
Date	Events outside Asia	Organiser & Contact
26 to 29 May 2020	Bauma CTT Russia 2020 Crocus Expo International Exhibition Centre Moscow Russia	Messe München Tel: +49 89 949 20251 Email: info@bauma-ctt.com Website: www.bauma-ctt.ru/en
17 to 18 Jun 2020	Smart.Con São Paulo Expo Centre São Paulo Brazil	Messe München Tel: +55 11 3868 6340 Email: info@intechtra.com.br Website: www.exposmartcon.com.br
23 to 25 Jun 2020	Hillhead 2020 Hillhead Quarry Buxton, Derbyshire, England United Kingdom	The QMJ Group Ltd Tel: +44 115 945 4367 Email: hillhead@qmj.co.uk Website: www.hillhead.com

**Note:** The show organisers may change the dates of the event or postpone/cancel it without prior notice, so readers are advised to visit the show websites regularly for the latest information.



# SOUTHEAST • ASIA CONSTRUCTION

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



Scan to visit our website

WE ALSO PUBLISH

**bathroom  
+kitchen**  
today

**SEAB**  
SOUTHEAST ASIA BUILDING

**lighting  
today**

**SECURITY  
SOLUTIONS**  
TODAY

**TRADE LINK MEDIA PTE LTD**

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

## Preparations in full swing for bauma China 2020

The 10th edition of bauma China is set to take place from 24 to 27 November 2020 at the Shanghai New International Expo Centre (SNIEC). With less than a year before the show opens, preparations are now progressing at full speed.

Since it was launched in 2002, bauma China has developed into the largest and most important industry event in Asia. A total of 3,350 exhibitors from 38 countries and regions participated in the previous edition – which took place in November 2018 – showcasing their companies and products to over 212,000 visitors from Asia and all over the world.

The next edition in 2020 is once again expected to occupy the entire exhibition space available, around 330,000 sq m in total. “The current registration figures are significantly higher than they were at this point in time for the previous event in terms of the number of exhibitors and the amount of exhibition space that has been reserved,” said Maritta Lepp, bauma China exhibition director.

### ‘Digitalisation and automation’

According to the show organiser, Messe München, bauma China will continue along the path already laid down by bauma in Munich (held in April 2019) when it comes to current topics and innovative developments: digitalisation and automation are the main drivers of development in the construction machinery industry. As such, smart and low-emission machines and vehicles with integrated digital solutions will feature heavily at bauma China 2020.

A leap in technological development is also anticipated due to further tightening of emission standards for unroadworthy diesel vehicles, which China has announced will be introduced at the end of 2020. Construction machinery that meets the new standards



ABOVE AND LEFT: The last edition of bauma China in 2018 drew over 212,000 visitors and 3,350 exhibitors.

will be displayed at bauma China and corresponding updates will be provided for older machinery. ■

Website: [www.bauma-china.com](http://www.bauma-china.com)

## Hillhead 2020 set for record-breaking event

Hillhead will return from 23 to 25 June 2020 at the Hillhead Quarry, near Buxton, the UK. The show organiser said that 550 exhibitors have now confirmed their participation, making it a record-breaking event.

Event director Richard Bradbury said, “With extensions to both the outdoor and indoor areas, we have been able to accommodate more exhibitors than ever before - providing our visitors with an unrivalled range of suppliers to source from.”

All the usual Hillhead regulars will be joined by a host of new companies including Prinoth, Cemen Tech, Sany Europe, Flogas, Shell International, Hidromek, Elkon, Kal Tire, Goldhofer, Aerzen, Magotteaux, Yanmar, Magni Telescopic Handlers, McLanahan Corporation, Merlo UK and Fruehauf, among others.

The organiser further announced an ambitious site-development programme, which will see hard-wired fibre-optic broadband installed strategically across the showground. This new solution will deliver three times the bandwidth provided at the 2018 event, increasing capacity from 300 MB to more than 1 GB.

“The application of digital tools in quarrying and construction is becoming increasingly prevalent. It’s important that Hillhead keeps ahead of the curve, enabling our exhibitors to showcase the latest technology available to the industry,” said Mr Bradbury.



A view of Hillhead 2018.

“This investment will allow exhibitors to book more powerful Internet packages at a lower cost than before. Free Wi-Fi hotspots will also be available around the site for visitors to download their e-mails and go online.” ■

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

# MYANBUILD'20



MYANMAR INTERNATIONAL BUILDING & CONSTRUCTION INDUSTRY SHOW

MYANMAR'S NO.1 INTERNATIONAL  
BUILDING & CONSTRUCTION  
EXHIBITION AND CONFERENCE

**19 20 21** NOVEMBER 2020

 MYANMAR EXPO HALL,  
YANGON

To book your booth at the Expo, contact:

 [ei@ambtarsus.com](mailto:ei@ambtarsus.com)  
 +(95) 1 2301311 ext 2075

**OPEN FOR  
BOOKING**

Co-located with:





**MYANMAR ARCHITECTS  
CONGRESS 2020**  
19 NOVEMBER 2020 - MYANMAR EXPO HALL, YANGON

Hosted by:



Organised by:

**AMBTarsus**  
EVENTS GROUP

 myanbuild  
 [www.myanbuild.net](http://www.myanbuild.net)

## Valid PAL Cards worldwide now officially ‘Smart’ cards

All valid Powered Access Licence (PAL) Cards issued by the International Powered Access Federation (IPAF) to MEWP and MCWP operators in circulation worldwide are now Smart cards, as since January 2015 all cards issued by the global PAL Card processing team at IPAF’s head office in Cumbria, the UK, have been Smart-capable.

The use of Smart technology was mandated by IPAF from 1 January 2015 to help prevent fraud, misuse and to interact with security, telematics and tracking systems on machines themselves to ensure only authorised, qualified and correctly familiarised personnel are able to operate Smart-enabled and compatible machines. As all PAL Card training must be refreshed or renewed at least every five years, it now stands that no cards issued pre-1 January 2015 will still be valid in the world today.

“Increasingly, equipment manufacturers, rental companies and end-users are utilising the Smart functionality of the IPAF PAL Card – to prevent unauthorised use or access to MEWPs, to track fleet and equipment utilisation, to record operators’ machine-category qualifications and log their usage,” said Giles Councill, IPAF’s director of operations, who led the adoption of Smart PAL Cards as part of IPAF’s ongoing commitment to ‘new generation’ technology in its training programme.

“IPAF works hard to safeguard its training programme against misuse and thwart any attempt to copy, counterfeit or fraudulently obtain a PAL Card. The use of Smart technology, operators’ photo ID and our online verification system are all key planks of the way



IPAF secures the PAL Card against potential abuses of this kind.”

Peter Douglas, CEO and MD of IPAF added, “It is very encouraging to hear that the effort IPAF puts into making the PAL Card such a robust and globally recognised certification of its operator training is so highly valued by equipment manufacturers, rental companies, end users, major contractors and training organisations worldwide.

“Manufacturers and hire firms often reference the Smart capability of the IPAF PAL Card whenever new technology is being talked about with regards to monitoring machine and fleet utilisation, preventing unauthorised equipment use, telematics, geo-fencing and logging operator usage on different types of MEWPs.” ■

## International IPAF Summit and IAPAS name first speakers

The first speakers have been confirmed for the IPAF Summit, to be held on 23 April 2020 at the Millennium Gloucester Hotel in Kensington, London, the UK. The International Awards for Powered Access (IAPAs) presentation dinner will be held on the same day.

The annual IPAF Summit and IAPAs event is a highlight of the worldwide powered access calendar. The overall theme for this year’s conference is ‘Safety and Sustainability in a Changing World’. In the face of generational change in the workforce, rapidly evolving technology, the growing climate crisis and globalisation of powered access standards, how can our industry ensure safety while navigating such challenges?

Speakers include representatives from the powered access industry and health & safety bodies; their presentations will address these topics and provoke debate on the key issues facing powered access. Among the speakers are: Bob Whitfield, formerly of the Disney Corporation, who will present an insight into the way Disney uses access equipment on site; Tim Morris of JLG, who will talk about advancing technology and sustainability; and Dr Shaun Lundy, chair of the Occupational Safety and Health Consultants Register and visiting scholar at the University of Greenwich, who will offer his thoughts on the safety implications of a changing workforce. Oana Samoila, marketing and sales specialist at Bravi Platforms, will speak about good ‘safety storytelling’; and Suzannah Nichol, chief executive of Build UK, will talk about how some of IPAF’s key projects and priorities align with those of her organisation.

There will also be a panel discussion about sustainability and the global climate crisis and what it means for the powered



access industry, an overview of the Global MEWP Safety Report based on IPAF’s ongoing worldwide accident reporting project, and a preview of the 2020 IPAF Global MEWP Rental Market Report - exclusively compiled for IPAF by market intelligence specialist DuckerFrontier.

In the evening of the IPAF Summit, a gala dinner will be held to celebrate the winners of the various IAPAs categories; the panel of judges has now met to draw up the shortlisted entrants for each award. The following day there will be a limited number of places on an informative powered-access site visit, with details yet to be confirmed. ■

Website: [www.iapa-summit.info](http://www.iapa-summit.info)

# PAQS CONGRESS

SINGAPORE 2020

4 September to 8 September 2020

MARINA BAY SANDS SINGAPORE

## Disruption and Transformation in the Built Environment

**1** Disruptive Technologies

**2** Transformative Delivery

**3** Green and Wellness

**4** Redesign Jobs & Quantity Surveying Services Offering

ORGANISERS



DIAMOND SPONSOR



PLATINUM SPONSORS



GOLD SPONSORS



SILVER SPONSORS



ASSOCIATE SPONSORS



MEDIA SPONSOR



SUPPORTING PARTNERS



AFFILIATED EVENT



IN SUPPORT OF



# Sandvik launches DS512i rock bolter

The new DS512i rock bolter from Sandvik Mining and Rock Technology is designed for 5 m x 5 m size headings combining a safe, ergonomic working environment with high-levels of performance. Equipped with a new carrier, high-frequency rock drill, control system and ergonomic cabin, this new bolter features excellent safety and efficiency, suitable for all rock reinforcement operations.

