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international construction

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KHL OFFICES

UNITED KINGDOM (HEAD OFFICE)

Southfields, Southview Road,
Wadhurst, East Sussex TN5 6TP, UK.
Tel: +44 (0)1892 784088
Fax: +44 (0)1892 784086
www.khl.com

USA OFFICE

KHL Group Americas LLC
3726 East Ember Glow Way,
Phoenix, AZ 85050 USA
Tel: +1 480 659 0578
e-mail: americas@khl.com

SOUTH AMERICA OFFICE

KHL Group Américas LLC
Manquehue Norte 151, of 1108.
Las Condes, Santiago, Chile
Tel: +56 2 2885 0321
e-mail: cristian.petters@khl.com

CHINA OFFICE

KHL Group China
Room 768, Poly Plaza,
No.14, South Dong Zhi Men Street,
Dong Cheng District,
Beijing 100027, P.R. China.
Tel: +86 (0)10 6553 6676
e-mail: cathy.yao@khl.com

KHL SALES REPRESENTATIVES

SALES MANAGER AND UK

Simon Kelly, UK Head Office
Tel: +44 (0)1892 786223
e-mail: simon.kelly@khl.com

CORPORATE ACCOUNT MANAGER

David Stowe, UK Head Office
Tel: +44 (0)1892 786217
e-mail: david.stowe@khl.com

USA

Thomas Kavooras
Tel: +1 312 929 3478
e-mail: thomas.kavooras@khl.com

USA/CANADA

Alister Williams
Tel: +1 312 860 6775
e-mail: alister.williams@khl.com

GERMANY/AUSTRIA/SWITZERLAND

Simon Battersby, UK Head Office
Tel: +44 (0)1892 786232
e-mail: simon.battersby@khl.com

FRANCE

Hamilton Pearman
Tel: +33 1 45 93 08 58
e-mail: hpearman@wanadoo.fr

ITALY

Fabio Potestà
Tel: +39 010 570 4948
e-mail: info@mediapointsrl.it

NORDIC COUNTRIES/BENELUX

Bridget Leary
Tel: +44 (0)1892 786220
e-mail: bridget.leary@khl.com

TURKEY

Emre Apa
Tel: +90 (0)532 324 36 16
e-mail: emre.apa@apayayincilik.com.tr

SPAIN/EASTERN EUROPE

Mike Posener
Tel: +353 86 043 1219
e-mail: mike.posener@khl.com

CHINA

Cathy Yao
Tel: +86 10 6553 6676
e-mail: cathy.yao@khl.com

JAPAN

Michihiro Kawahara
Tel: +81 (0)3 3212 3671
e-mail: kawahara@rayden.jp

KOREA

CH Park
Tel: +82 2 730 1234
e-mail: mci@unitel.co.kr

COMMENT

Positive times

They say that bad news sells – I'm not sure that this is entirely accurate and, even if it is, I'm delighted to have some good news to be able to report. In 2017, every individual country in Europe – along with North America, India and Japan – experienced increased construction equipment sales.

While the level of growth obviously varied quite dramatically, it is unusual and noteworthy for all these countries to experience growth in the same year. It's also worth noting the extent to which sales in China increased – an eye-wateringly high 82%. Even considering that construction equipment sales in China have experienced several difficult years, and so the level for 2016 was (relatively speaking) quite low, this is still a stand-out figure. For more information on how different regions around the world fared, turn to the Off-Highway Research article on page 49.

This issue sees the yearly appearance of the Yellow Table, in which we list the top 50 equipment manufacturers in the world by construction equipment sales in 2017. Looking at the figures of these companies, it really hits home just what a massive industry construction is – the sales figures of some of the firms not even in the top 20 would be top three players in other industries. It is also positive to see so many companies posting a healthy increase on their figures from 2016. To view the table and read our analysis of the results, turn to page 21.

Our April edition also features articles on bridge construction, concrete equipment and compact loaders, as well as a regional report on North Africa and a look at the economic situation in the Asia-Pacific region. Continuing the theme of good news, the region enjoyed better growth than the global average in 2017, and 2018 is shaping up to be strong too, with some countries in particular performing especially well.

Intermat is just around the corner, being held between 23 and 28 April. I'm looking forward to the event and getting to see so many people and different bits of equipment first-hand. I think I might need to invest in some comfortable walking shoes for the event though, given how full of appointments and press conferences the diary is already looking! I hope to see you in Paris.

Andy Brown
Editor



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Generally, in feature articles, although figures may have originally been reported in currencies other than US dollars, *International Construction* will use the conversion rate that is correct at the time of writing and report the figure in US dollars.

Generally, within news stories, the US dollar figure will follow (in parentheses) the originally reported currency figure.