The new FOPS / ROPS cabin offers a safe, comfortable working environment for the operator. This reduces noise, vibration and dust levels and improves visibility while drilling and tramming. Furthermore, the spacious and ergonomic operating environment has an interactive graphic user interface, enabling all bolting operations to be performed by a single operator in safety and comfort.

Intelligent control systems assist during drilling, grouting and bolt tightening, delivering high levels of automation. Machine efficiency is further maximised through easy-to-access service points from ground level, allowing rapid maintenance and trouble shooting. The new DS512i comes ready for the AutoMine fleet and information management system and has multiple levels of automation, resulting in the correct choice of rig for the specific application.

Top drilling performance can be ensured, thanks to the use of Sandvik RD314 high-frequency rock drill and the drilling control system which optimises drilling penetration rates. The one bolt automation function of the DS512i enhances drilling productivity and extends operating lifetime of the drilling tools.

Featuring up to 55% increased operator visibility and 35% higher penetration rates for greater productivity, the DS512i's performance and safety are seamlessly combined. An upgraded bolting head is equipped with different bolt lengths providing an extensive bolt selection, whilst the eight-rock bolt carousel ensures that the DS512i is capable of installing different types of rock bolts ranging from 1.6 to 6 m in length. An automatic resin shooting and cement mixing system further guarantees a high-quality rock reinforcement process.

With a 1,200 kg cement silo, the DS512i delivers increased meshing as well as hole angle measurement and an advanced boom manipulator. Bolting head



The new DS512i rock bolter from Sandvik Mining and Rock Technology is ideal for 5 m x 5 m size headings combining a safe, ergonomic working environment with excellent performance. Designed specifically for tunnelling and mining, the machine is equipped with a new carrier, high-frequency rock drill, control system and ergonomic cabin.

movement is further optimised with new assistive and automatic features.

Designed specifically for tunnelling and mining, the new DS512i has been developed based on a modularised concept leading to high levels of parts commonality with the Sandvik DT922i, lowering the total cost of ownership. The bolter has been designed for the integration of subsequent actions involved in the drill and blast process.

As well as being an ideal bolter for tunnelling, the new DS512i offers certain features that make it an excellent choice for mining bolting operations. It possesses several types of bolt length and varieties within the same machine and an automatic cement mixer in parallel with automatic resin injection. Suitable for small and large headings, it enables high bolting and meshing coverage, with efficient operations being ensured through sharing high commonality of parts with other members of the 400i carrier series.

## High levels of automation

At the heart of the new DS512i are the high levels of automation. These have been

developed to suit the specific needs of the customers and come in two packages: Silver and Gold.

The Silver package consists of 'one bolt' automation (collaring, drilling, grouting, bolt handling, tensioning) and hole angle measurement. The boom is fully instrumented with indicators for hole angles, tilt and rotation, as well as an advanced boom manipulator, automatic cement mixing and basic remote monitoring, amongst other features.

The Gold package offers full instrumentation and fan bolt locations to show one or more bolt fans to the specific mine or tunnel coordinates. iSURE is fitted as standard along with MWD, Total Station Navigation, Tele-Remote bolting, 'planned versus actual' bolting (which can be transferred to the control system) and full remote monitoring.

With its many purpose designed safety features, in-built levels of efficiency for high levels of operational productivity and automation to suit, the new Sandvik DS512i will be able to provide miners and tunnellers with peace of mind in rock support. ■

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

# Manitowoc unveils Potain MRH 175 luffing jib crane

The new Potain MRH 175 hydraulic luffing jib crane from Manitowoc offers a maximum capacity of 10 t, while its maximum jib length is 55 m. Tip capacity is 1.5 t when working with the full 55 m jib, or 2.7 t if fitted with 50 m of jib. Maximum line speed is 215 m/min when working with the high-performance 90HPL25 hoist.

The crane's innovative design, with its fixed counter jib and topless structure, facilitates its trademark fast erection and dismantling, as well as making it more compact for transport, needing only four standard containers.

The MRH 175 is the latest release in Potain hydraulic luffing jib crane series, a product line that Manitowoc has continuously developed since unveiling the MRH 125 a year ago. The company has championed this category of cranes, with dozens of models already delivered to a range of markets.

Combining the advantages of Potain MR luffing jib cranes and MDT topless cranes, contractors would find the MRH cranes particularly straightforward to assemble and disassemble on congested sites, making them ideal for urban projects, high-rise construction or job sites where space is limited.

The elements weigh under 7.7 t, and there is a single counter-jib/jib foot package. The topless design also means less space is needed on sites where multiple cranes overfly the job site and the hydraulic design means no wire rope installation is needed. It also

means a smaller assist crane is needed for erection as there is no cathead to assemble.

Potain's hydraulic luffing design features a shorter counter-jib and out-of-service radius than rope-luffing alternatives. This frees up valuable space on job sites, with the MRH 175 delivering an out-of-service radius of only 10.2 m, regardless of jib length.

Freestanding heights of up to 62.8 m are available with the 2 m K-mast sections, and the crane is also compatible with 1.6 m K-mast sections. On the hoisting drum, up to 956 m of rope is available with the 90HPL25 winch, allowing users to choose either 478 m in a two-fall configuration with a 5 t maximum capacity or 239 m in a four-fall configuration with a 10 t maximum capacity. Luffing the crane from the horizontal to vertical is efficient, taking less than two minutes, delivering optimum productivity on the job site.

"Hydraulic luffing topless cranes have a very strong future in our industry, and we've been pleased with the uptake over the past two years," said Thibaut Le Besnerais, VP of global products for tower cranes at Manitowoc. "Potain customers have seen the advantages these new cranes deliver and how they help them achieve a stronger return on investment on their projects. We have a strong technical training programme to accompany our new MRH cranes, and the feedback from the market has been very positive." ■

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

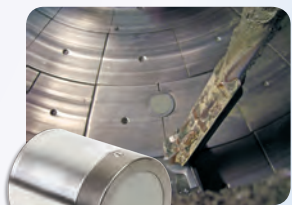


The new Potain MRH 175 hydraulic luffing jib crane offers a maximum capacity of 10 t, while its maximum jib length is 55 m.

## If you want to make Quality Concrete You need Hydronix Moisture Sensors



Hydro-Probe



Hydro-Mix

Accurate, real time moisture measurement allows you to adjust the amount of water needed in your process ensuring the production of high quality concrete, batch after batch after batch after batch.....

- Sensors for bins, conveyors and mixers
- Digital technology with precise linear output
- Easy to integrate into new or existing systems
- Remote calibration and configuration
- Temperature stable
- Local Service & Support

[enquiries@hydronix.com](mailto:enquiries@hydronix.com)  
[www.hydronix.com](http://www.hydronix.com)

  
**Hydronix**

# New Vermeer XR2 vacuum excavator

Vermeer offers its latest advancement in hydro-excavation – the XR2 vacuum excavator. It is equipped with a shaker deck that separates liquids and solids to allow contractors to stay on the jobsite longer, work efficiently and reduce disposal expenses. Material excavated with the XR2 is fed through an onboard deceleration tank that exits through an airlock onto a shaker deck where solids and liquids are then separated.

The solid material is moved by conveyor towards the rear of the machine where it is discharged and can be carried away or left on the jobsite, depending on the material. Used, slurry water is pumped into one of the four XR2 holding tanks for disposal. This new concept in vacuum excavation enables contractors to carry 5,678.1 l of water to the job, work longer on the jobsite and can reduce hydro-excavator transport weights.

According to Adam Bates, product manager at Vermeer, the XR2 can help utility contractors mitigate utility strikes, improve operational efficiencies and create new opportunities. “Soft excavation methods are effective at reducing utility strikes, which have spurred the growth of the vacuum excavator market,” he said. “However, DOT truck and trailer weight restrictions can impact the amount of material that crews can transport over the road, and the design of the XR2 helps teams get more hours of production.”

The Vermeer XR2 vacuum excavator has 5,678.1 l of freshwater storage capacity capable of delivering up to 150 minutes of wand time at a rate of 37.8 l/min. The adjustable pressure wand has a maximum output of 3,000 psi for challenging conditions, but can be dialed back when working in sensitive areas.

The unit’s 15.2-cm-diameter hose produces up to 5,776.6 cu m/hr of suction for maximised digging performance. Its 6.4 m boom gives crews 260 degrees of swing, and the unit also has a reverse flow feature to dislodge large chunks of material from the hose. All of these functions can be controlled through the fully functional remote.

For efficient truck repositioning, the design team integrated a power takeoff (PTO) feature that automatically transitions power from the vacuum system to the truck drive system and back. Crews no longer need to manually disengage



ABOVE AND LEFT: Vermeer XR2 vacuum excavator is equipped with a shaker deck that separates liquids and solids to allow contractors to stay on the jobsite longer, work efficiently and reduce disposal expenses.

and re-engage the system every time the vacuum excavator is moved.

## Separation design

Unlike traditional vacuum systems with spoil tanks, solids and liquids are separated using a shaker deck with auto-levelling capabilities up to a 10% grade. The deceleration tank includes six cyclones to aid with the separation process. The onboard, foldable 4.3 m solid material conveyor is controlled through the remote control, has a 180° rotating radius and a discharge height of 203.2 cm for efficient truck loading.

The XR2 has four 1,892.7-l liquid storage tanks. Processed liquids are first pumped into the unit’s reserved empty tank, and then automatically switched to another tank as the freshwater supply is depleted and the reserve tanks fill up.

The tanks are designed with sloped bottoms, so slurry can be efficiently pumped out before freshwater is replenished. Fresh and dirty water tank levels can be viewed anytime from the control station located on the side of the hydro-excavator.

The Vermeer XR2 vacuum excavator is built on the back of a Kenworth T8800 truck with an Allison automatic transmission and Chelsea PTO. The unit has a curb weight of 17,690.1 kg, a freshwater transport weight of approximately 23,133.2 kg, at recommended capacity, and a return weight of an estimated 24,040.4 kg when at the recommended full capacity of 1.26 SG of slurry. With the conveyor in transport position, the truck measures 11 m long, 259.1 cm wide and 350.5 cm high.