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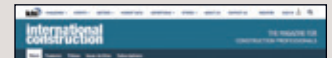
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KOBELCO CONSTRUCTION
MACHINERY CO., LTD.
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intl@sales_cr@kobelconet.com

KOBELCO CONSTRUCTION
MACHINERY MIDDLE EAST AND
AFRICA FZCO
Sharjah, U.A.E.
Tel: +971-4-298-2020
nezaki.kentaro@kobelco.com

KOBELCO CONSTRUCTION
MACHINERY U.S.A. INC.
Tel: +1-281-888-8430
jack.fendrick@kobelco.com

KOBELCO INTERNATIONAL (S)
CO., PTE. LTD.
Singapore
Tel: +65-(0)6268-1308
hirakawa.takemichi@kobelco.com

KOBELCO CONSTRUCTION MACHINERY
EUROPE B.V. FOR EUROPE, RUSSIA, CIS
Tel: +31-(0)36-549-5510
jos.verhulst@kobelco.com

KOBELCO CONSTRUCTION
EQUIPMENT INDIA PVT. LTD.
Tel: +91-120-4079900
miyashita@kobelconet.com

www.kobelcocm-global.com

KOBELCO CONSTRUCTION MACHINERY
EUROPE B.V. FOR U.K., IRELAND AND
SOUTH AFRICA
Tel: +44-(0)1342-301122
mark.evans@kobelco.com

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STAFF LIST

Editor
Andy Brown
e-mail: andy.brown@khl.com
Tel: +44 (0)1892 786224

Deputy Editor
Thomas Allen
e-mail: thomas.allen@khl.com
Tel: +44 (0)1892 786209

Editorial Director
Paul Marsden BSc

Editorial Team
Lindsey Anderson, Alex Dahm, Steve Ducker, Sandy Guthrie, Joe Malone, Fausto Oliveira, Cristián Peters, Murray Pollok, D. Ann Shiffler, Euan Youdale, Christian Shelton, Hannah Sundermeyer

Sales Manager
Simon Kelly
e-mail: simon.kelly@khl.com
Tel: +44 (0)1892 786223

Corporate Clients
David Stowe
e-mail: david.stowe@khl.com
Tel: +44 (0)1892 786217

Production & Circulation Director
Saara Rootes

Print & Digital Production Manager
Ross Dickson
e-mail: ross.dickson@khl.com
Tel: +44 (0)1892 786245

Production Assistant
Anita Bhakta
e-mail: anita.bhakta@khl.com
Tel: +44 (0)1892 786246

Design Manager
Jeff Gilbert

Events Design Manager
Gary Brinklow

Print & Digital Designer
Mitch Logue

Junior Designer
Jade Hudson

Commercial Director
Paul Baker

Finance Manager
Alison Fitness

Finance Assistants
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Helen Knight

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The countries making up North Africa have experienced different fortunes in recent years, but overall the signs are positive, writes *Andy Brown*.

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2017 proved to be the most positive year for equipment manufacturers in a number of years. Our report shows exactly which companies experienced the most growth.

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New innovations mean that concrete can now flex under pressure and heal itself. *Thomas Allen* takes a closer look at these new technologies.

COMPACT LOADERS 32

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Collaboration and innovation are essential to the successful construction of bridges, no matter where in the world they are built, as *Thomas Allen* finds out.

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Sany Heavy Industries has experienced strong growth in recent years, so *Andy Brown* took the chance to speak to Wanchun Zhou, vice president of the company.

INTERMAT STOP PRESS 44

Your final call for all information relating to Intermat, which will be held in Paris, from 23 to 28 April.

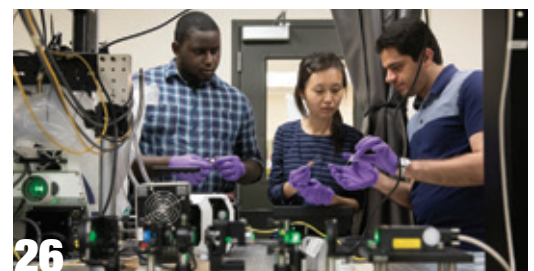
OFF-HIGHWAY RESEARCH 49

An overview of the global construction market in 2017.



2018 Yellow Table

| Company | 2017 Sales (€ million) | 2017 Sales (US\$ million) | 2017 Sales (UK£ million) |
|------------|------------------------|---------------------------|--------------------------|
| 1. SANY | 1,200 | 1,500 | 1,000 |
| 2. CAT | 1,100 | 1,400 | 950 |
| 3. VOLVO | 1,000 | 1,300 | 900 |
| 4. CASE | 900 | 1,200 | 850 |
| 5. JCB | 800 | 1,100 | 800 |
| 6. KOMATSU | 750 | 1,000 | 750 |
| 7. CASE | 700 | 950 | 700 |
| 8. CASE | 650 | 900 | 650 |
| 9. CASE | 600 | 850 | 600 |
| 10. CASE | 550 | 800 | 550 |



HIGHLIGHTS

GLOBAL An initiative by the International Finance Corporation (IFC) is seeking to help address what it says is a US\$1 trillion shortfall in global infrastructure investment, particularly in developing markets. The IFC – a sister organisation of the World Bank and member of the World Bank Group – says that US\$2 trillion is required for global infrastructure but only US\$1 trillion is received.

To try and make up this gap, the IFC is looking to the private sector and, in particular, the asset management industry, which has traditionally stayed away from emerging markets.