“The XR2 was developed after listening to contractors talk about the limitations associated with traditional hydro-excavators,” explained Mr Bates. “Contractors understand the soft excavation advantages of hydro-excavators, but also felt limited by the production of many units because of weight concerns and water storage capacities. The design of the XR2 can help expand the use of vacuum excavation for everything - from utility potholing and stitch boring to slot trenching and general construction.” ■

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

# Gomaco introduces new, high-production screed

Gomaco has enhanced its bridge deck and flat slab finishing technology with the introduction of a new, high-production truss-mounted screed for paving bridge decks, flat slabs and floors. It allows contractors to economically finish city streets, concrete floors, bridge decks, tunnels and canals at widths up to 31.7 m.

This new high-production screed can advance up to 1.2 m in a single pass, significantly reducing finishing time and providing savings on concrete delivery costs and total project labour. The screed features a 1.7-m-long leading auger with a high-production strike-off action that reduces the number of puddlers needed out front.

A 1.5-m-long finishing cylinder, directly behind the auger, compacts and finishes the concrete in a single pass. A 1.8 m trailing screed delivers the final finish to the surface of the concrete with a Gomaco-designed vibratory system.



The new screed can pave up to 31.7 m in width and advance up to 1.2 m in a single pass.

The new screed with a patent-pending design for tilt and skew is mounted to the Gomaco C-450 truss system. The new

mount is instrumental for the optional 3D package to finish to a 3D design model. ■

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

**CARMIX  
EVERYWHERE  
YOU BUILD.**



**CONEXPO-CON/AGG  
2020**  
**WE ARE AT  
SILVER LOT 1&2  
BOOTH S 5479  
CONEXPO 2020  
LAS VEGAS, NV  
MARCH 10-14**

[carmix.com](http://carmix.com)

**READY. MIX. EVERYWHERE.  
CONCRETE.**

**CARMIX MOBILE BATCHING PLANTS,  
BEST PERFORMANCE  
ON THE TOUGHEST JOBSITES**



**CARMIX**  
4x4 mixers & dumpers

YouTube [facebook.com/metalgalante.carmix](https://www.facebook.com/metalgalante.carmix) METALGALANTE S.p.A. Via A. Volta 2 - Noventa di Piave (Venezia) ITALY

# Mapei's Elastocolor Paint Plus protects concrete surfaces

The Elastocolor Paint Plus from Mapei is an elastomeric, acrylic resin-based paint with crack-bridging ability, which is designed to protect and decorate concrete surfaces. It is ideal for a final finish after concrete repair is completed.

Moist, damaged and cracked renders are the most frequent problems for concrete surfaces. Therefore, concrete structures (such as balconies, pillars, bridges, canals, etc) must be protected with systems that are not highly permeable to carbon dioxide and are resistant to aggressive agents. This is when the Elastocolor Paint Plus comes handy.

The Elastocolor Paint Plus is suitable for painting facades with micro-cracks, even on existing paint; protecting concrete structures subject to small deformations when under load against carbonation; and painting facades damaged by algae and mould.

The typical application scenario is to have the damaged or deteriorated areas of the concrete repaired. If algae, mould or fungi are present, they must be removed. All traces of dirt, dust, grease, oil and saline efflorescence must be removed as well before treating the repaired areas with primer and subsequently coating them with the Elastocolor Paint Plus.

Once applied, the Elastocolor Paint Plus forms an elastic coat that remains impermeable to water and aggressive atmospheric agents (CO<sub>2</sub>, SO<sub>2</sub>) while remaining permeable to vapour. The paint also features superior resistance to ageing, and its photochemical film-forming process gives the painted surface an excellent dirt pick-up resistance. In addition, the paint is resistant to the growth of algae, mould and fungus, providing a long-lasting protection against the formation of microorganisms.



ABOVE AND LEFT: Mapei's Elastocolor Paint Plus is an elastomeric paint with crack-bridging ability, which is ideal for a final finish after concrete repair is completed.

Mapei's Elastocolor Paint Plus complies with the EN 1504-9 standard ('Products and systems for the protection and repair of concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use and application of systems'), as well as the EN 1504-2 standard ('Protection systems for concrete surfaces').

The Elastocolor Paint Plus can be customised in a wide range of colours. It has been used in many countries around the world, including Asia.

One of the recent projects in Asia was for a Catholic Centre in Singapore. Here, water seepage was detected from the exterior of the building. Mapei offered its solutions comprising a flexible, cementitious waterproofing membrane (Mapelastic) to waterproof the structure, and then followed by applying a primer (Silancolor Primer Plus) and two coats of Elastocolor Paint Plus. Thanks to its crack-bridging ability, the elastomeric paint was able to resolve crack issues easily and protect the concrete surface of the building. Furthermore, the flexibility of the product allowed it to bond well with the waterproofing membrane.

Mapei has also supplied its Elastocolor Paint for use in the Bisagno Stream project in Italy. The work involved demolishing

the foundation slab of the road over the stream and rebuilding a new foundation slab, and increasing the stream's capacity to handle run-off water. Here, Mapei provided several products including its galvanic cathodic protection of reinforcement rods to protect the reinforced concrete abutments and bearing walls against corrosion. Once the surfaces had been cleaned and made sound, they were treated with Malech, Mapei's acrylic, water-based primer and then painted with the Elastocolor Paint, an elastomeric paint for crack-bridging protection of external surfaces. ■

Website: [www.mapei.com.sg](http://www.mapei.com.sg)



LEFT: Mapei's Elastocolor Paint Plus has been applied on a Catholic Centre building in Singapore.

FAR LEFT: Mapei has also supplied its Elastocolor Paint for use in the Bisagno Stream project in Italy.



# TRENCHLESS ASIA 2020

17-18 November

Kuala Lumpur Convention Centre, Kuala Lumpur, Malaysia



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

## CALL FOR PAPERS

We invite you and your colleagues to submit an abstract for inclusion in the conference programme for the ISTT's 38th International No-Dig show, featuring Trenchless Asia 2020, Asia's ONLY Trenchless event. The conference will feature:



1,400+  
ATTENDEES



25  
EXPERT SPEAKERS



100+  
EXHIBITORS



6  
CONFERENCE  
SESSIONS PER DAY

## WHY PRESENT AT TRENCHLESS ASIA?

- Gain important peer recognition at this Trenchless Technology event
- Share the recent successes that have set your company apart
- Launch new technical innovation
- Influence the direction of the market
- Enhance your career prospects
- Highlight important research or analysis
- Open up markets, debates and discussions
- Reveal improved techniques or efficient operation methods
- Participate in Asia's largest and most prestigious Trenchless Technology event

Visit the online portal to view the abstract guidelines and submission procedure at: [www.callforpapers2020.trenchlessasia.com](http://www.callforpapers2020.trenchlessasia.com)

All papers will be judged on merit by the International Society for Trenchless Technology (ISTT) and all entrants will be contacted shortly after the Abstract Submission deadline of 1st May 2020.

Should you have any questions, please contact the organisers at [trenchless@westrade.co.uk](mailto:trenchless@westrade.co.uk)

Organised by



Supported by



Official Media Partner



Media Partners



Platinum Sponsors



Gold Sponsors



Chinese Partner



百斯特国际展览(北京)有限公司  
Best International Expo(Beijing) Co.,LTD

# Demag CC 8800-1 crawler crane excels in heavy lifting

There are only a few jobs that require more than the enormous lifting capacity of a Demag CC 8800-1 crawler crane with its standard configuration. Lifting a 100-m-long, 510-t C3 splitter tower on a construction site at the Singapore Refinery Company propylene manufacturing plant was one such job. This is why crane service provider Tiong Woon configured its Demag CC 8800-1 with a boom booster, enabling the crane to carry out the demanding tandem lift together with a Demag CC 2800-1.

Firstly, the CC 8800-1 had to be set up for a test lift according to the local codes of practice. This test was carried out away from the actual work site with the support of Demag and in the presence of the ordering party. The crane got the green light for the lift after successfully completing the test, then it was completely disassembled and taken with heavy goods vehicles to the Merlimau Road work site, where it was reassembled for the job.

Setting up the crane with its seven-part boom booster kit took the team, comprising six assembly technicians, six signal persons, and two supervisors, a total of five days – which is just a day longer than the standard configuration would have taken. “In order to speed up the process, one part of the team took care of assembling the base crane, while the other part took care of setting up the boom booster,” said Michael Ang, Tiong Woon’s deputy CEO.

For the CC 8800-1 primary crane with the boom booster kit, Tiong Woon chose a BSFVL configuration with a main boom length of 102 m plus a fly jib of 12 m mounted at an angle of 14°. Meanwhile, the required Superlift counterweight came in at 400 t. For the Demag CC 2800-1 assist crane, the company chose an SSL configuration with a main boom length of 42 m and a Superlift counterweight of 100 t. Once set up this way, the Demag duo was ready to lift the 100-m-long, 510-t steel pipe with a diameter of 4.84 m.

The biggest challenge was to bring the massive steel structure from a horizontal position to a vertical position on the Demag CC 8800-1’s hook in a controlled manner by using a tailing operation. To do this, the CC 2800-1 first picked up the splitter column from its end and then lift it to a height of 0.5 m.

At the same time, the CC 8800-1 lifted the load from its other end while the CC 2800-1 slowly moved forward until the splitter column was hanging from the CC 8800-1’s hook and the assist crane was no longer under load. After the team released the CC 2800-1’s slinging gear, the CC 8800-1 brought the splitter column to the required position in order to set it down exactly at the intended point.

“Tandem lifts are already complex operations in and of themselves, but when you add a heavy load with this type of dimensions, things get even trickier,” said Mr Ang.

With such a challenge, the job had to be meticulously planned. A technician and a mechanic were also present on the job site, ready to fix any issues that might have occurred. Thanks to this conscientious effort, Tiong Woon was able to carry out the project successfully to the customer’s full satisfaction, and even finished it a few days earlier than scheduled.

“We were at the work site for a total of 69 days with our cranes and 25 people on average. The fact that the weather conditions were ideal and, especially, that the two Demag cranes have such incredible performance characteristics played a crucial role in enabling us to finish the project earlier than planned – this goes



The Demag CC 8800-1 crawler crane with the boom booster kit is seen here lifting the 510-t splitter tower, working in tandem with a smaller Demag model, the CC 2800-1.



The boom booster kit on the job site.

particularly for the CC 8800-1 with the boom booster, which was an absolute requirement in order to be able to lift a load with these dimensions and this weight,” explained Mr Ang.

“Needless to say, we were also tremendously thankful for the support provided by the Demag team during the test setup. It served as further confirmation of the fact that we can always rely on Demag for fast and expert help with any issues at any time, which is why we’ve always been happy with the service they provide.” ■

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

# Sime Darby joins West Coast Expressway project



Sime Darby Industrial has supplied various machines to Dhaya Maju Infrastructure (Asia) Sdn Bhd - including Cat machines - for use in the West Coast Expressway project in Malaysia.

Malaysia's West Coast Expressway (WCE) is a greenfield highway project with its 50-year concession agreement signed with the government in January 2013. It runs parallel to the North South Expressway (NSE), and is expected to offload some of the traffic from the NSE as well as provide connectivity to towns along the west coast.

The WCE project reportedly boasts more interchanges than other highways in Malaysia. There are 21 interchanges over the 233-km stretch - this is almost one interchange at every 10 km - allowing greater connectivity between the smaller towns and the larger cities.

Dhaya Maju Infrastructure (Asia) Sdn Bhd (DMIA) is one of the major contractors that plays a main role in the WCE project, specifically in the Work Package 10. The company was incorporated in 1996 and registered in Malaysia as a 'PKK Class A' Bumiputera and CIDB G7 Contractor, which is qualified to undertake projects of unlimited value. Since 2004, the management system has been awarded an ISO 9001:2015 quality certification by Lloyd's Register Quality Assurance.

Sime Darby Industrial (SDI) has supported the WCE project by supplying more than 50 machines - including those of Caterpillar, SEM and New Holland - to DMIA. With the large fleet requirement, SDI provided a great support to DMIA through the availability of the in-house financing, Caterpillar Financial Services Malaysia (CFSM).

The excavators, soil compactors, motor graders, bulldozers and tractors were delivered to the project site in Taiping and Butterworth in 2019. The short lead time of the machine delivery enabled DMIA to commence work immediately.

With an excellent after-sales support, SDI said it has been chosen as the preferred working partner for DMIA. The prompt after-sales services and high parts availability offered by SDI also ensure a smooth work operation throughout the project duration. ■

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

## DRILL MORE WITH ROCKMORE

SONIC FLOW  
X TUBELESS X  
MULTIPOINT

**BITS  
RODS  
COUPLINGS  
SHANKS  
DTH**

**ROCKMORE®  
INTERNATIONAL**

*Rock Drilling Tools*

**MINING  
CONSTRUCTION  
QUARRYING  
TUNNELING  
WATER-WELL**

Wilsonville, Oregon USA  
Tel +1 (503) 682-1001  
[info@rockmore-intl.com](mailto:info@rockmore-intl.com)

Judenburg, Austria  
Tel +43 3572-86300  
[austria@rockmore-intl.com](mailto:austria@rockmore-intl.com)

[www.rockmore-intl.com](http://www.rockmore-intl.com)

# Wirtgen pavers in action at new Yogyakarta Int'l Airport

A fleet of Wirtgen slipform pavers has played a key role in the construction of new Yogyakarta International Airport in Indonesia. The airport reportedly started operations in May 2019 (Phase 1) with the first flight arriving from Jakarta, while the construction of the terminal is almost finished.

When the entire project is fully completed, up to 20 million passengers will be able take off and land there each year. With a current terminal area of 130,000 sq m in the first phase, the new airport is set to replace Adisutjipto International Airport, which is struggling with capacity issues.

The tight schedule was a particular challenge for this large-scale project. Here, Wirtgen Singapore worked closely with its local dealer PT Gaya Makmur Tractors to deliver the concrete surfaces on time. They not only supplied the large fleet of machines required, but also provided technical support and on-site application consulting.

Four Wirtgen SP 64 machines, six SP 500 machines, and one SP 84i machine formed the final line-up for the high-precision, cost-effective paving of the 3,250-m-long, 45-m-wide runway, its taxiways, and the apron.

The 50-cm-thick concrete layer was paved across a width of 2 m, 5 m or 6 m, depending on the area involved. During the process, dowels, which were prepositioned on reinforcement cages spaced at transverse intervals of 30 cm, and a wire grid were integrated in the concrete as additional reinforcements.



ABOVE AND BELOW: Wirtgen slipform machines on the new Yogyakarta International Airport project, paving the 3,250-m-long, 45-m-wide runway, its taxiways, and the apron.



“The quality of the concrete surfaces is excellent,” said Andek Prabowo, CEO of PT PP Presisi Tbk Group of PT PP (Persero) Tbk. “The machines also excelled across the board in terms of their performance. The airport is set to grow by another 65,000 sq m during the second phase of construction. The landing runway will also be extended by another 350 m.” When the time comes, the fleet of Wirtgen slipform pavers will once again be ready for action. ■

Website: [www.wirtgen-group.com](http://www.wirtgen-group.com)

LEFT: The pavers can produce concrete corners with a 90° angle.

# LANKA BUILD '20

SRI LANKA INTERNATIONAL BUILDING AND CONSTRUCTION EXHIBITION

SRI LANKA'S NO. 1 INTERNATIONAL  
BUILDING AND CONSTRUCTION  
INDUSTRY EXHIBITION

**OPEN FOR  
BOOKING**

**6-8 AUGUST 2020**

SRI LANKA EXHIBITION & CONVENTION CENTRE  
(SLECC), COLOMBO, SRI LANKA

To book your booth  
at the Expo, contact:

✉ [ian@ambtarsus.com](mailto:ian@ambtarsus.com)  
☎ 03-2692 6888

Organised by:

**M** AMBTarsus  
EVENTS GROUP

Co-organised by:

**MCSL** MAJOR  
CONSTRUCTORS  
OF SRI LANKA

🌐 [www.lankabuild.org](http://www.lankabuild.org)

📘 lankabuild

## Volvo EC350D helps Hari Om carry out demanding jobs

Hari Om Earthmovers & Transport is the first in Gujarat, India, to acquire an EC350D crawler excavator from Volvo Construction Equipment (Volvo CE). The machine started working on a tough mine site in July 2019 and has already proven its high performance and low efficiency.

The EC350D excavator is currently deployed in a stone quarry located in the district of Kachchh, at a site known as Vidi in Anjar Taluka. The machine works on demanding applications such as excavating and loading stones on to the tippers.

“Volvo has paid attention to every little detail – from structure to reinforcements to operating comfort – ensuring optimum productivity at minimal cost,” said Raghuvir Vaghamshi, owner of Hari Om. “That certainly makes a difference in our business where we are always under margin and time pressures.”

Powered by a fuel-efficient D8 engine with a 210 kW rating and a bucket capacity of up to 1.9 cu m, the Volvo EC350D excavator has an operating weight of between 37.8 t and 42.6 t, depending on configuration. The machine delivers fast cycle times, high digging power, and low fuel consumption.

“The EC350D makes tough applications look so easy. Just imagine – we achieved 1,500 t of output in two hours flat, burning 23 l of fuel. I am convinced that this is one machine that will not let you down no matter how hard the application or conditions,” said Mr Vaghamshi.

Established in 2005, with its headquarters in Adipur Gandhidham and branch office in Ahmedabad, Hari Om is focused on infrastructure development in the state of Gujarat. The company owns five Volvo machines so far – one EC200D, three EC210Ds and one EC350D.

These five Volvo machines were purchased from Volvo CE’s dealer partner, West India Equipments Pvt Ltd. According to Mr Vaghamshi, the combination of great aftermarket services from West India Equipments and quality machines from Volvo CE is the main reason he continues choosing equipment from Volvo CE.

Mr Vaghamshi said, “We have lined up ambitious plans for the company’s expansion and are excited about the future. We still have many promises to keep and miles to go, but of course with Volvo CE leading the way.” ■

Website: [www.volvoce.com/india](http://www.volvoce.com/india)



ABOVE AND BELOW: The Volvo EC350D crawler excavator being deployed in a stone quarry located in the district of Kachchh, at a site known as Vidi in Anjar Taluka. The machine works on demanding applications such as excavating and loading stones on to the tippers.





**IRF**  
GLOBAL



# 3RD IRF ASIA REGIONAL CONGRESS & EXHIBITION

*Connecting Asia with Better Roads*

**Bali, Indonesia  
September 2-4, 2020**



**Call for Abstracts**  
[www.IRF.global/ASRC](http://www.IRF.global/ASRC)



© Jason Goh / Fixabay

# TRANSIT-ORIENTED DEVELOPMENT IN INDONESIA: IMPROVING THE FINANCING MODEL FOR PUBLIC TRANSPORT PROJECTS

By: *Seth Tan, executive director and Poh Mei Yi, lead (Indonesia) at Infrastructure Asia*

## Asia's critical urban transport needs

Some of the world's most bustling cities are in Asia, with 44 million people moving through Asia's cities every year<sup>1</sup>. According to the Asian Development Bank (ADB), 80% of Asia's new economic growth will be generated through these urban economies. Such growth trends place a huge strain on urban transport and mobility – time loss and transport costs alone are estimated to be 2% to 5% of Asian economies' annual gross domestic product<sup>2</sup>.

To support the growing demand for modern urban transport systems, Asian cities are heavily investing in the construction of roads and quality mass public transportation. However, government budgets are often insufficient to support the large pipeline of projects.

To overcome this hurdle, private capital is often presented as a supplementary and alternative source of funding. To mobilise private capital to deliver urban transport, there is a need for newer frameworks in the government's planning to better leverage land value capture, while developing liveable transit-oriented cities.

## Indonesia's urban transport and financing gap

Indonesia is one of the countries that faces these barriers. The government's plan for new roads is a double-edged sword - while it will increase the mobility of goods and people, market access, and business activities, it will also lead to a rise in demand for cars<sup>3</sup>. With already congested streets, commuters often find themselves stuck in two to three-hour traffic jams. This not only affects workers personally, but also factories and suppliers that

deliver products to areas by land, ultimately leading to a decline in economic efficiency.

The transportation sector also contributes 70%<sup>4</sup> of air pollution in Jakarta. Energy consumption of transportation in Jabodetabek, Indonesia's biggest and most strategic metropolitan hub, is more than 700 million kilo litres per year<sup>5</sup>. In fact, the estimated economic cost of traffic congestion in Jakarta reached approximately Rp 960 billion a year<sup>6</sup>, excluding the cost of health impact to humans from transport pollution.

This is where public transport projects can make a difference by decreasing the number of cars on the road. However, funding these urban transit projects can pose a challenge. The Indonesian Ministry of Public Works and Public Housing (PUPR) noted that the 2020-2024 State Budget<sup>7</sup> is only able to cover 30% (Rp 623 trillion out of the Rp 2,058 trillion) required for the infrastructure development. In view of this, what can be done to improve financing for public transport projects?

## Boosting Indonesia's urban transport financing

A key challenge that urban transport projects face is encouraging higher ridership. Most cities' transport systems have already decentralised amongst private vehicles and operators, said David John Ingham, senior transport specialist at World Bank.<sup>8</sup>

Enter transit-oriented development (TOD) – a type of urban development that offers a strategic spatial planning tool to direct and regulate mobility in accordance with city's development vision, said Arup's specialist Kate Hardwick. Designed to maximise

residential, commercial and entertainment space within walking distance of public transport nodes, it can help reduce competing transport options, while fostering a greater demand and viability for international investors in the design and operation of mass transport systems.

While TOD improves the liveability of cities, its effect on the financing model for mass transit projects is often overlooked. Integrated spatial and transport planning requires robust demand planning, as a well-planned urban transit line with robust traffic study lowers the risk of future deviation from ridership and cashflows projections. "This makes it more likely to be of interest to infrastructure investment managers like Partners Group, which look for promising greenfield projects to invest in on behalf of their clients," said its vice president Toh Kok Leong.

"To any credible real estate developer, a key investment criteria, in addition to existing and future population size based on location, would be the state of existing infrastructure and roads, and its integration with future transit plans to provide traffic flow and determine growth potential," said Sharon Sng, senior vice president of CapitaLand Indonesia. Through proper capacity building, it can strengthen project implementation capabilities and improve bankability for investors and stakeholders.

Central state support is also a key factor in projects' eventual bankability and investability, especially for new transport networks. Drawing from central states' budget often requires the project to incorporate higher prudence in planning, stronger public connectivity outcomes, and a vision on the use of public transport to support the long-term development of the city. These conditions can help to mitigate demand risks to the private sector, improve the project's economics and reduce the amount of the viability gap funding needed from public budgets.

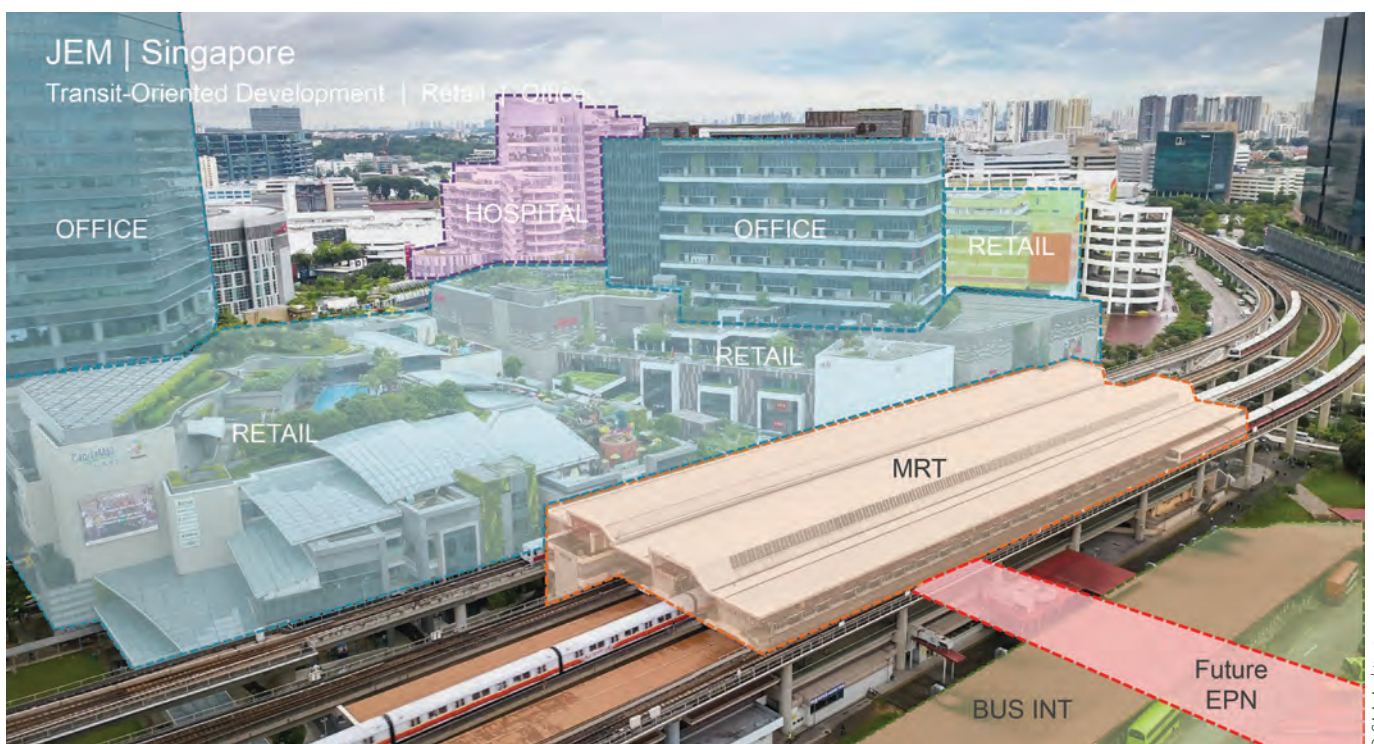
"International lenders are interested in doing more to meet a substantial part of infrastructure projects' financing needs in emerging Asia. However, risk allocation and mitigation are key considerations. Central state backing together with fundamentally

sound planning serves as good indicators on the project's attractiveness," said Steve Mercieca, project and infrastructure finance executive director at Standard Chartered Bank.

For the above benefits to be realised, the international industry believes that the "successful implementation of a TOD project requires a robust feasibility study that takes into account stakeholders' acceptance of the developmental proposition upfront," said David Ng, KPMG's principal for global infrastructure advisory. He explained that the assessment on the financial viability of the TOD development should be underpinned by traffic and demand studies, market testing of appropriate mix of uses and project social and community impacts. It is also important to structure an appropriate framework that effectively enables joint development amongst the local authority, the relevant transit agencies and private developers. This should also include appropriate zoning regulations and an effective institutional mechanism to put into effect public and private cooperation for the TOD development, said Mr Ng.

**"Successful TOD projects build communities. The safeguarding of land and other special requirements of transit infrastructure constrain space for commercial usage. Creative and efficient space planning is therefore key to the success of the design of these developments and coupled with a strong shared vision between the vested parties and good management, TODs are high-density urban centres that enhance public transport and connect everything into a seamless experience."**

*Lim Hong Kian (director) and Rustam Tan (associate director), SAA Architects.*



OPPOSITE: Singapore's mass rapid transit (MRT) system.

ABOVE: Rendering of Singapore's Jurong East MRT station and bus interchange.

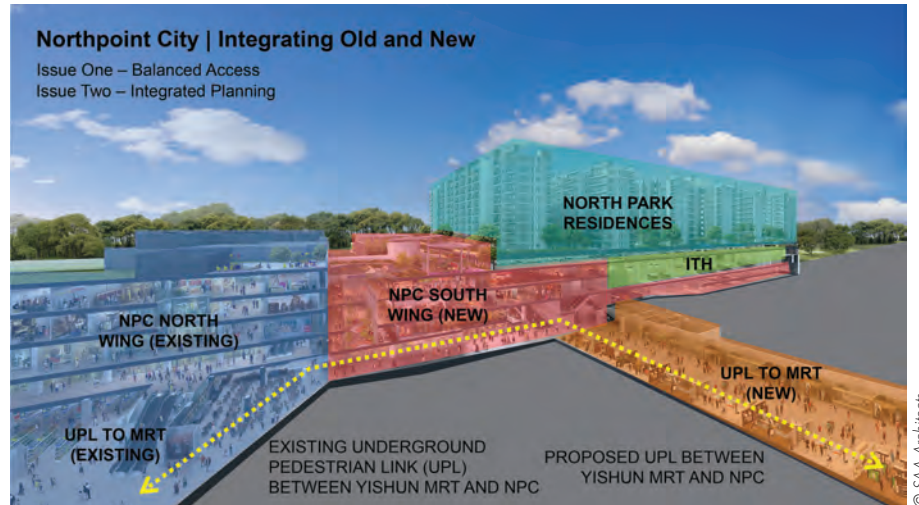
## Adoption of TOD in Indonesia

In Jakarta - Indonesia's capital city - the administration has already expressed its intention to work on a significant number of TOD projects to transform stations and bus terminals into multimodal transport nodes that will integrate housing and public transportation. The plan also aims to maintain the availability of green open space for the urban ecosystem. By looking abroad, Jakarta could adopt best practices from other cities on harnessing TOD, to fully realise its TOD vision, as well as engage with solution providers based in the region who have the necessary experience with such projects.

## Singapore's TOD experience

As a testament to the efficacy of TOD, one can look to how Singapore successfully leveraged it. The city-state shares many similarities and challenges with Indonesia's metropolitan areas, such as traffic congestion. These conditions have prompted Singapore to integrate its urban transit development with spatial design and planning and could be one example for interested cities in the same region to leverage TOD for urban transport.

Singapore's TOD is primarily focused on urban renewal through the expansion of the transit network. The result is a constellation of satellite towns that surround a central core, with rail networks that link these towns to industrial parks and the city centre. These satellite towns are self-sustaining, with common public amenities within walking distance and a reduced need to venture out for common daily needs<sup>9</sup>. Under the right conditions, TOD can also be used for discrete and



Complex TOD design applied for the expansion of a brownfield multimodal transport station in Singapore's Yishun district to combine entertainment, residential and transport.

promising projects rather than the entire network.

Singapore's adoption of TOD also includes affordable public housing in well-connected areas. "Well-designed integrated planning around mass transit stations offers obvious land value capture benefits. However, this can also be better leveraged to capture a wider range of benefits for all segments of societies, including the provision of affordable housing by incorporating clear targets into available planning instruments and policies," said Tony Chan, associate principal at Arup.

Through organisations like Infrastructure Asia, Indonesia can tap into Singapore's international ecosystem of firms with design, engineering and architectural experts. This also includes

other key value chain players for transit-oriented cities such as active real estate firms (Capitaland, Keppel, and Mapletree, to name a few), financiers active in seeking opportunities, and legal and transaction advisors who can help design and manage tenders up to its financial close.

By partnering with relevant organisations, Jakarta will be able to access the necessary investments for their TOD projects. Like it did for Singapore, leveraging TOD can help them encourage greater transit ridership by maximising access to public transport and controlling the number of cars on their roads. When the journey towards achieving transit efficiency is accelerated, costs, pollution and congestion all decrease significantly, to ultimately offer better quality of life for citizens. ■

### Notes:

1. ADB. Urban Transport. Retrieved 1 October 2019. <https://www.adb.org/sectors/transport/key-priorities/urban-transport>
2. ADB. Urban Transport. Retrieved 1 October 2019, from <https://www.adb.org/sectors/transport/key-priorities/urban-transport>; and The Economist. The Hidden Cost of Congestion (28 Feb 2019). <https://www.economist.com/graphic-detail/2018/02/28/the-hidden-cost-of-congestion>
3. Tirta. Tantangan Nyata Proyek Infrastruktur: Membatasi Kepemilikan Mobil. Retrieved 22 Nov 2019. <https://tirta.id/tantangan-nyata-proyek-infrastruktur-membatasi-kepemilikan-mobil-dpuw>
4. Science Direct. The Role of Transit Oriented Development in Constructing Urban Environment Sustainability, the Case of Jabodetabek, Indonesia. Retrieved 22 Nov 2019. <https://www.sciencedirect.com/science/article/pii/S1878029614000760>
5. Science Direct. The Role of Transit Oriented Development in Constructing Urban Environment Sustainability, the Case of Jabodetabek, Indonesia. Retrieved 22 Nov 2019. <https://www.sciencedirect.com/science/article/pii/S1878029614000760>
6. Science Direct. The Role of Transit Oriented Development in Constructing Urban Environment Sustainability, the Case of Jabodetabek, Indonesia. Retrieved 22 Nov 2019. <https://www.sciencedirect.com/science/article/pii/S1878029614000760>
7. CNBC Indonesia. APBN Terbatas, Jokowi Butuh Rp. 1.435 Lagi untuk Infrastruktur. Retrieved 22 Nov 2019. <https://www.cnbcindonesia.com/news/20191118084854-4-115906/apbn-terbatas-jokowi-butuh-rp-1435-lagi-untuk-infrastruktur>
8. Some cities that IA is engaging has close to 90% of its current transport served by private vehicles.
9. Centre of Liveable Cities. Challenges and Reforms in Urban Governance. [https://www.clc.gov.sg/docs/default-source/books/challenges-and-reforms-in-urban-governance\\_27apr.pdf](https://www.clc.gov.sg/docs/default-source/books/challenges-and-reforms-in-urban-governance_27apr.pdf); and World Bank Group. Transforming Cities with Transit. <https://openknowledge.worldbank.org/handle/10986/12233>.

### About Infrastructure Asia

Infrastructure Asia (IA) aims to support Asia's social and economic growth through infrastructure development. The organisation was established by Enterprise Singapore and Monetary Authority of Singapore to support infrastructure financing and development in the region. It does so through early project scoping, best practice sharing and brokering, harnessing Singapore's best-in-class infrastructure ecosystem (international developers, engineering and professional services, along with financial institutions and multilateral development entities). IA also works with global players in the regional infrastructure ecosystem and leverages the collective capabilities and networks of various government agencies to catalyse more trade and investments into infrastructure in the region.

Website: [www.infrastructureasia.org](http://www.infrastructureasia.org)

# SUBSCRIPTION FORM

Fax your order to +65 6842 2581 or email us at [info@tradelinkmedia.com.sg](mailto:info@tradelinkmedia.com.sg)

Please (✓) tick in the boxes.



Southeast Asia Building  
Since 1974



Southeast Asia Construction  
Since 1994



Security Solutions Today  
Since 1992

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

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



Bathroom + Kitchen Today  
Since 2001

**1 year (4 issues)**

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



Lighting Today  
Since 2002

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

<http://lt.tradelinkmedia.biz>

**Personal Particulars**

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

## IMPORTANT

Please commence my subscription in \_\_\_\_\_ (month/year)

Professionals (choose one):

- |   |  |  |  |
|---|--|--|--|
| <input type="checkbox"/> Architect        | <input type="checkbox"/> Landscape Architect   | <input type="checkbox"/> Interior Designer | <input type="checkbox"/> Developer/Owner |
| <input type="checkbox"/> Property Manager | <input type="checkbox"/> Manufacturer/Supplier | <input type="checkbox"/> Engineer          | <input type="checkbox"/> Others          |

I am sending a cheque/bank draft payable to:

**Trade Link Media Pte Ltd, 101 Lorong 23, Geylang, #06-04, Prosper House, Singapore 388399**  
Co. Reg. No: 199204277K \* GST inclusive (GST Reg. No: M2-0108708-2)

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

Card Number: \_\_\_\_\_ Expiry Date: \_\_\_\_\_

Name of Card Holder: \_\_\_\_\_ Signature: \_\_\_\_\_

# 'NO FRILLS, NO FUSS' CAT HAMMERS



**THE LATEST ADDITIONS TO THE CAT HAMMER LINE-UP PROVIDE NEW LEVELS OF TECHNOLOGY AND PERFORMANCE, BUT ARE DESIGNED WITH A 'NO FRILLS AND NO FUSS' APPROACH TO DELIVER GREAT PRODUCTIVITY AND LOWER OWNERSHIP COSTS FOR EVERYDAY USE.**

**H** ydraulic hammers are one of the most versatile work tools available, suitable for skid steer loaders, backhoe loaders and excavators of all sizes in applications from civil construction, road building, earthmoving, quarrying and mining.

The new, no frills GC-series hammers from Caterpillar offer a straightforward design to meet the needs of everyday users by doing away with features that generally add to purchase and operating costs. These economically priced hammers are built with Cat quality – but without the frills. As a result, they are easy to operate, simple to maintain, reliable and durable.

The seven new models added to the Cat range include the H110GC, H115GC, and the new GC silenced-series (H110GCs, H115GCs, H120GCs, H130GCs and H140GCs).

The H110GC and H115 GC are added to the existing GC product line-up comprising the H120 GC (B20), H130 GC (B30) and H140 GC (B35). These two new GC-series hammers are configured for 9.9 – 16.2 t excavators.

The five GC silenced hammers further expand the Cat hammer portfolio by offering additional benefits to customers looking for life cycle value on excavators in the 9.9 – 36.3 t range.

## Key features and benefits

The Automatic Shut Off (ASO) feature on H110GCS–H140 GC silenced (S) hammers provides protection against blank firing, by stopping the piston from cycling internally when there is no material under the tool.

Eliminating blank firing helps protect the hammer from premature damage by reducing internal stresses and heat, and this helps to lower overall hammer ownership and operating costs. Additionally, ASO will protect rental fleet hammers where operator skill level and expertise can vary.

Silencing is standard on the GC S hammers (H110GC S – H140 GC S), which are designed with a protective enclosed



housing to minimise overall noise levels on a job site. The standard silencing feature, indicated by the 'S' in the nomenclature, protects the operator and everyone near the job site.

Maintenance is also simple on the new range with critical lubrication points made easily accessible, or an optional automatic lubrication system available.

Customers can utilise a carrier mounted auto-lube system or a hammer mounted auto-lube system with the GC silenced hammer range (H110 GC S – H140 GC S). With an optional auto-lube system, the hammer is greased while it runs – saving time and protecting the hammer.

Rental fleets and owner operator customers commonly fit these systems because they could reduce wear and tear and pre-start intervals. Easy and quick access to all other maintenance areas ensures the hammers are ready to operate at their peak and helps to decrease maintenance costs over the life of the tool.

Service of the lower bushing can be carried out in the field using simple hand tools. Users can also verify the gas charge of the hammer without removing it from the carrier. Such a simplified design provide high-level hammer protection as well. The fully enclosed housing protects the power cell, including the front head, cylinder and valve assembly.

A buffer system fitted inside the hammer housing on H110 GC S – H140 GC S models is to protect the carrier from potentially damaging reflective forces. The system also helps to reduce vibration to the machine, improves noise suppression and aids hammer durability. The large



TOP AND ABOVE: The new, no frills GC-series hammers from Caterpillar offer a straightforward design to meet the needs of everyday users by doing away with features that generally add to purchase and operating costs.

top buffer absorbs vibration and prevents damaging impulses from reaching the carrier. The lower and top buffers help to dampen tie rod loading and assist in noise suppression.

An accumulator protects the machine by capturing and buffering hydraulic spikes before they cause damage to hydraulic pumps. Matched with all common carriers, the range is ideally suited to Cat machines as a total solution providing seamless hydraulic connectivity and maximum performance.

Operators can take advantage of simplified design features, such as adjustment of the hammer power via a manual control adjustment on the

side of the power cell. The operator can select between high blow frequency and maximum power to get the performance they need to suit their application.

The long stroke - featuring less piston frequency but more impact power and productivity - is best for tougher applications. The short stroke, which has increased piston frequency but with less impact power, is perfect for lighter applications.

All in all, the new Cat hammer line up offers a model ideal for every need without compromising the Cat levels of performance that customers and operators expect. ■

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

# Encore Melaka Theatre



Overlooking the Straits of Malacca, the Encore Melaka Theatre is Malaysia's new landmark featuring both a contemporary and an avant-garde design. The project is part of a wider development programme known as Impression City Melaka which, in the coming years, will see the construction of hotels, residences, shopping and business centres, schools, and wellness facilities.

The new theatre shows performances of Impression & Encore Series, an avant-garde production that recounts the history of the city over the centuries, with stories of the first travellers, indigenous settlements and inter-cultural encounters through the medium of song and dance.

Occupying over 60,000 sq m of site area, the Encore Melaka Theatre has a capacity of more than 20,000 - it is believed to be the largest theatre ever built in Asia. Construction work started in 2016 and it was completed in 2018. Main contractor on the project was CCC Construction Sdn Bhd.

The project was designed by architect Wang Ge from the Beijing Institute of Architectural Design, who aims to promote the multi-ethnicity and cultural wealth that has been a main attribute of Malacca for many centuries. He has achieved this by creating a structure that may appear to be quite simple on the surface - with facades covered entirely with white porcelain tiles - but is sophisticated in terms of construction technology.



The theatre is equipped with a cutting-edge technology, incorporating a complex hydraulics system to raise and lower platforms built into the stage, a high-tech audio system, a 3D mapping projection equipment and a spectacular platform that can rotate 360 degrees. This platform is reportedly the first of its kind in Southeast Asia, which allows the entire auditorium to rotate automatically during a show, thereby giving a different perspective of the stage.

There are LED panels that illuminate the building at night. The internal spaces, as well as the foyer where spectators are welcomed, are characterised by blue and white colours - which are seen as a symbol of purity and eternity.



**ABOVE AND LEFT:** Construction work on the Encore Melaka Theatre started in 2016 and it was completed in 2018. This new landmark features both a contemporary and an avant-garde design, occupying over 60,000 sq m of site area.



With a capacity of more than 20,000, Encore Melaka is believed to be the largest theatre ever built in Asia.



TOP, MIDDLE AND ABOVE: The new theatre is equipped with a cutting-edge technology, including a sophisticated platform that can rotate 360 degrees.



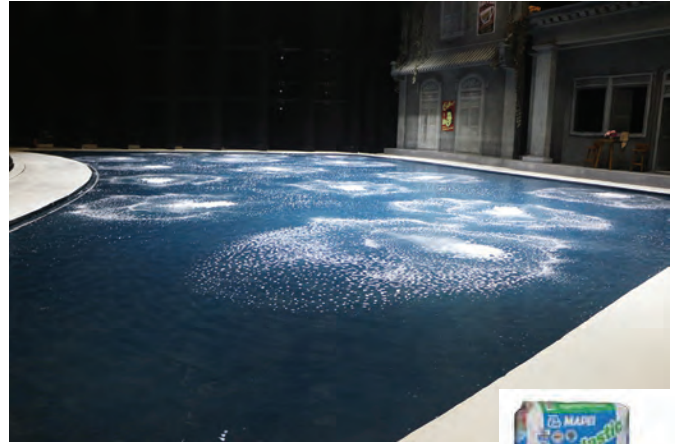
A number of areas in the theatre needed to be waterproofed, such as flat surfaces, lift shafts, bearing walls, pump room, storage tanks, balconies, corridors, bathrooms and kitchens, as well as some sections of the stage.

### Waterproofing solutions

The main contractor needed to waterproof a number of areas in the building, including flat surfaces, lift shafts, bearing walls, pump room, storage tanks, balconies, corridors, bathrooms and kitchens, as well as some sections of the stage. For this reason, the company commissioned Monarch CC Sdn Bhd to carry out the waterproofing work, with the help of Mapei waterproofing products.

For the bearing walls and lift shafts, covering a total area of 600 sq m, Mapelastic Foundation was used - a two-component cementitious mortar specifically developed for concrete retaining walls. The system was applied in two coats with a roller to form a layer at least 2 mm thick.

To waterproof the rainwater collection tank, the pump room, the storage tank for



LEFT, ABOVE AND RIGHT: The water storage tank on the stage was waterproofed with Mapelastic two-component cementitious mortar.



the spray-mist and the storage tank located on the stage (covering a total area of 620 sq m), Mapei supplied its Mapelastic two-component cementitious mortar. This product can remain flexible at very low temperatures (up to -20°C) and protects the surface of concrete from CO<sub>2</sub> penetration (carbonation) for more than 50 years. It is resistant to UV rays and CE-certified in compliance with EN 1504-2 and EN 14891 standards. It is also compatible with ceramic, mosaic and natural stone coverings and certified EC1 R Plus by GEV.

For the floor surfaces on the stage and in the corridors - featuring a total area of 8,820 sq m - Mapei Plastimul PU waterproofing membrane was chosen. In the bathrooms, showers, kitchens and areas with the air-conditioning system, the surfaces were treated with Mapei Planiseal 288 two-component cementitious mortar; this product can also be used for waterproofing underground structures, storage tanks and concrete structures in general.

The concrete road surfaces in the carpark and in the loading bays - about 12,000 sq m of area - were treated with Mapei Mapetop SP (natural colour). This surface hardener is used to make both internal and external concrete surfaces more abrasion-resistant when they are subjected to harsh conditions, such as a high level of traffic. ■

Website: [www.mapei.com.sg](http://www.mapei.com.sg)



ABOVE AND LEFT: The floors in the corridors and on the stage were waterproofed with Mapei Plastimul PU membrane.

RIGHT: Mapei Planiseal 288 mortar was used to waterproof the substrates in the bathrooms and showers.



The article courtesy of Realta Mapei International no. 77

# Kömürhan Bridge



CONSTRUCTED OVER THE KARAKAYA DAM LAKE, THE KÖMÜRHAN BRIDGE WILL BECOME PART OF THE MALATYA-ELAZIĞ STATE HIGHWAY IN EASTERN TURKEY. MEASURING 660 M IN LENGTH, THIS IS BELIEVED TO BE THE FOURTH SINGLE PYLON CABLE-STAYED BRIDGE IN THE WORLD. IT WILL PLAY AN IMPORTANT ROLE AS A LOGISTICS CORRIDOR, NOT ONLY CONNECTING MALATYA AND ELAZIĞ, BUT ALSO SERVING AS A STRATEGIC CROSSING FOR THE 16 PROVINCES OF EASTERN ANATOLIA.



Standing at a height of 168.5 m, the 'Y' shaped reinforced concrete tower is the centrepiece of the new K m rhan Bridge. Stretching just over half a kilometre at 660 m, the bridge has an edge opening of 180 m, a middle opening of 380 m, and a width of 24 m.

The deck cross-section will be orthotropic steel, while the superstructure of the bridge will be connected to the pylon with 42 tensioned cables. In context of the wider project, it is part of a 5,225 m four-lane highway that includes a 120-m viaduct and a 2,400 m tunnel, providing passage to the Karakaya Dam a few kilometres to the south. The existing old bridge and crookedly connected roads will be preserved. The new bridge and the tunnel will be developed next to the existing route.

The K m rhan Bridge is scheduled for completion in July 2020. The DoĝuŐ and G lsan joint venture has been appointed as contractor for the project, working for Turkey's General Directorate of Highways (KGM).

### Efficient formwork solution

Doka Turkey was awarded a contract to design and supervise the execution of formwork, which commenced in August 2017. The major challenge faced by the company was focused on the pylon, specifically its unusual shape. Doka's SKE 50 automatic climbing formwork was used on the upper single core column of the pylon, while a specially adapted double set was used on the lower half with bespoke solutions created at junction points to maintain the highest standards of quality and safety.

"Safety was our main priority on this project and Doka has maintained an excellent track record where this is concerned. Most of my team were accustomed with Doka's products and systems and knew that the solution presented, and the site support received would add much value," said Taha  zdilek, project manager at DoĝuŐ and G lsan joint venture.

"Our team was also familiar with Doka's solution for a similar project (Nissibi Bridge), which was delivered in 2015 and therefore knew they would be well suited for the job."



Doka's Top 50 large-area formwork was used for the pylon with Doka D2/D3 and Staxo 100 load-bearing towers for the approaching viaduct. While a tower crane and mobile crane were used for the pylon and viaduct respectively, the formwork system was self-sufficient and delivered its portion of the project safely, on time and on budget. ■

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

ABOVE: Standing at a height of 168.5 m, the 'Y' shaped reinforced concrete tower is the centrepiece of the new K m rhan Bridge. Doka's SKE 50 automatic climbing formwork was used on the upper single core column of the pylon.

LEFT: Doka's shoring system, the Staxo 100 load-bearing towers were used for the approaching viaduct.

All images   Doka

The K m rhan Bridge has a 660 m length and 360 m span. Featuring a cable-stayed design, it will be connected to the pylon with 42 tensioned cables.





# CONNECTING ROTTERDAM

**R**otterdam is not only the second largest city in the Netherlands, but also an important transport hub for freight traffic. A wide variety of goods from all over the world make their way to European cities after arriving in Rotterdam by ship. Most of these goods are transported onward from Rotterdam on freight trains or trucks. In order to better direct traffic in the city and permanently alleviate road congestion, a new highway

called the Blankeburgverbinding (Blankenburg Connection) is currently being built west of Rotterdam between the existing A15 and A20 highways.

## **‘Deepest GEWI piles in the Netherlands’**

The new A24 highway will be approximately 4 km long and will cross the Scheur River by two tunnels. As part of the project, Bauer



ABOVE: Construction of Blankenburg Connection is currently underway in Rotterdam, between the existing A15 and A20 highways.

TOP RIGHT AND RIGHT: Bauer is involved in the project, working to install GEWI piles with a final penetration of 64 m below the NAP (Normaal Amsterdams Peil). Here, a total of 11 Klemm KR 806 drill rigs are being used.



All images © Bauer Group



Funderingstechniek BV, the Dutch subsidiary of Bauer Spezialtiefbau GmbH, was contracted to deliver and install GEWI piles, which are micropiles with threads. In total, approximately 10,000 t of GEWI material will be delivered by Bauer between July 2019 and May 2020 and installed as 4,500 individual piles.

In the run-up to the actual construction work, preliminary pile load tests were conducted in 2018 to investigate the primary friction properties of the three soil strata at the site. Soft clay, followed by firm clay and medium-dense to dense layers of sand were detected down to a depth of up to 20 m.

The design of the GEWI piles for the tunnel ramps was adjusted based on the results of the pile load tests. The installation of the

pile foundation for the southern ramp of the future Maas Delta Tunnel, which is 30 m deep, began in mid 2019.

"In total, 11 teams with 11 Klemm KR 806 rigs are currently being used in the joint project with our partner De Vries Titan," said Maarten Daalmeijer, project manager at Bauer Funderingstechniek BV. "This way we can be sure to keep to the tight schedule."

According to Bauer, in this project the company is installing the deepest GEWI piles in the Netherlands to date, with a final penetration of 64 m below the NAP (Normaal Amsterdams Peil), or 'Amsterdam Ordnance Datum' – a height reference point for the Amsterdam water level. ■

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

# ROAD SMART

German railway Deutsche Bahn entrusted Vinci Construction Terrassement, a subsidiary of Vinci Construction Germany, with the construction of a new section along the high-speed rail line (ICE) between the Stuttgart airport and Wendlingen. The construction required earthworks for a 5.4-km ICE track and 7.5 km of side roads. The project is still ongoing, and is expected to take 24 months from start to finish.

## Compaction work

Working on the project are an Ammann ARS 200 HX smooth drum roller and an Ammann ARS 220 HX padfoot drum roller. Both machines feature the ACE<sup>force</sup> intelligent compaction system, which measures compaction and assigns specific values to progress through a digital display. This system can confirm that compaction targets have been met, and also enables data analysis through Ammann Documentation System (ADS). In addition, the rollers are equipped with a connected data acquisition system in cooperation with Q Point.

Ammann's ARS-series soil compactors are suitable for construction sites that require optimum compaction power, such as railways and airfields with highly-stressed bearing layers. The machines' fully hydrostatic drive provides higher performance on a cohesive, uneven or inclined surface.

To achieve optimum traction power, the ARS soil compactors use the Ammann Traction Control (ATC) system - which provides exceptional control of all three drives and prevents slippage. The machines' innovative amplitude and vibration systems and a weight of 20 t or 22 t ensure effective compaction. The boosted HX drive used in the ARS series is ideal for job sites where the machine's climbing ability is essential.

The ACE<sup>force</sup> and Q Point telematics systems have brought many benefits to the Vinci Construction site. The machines performed well, while the new technology enabled complete tracking of the work. "The advantages of these machines with integrated full-area compaction documentation lie in their innovative technology," explained Frédéric Hoeffel, key account manager at Ammann. "The synergy of this technology and powerful ARS rollers permanently increases productivity."

Combining the technologies brings impressive results. The ACE<sup>force</sup> system with GPS greatly simplifies the identification of compacted areas. Monitoring of the compaction process is much easier, which also benefits machine operators. Colour-coded drum passes are displayed directly on a screen. After reaching the desired values, the operator can move the machine to the next work area. This eliminates unnecessary passes, saves time and fuel, and increases productivity. This system also allows complete GPS mapping of gathered information.



TOP AND ABOVE: Vinci Construction Terrassement is currently working on a new section along the high-speed rail line between the Stuttgart airport and Wendlingen. The construction required earthworks for a 5.4-km ICE track and 7.5 km of side roads.

Vinci's pursuit of the work included its utilisation of the innovative ARS technologies and the low-cost compaction system with documentation. It is possible to record all relevant values, such as the number of passes, machine position, travel speed and rigidity values of the compacted area – regardless of whether a smooth or padfoot drum is used.

Data displayed on the screen can be transmitted in real time to the central computer. The site manager can then supervise and document the entire compaction process. Moreover, the supervisor can provide the operator with information on the



bearing capacity of the terrain or give direct instructions to make the compaction process more efficient. All collected data can be used for daily or periodic evaluation. The data can be further used as needed – for example, in work reports or as supporting documents for the client.

“Machines have reached the plug-and-play stage,” said Kuno Kaufmann, head of digital products at Q Point. “The entire innovative system was designed so that the driver only attaches the hardware to the machine and connects it. The system then automatically activates the stored machine data during the first installation. The team on site does not have to perform any further configuration and can go straight to work. Control and configuration errors are impossible.”

At the beginning of the work, Deutsche Bahn established and marked the test field. Soil samples were taken from the test field and analysed. A formula was determined based on the soil analysis. This dictated what binder to use – and at what ratio to deliver the required rigidity.

The test field was evenly covered with the binder, which was then mixed with the adjacent soil by milling. This resulted in a flat surface. The processed soil was then compacted using the Ammann ARS 220 with a padfoot shell. It worked in high amplitude at a speed of 2-2.5 km/h. The operator could monitor the increase in rigidity by using the ACE<sup>force</sup> system, located directly on the display.

The display also shows the roller paths. These paths and the displayed values are transmitted in real time to the stationary computer of the subsidiary of Vinci Construction Terrassement. Such procedure quickly ensured a homogeneous bearing capacity of the entire test area that met the requirements of Deutsche Bahn. At the end, the surface was processed by a grader and



**Ammann’s ARS 200 HX smooth drum roller and ARS 220 HX padfoot drum roller are both involved in the project during compaction work. The machines are equipped with innovative technologies, such as the ACE<sup>force</sup> and Q Point telematics systems, thus delivering better performance on the job site.**

compacted by an Ammann ARS 200 with a smooth drum. To ensure high quality, soil samples were once again taken and analysed in a laboratory.

Last year, Deutsche Bahn launched a number of projects to upgrade and modernise the Stuttgart railway junction. This particular section is just a single component in one of the largest projects in Germany. The construction will also contribute to creating the preconditions for the future high-speed line called ‘Magistrale Européenne,’ which will connect Paris with Budapest. ■

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



# BRIDGING THE GAP

The historical Aare Bridge in Koblenz, Switzerland, has undergone renovation with the help of a Liebherr LB 36 drilling rig. It was reportedly a huge challenge bringing the 115-t machine to the job site. A small harbour was specially built on the Aare in order to assemble the machine and it now serves as an access to the pontoon. From there, the drilling rig was transported upriver. After days of rain, the high water level further intensified the situation and made the plan to manoeuvre the LB 36 under the bridge even more difficult.

“This is a very special water construction site,” said Daniel Kunz, director of Birchmeier Spezialtiefbau AG, the contractor on the project. “We are operating with our drilling rig on a pontoon.”

The renovation work on the 130-year-old railway bridge was

performed through four pillars, explained Adrien, the site manager. “We are making four piles surrounded by a sheet pile wall for each pillar.”

Using the Kelly drilling method, Birchmeier bored the 16 piles with the LB 36 rig. Each pile has a diameter of 1.5 m and is between 12 and 20 m deep.

Originally, it was planned that Birchmeier would reinforce the pillars in winter, when less water flows in the Aare. However, that would be the time when work must be stopped for the close season of the fish.

During the drilling work, it also became evident how special this job site is. The workers cannot mark the water with the spray can. “We are using GPS for positioning. That works perfectly



A Liebherr LB 36 drilling rig can be seen above, being deployed on the Aare Bridge renovation project.

even though we are under a bridge and close to electric lines,” said Patrick Fuchs, the site foreman. The GPS here refers to the LIPOS assistance system from Liebherr. “We have never had any interference with the signals and could always work. It’s a huge support for positioning the piles in the water,” added Mr Fuchs.

After the hole has been drilled and the reinforcement cages have been inserted, the next challenge was transporting the concrete to the borehole. This involved pumping and laying 280 m of concrete lines using a Liebherr pump type THS 110 D-K - chosen by Birchmeier.

Despite all these challenges, Birchmeier was able to complete the first building phase successfully. ■

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

**Southeast Asia Construction is available on issue!**  
[issuu.com/southeastasiaconstruction](http://issuu.com/southeastasiaconstruction)



Or download our e-magazine at [seac.tradelinkmedia.biz](http://seac.tradelinkmedia.biz)

## ADVERTISERS' INDEX

AMMANN	9	LANKABUILD 2020	57
BAUER	15	LAOBUILD 2020	4
BAUMA CHINA 2020	IBC	LIEBHERR	OBC
BAUMA CONEXPO INDIA 2020	37	LINK-BELT	5
CAMBUILD 2020	6	LIUGONG	17
CATERPILLAR	21	MAEDA SEISAKUSHO	29
COMANSA	3	MAPEI	25
DOKA	27	MBAM ONEBUILD 2020	39
ENGINEER 2020	35	METALGALANTE	51
GENERAC	19	MYANBUILD 2020	45
HAMM	41	PAQS 2020	47
HILLHEAD 2020	IFC	ROCKMORE	55
HYDRONIX	49	SAMBO	11
INTERNATIONAL CONSTRUCTION WEEK 2020	2	SANDVIK	1
IRF ASIA 2020	59	SNORKEL	31
JP NELSON	23	TRENCHLESS ASIA 2020	53
KOBELCO	GATEFOLD	WIRTGEN	13
KOMATSU	7		



Messe München

Connecting Global Competence

# OUR COMPETENCE, YOUR INNOVATION.

bauma CHINA, Shanghai, SNIEC,  
November 24-27, 2020



**SHAPE THE  
INDUSTRY AND BE  
AN EXHIBITOR**

**Apply now !**

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

[www.bauma-china.com](http://www.bauma-china.com)

**bauma** CHINA

# Experience the Progress.



## Liebherr deep foundation machinery

- High availability and long service-life due to robust equipment technology
- Low emission and high efficiency thanks to intelligent drive systems
- Operating comfort through innovative control concept
- Matching working tools ensure excellent productivity
- Optimized construction processes thanks to comprehensive consultation

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

# LIEBHERR