IRAQ The National Investment Commission (NIC) of Iraq is to sign a deal with Emaar Properties of Dubai and Eagle Hills of Abu Dhabi to begin work on the 64,000-home Al-Rashid City in southern Baghdad, Iraq.

Emaar's involvement in the scheme was announced last year when the governor of Iraq's central bank announced that it was looking to begin work on the scheme in 2018 and giving the total investment at US\$10 billion.

UK The UK-based construction firm Balfour Beatty has released its 2017 financial results, which saw underlying profit from operations more than double to £196 million (US\$ 274 million), from the £69 million (US\$96 million) recorded in 2016.

The group enjoyed a growth in profit from operations across all of its earnings-based businesses, and the company's year-end net cash stood at £335 million (US\$469 million), up significantly from the £173 million (US\$242 million) recorded in the previous year. Balfour Beatty's rebased order book stood at £11.4 billion (US\$15.9 billion).

GERMANY Flughafen München has charged Porr with the extension of the existing railway tunnel at Munich Airport by 1.8 km. The tender volume is €110 million (\$US135 million).

The tunnel will primarily be created using the cut-and-cover method. What makes this project special is the tight timeline relating to the eastern area of the airfield of the satellite terminal, where around 250m of the tunnel will be built.

Once the works begin, there will only be a 9-month construction period for building the tunnel and fully restoring operations on the airfield.

GLOBAL

Global equipment sales surge

Data provided by Off-Highway Research has shown that global construction sales surged in 2017 to the highest rate the market has been since 2012

Global construction equipment sales rose 28% last year to almost 895,000 units, according to specialist forecasting and market research company Off-Highway Research. This was the highest the market has been since 2012, and was a marked turnaround from 2015 and 2016, when worldwide equipment sales bottomed-out at 700,000 units.

China was a key driver of global growth last year, where equipment sales rose a remarkable 82%. This took demand back above 200,000 units for the first time since 2014, and re-established China as the largest equipment market in the world in unit terms, ahead of the US.

The new-found buoyancy in China is linked to the 'One Belt One Road' infrastructure projects that were launched by the government towards the end of 2016. This has driven across-the-board rises in construction equipment sales, particularly larger earthmoving machines.

Elsewhere in Asia, robust growth continued to be the order of the day in India last year, with a 14% increase in construction equipment sales following on from the 36% surge seen in 2016. This took the market size to a new record level of 60,089 units, surpassing the previous high that had been seen in 2011.

Meanwhile in Japan, equipment sales were also up 14%, due to a sharp rise in the crawler excavator segment.

Sales in Western Europe rose 13% last year to 160,562 units, which took demand to its highest level since the global financial crisis. Significantly, all the individual countries in the region experienced increased demand last year.

Among the highlights were Sweden and Norway reaching new records, while sales of equipment in Germany were their highest since the reunification boom of the early 1990s.

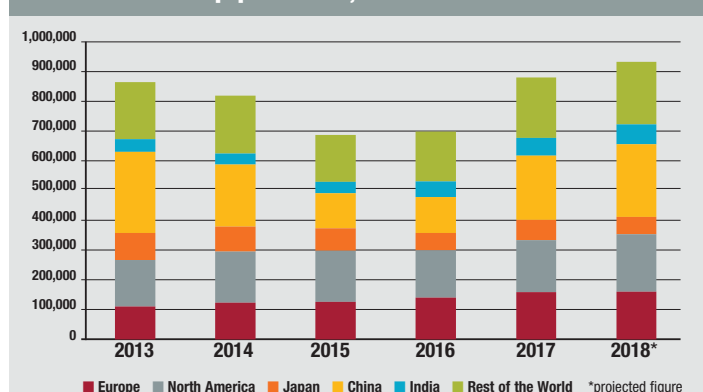
Off-Highway Research managing director Chris Sleight said, "At 160,000 units, the European market is the strongest it has been for a decade. This buoyancy is expected to persist in 2018 and 2019, before volumes tail off to around 150,000 unit sales in 2022."

After a year of uncertainty in the run-up to the November 2016 US presidential election, the North American construction equipment market returned to growth last year. Sales were up 11% to 173,188 units, thanks to accelerating economic growth.

Off-Highway Research expects global equipment sales to grow another 6% this year, with the most significant growth being seen in North America, India and China.

For more information, visit www.offhighway.co.uk

Global construction equipment sales, 2013-2018



US

Concern over US steel tariffs

President Trump's proposed plan to impose a 25% tariff on imported steel and a 10% tariff on imported aluminum would lead to a loss of over 28,000 jobs in the construction industry, according to a study released by US-based economic consulting group Trade Partnership.

Trump's intention is to boost US production of steel and aluminum, and the President's advisors have argued that the tariffs will have no significant negative impact on consumers who purchase US or imported steel, something which has been widely questioned by many industry commentators.

According to data from the American Iron and Steel Institute, construction accounted for 43% of all steel shipments in the US last year.

The tariffs – along with an expected increase in the price of raw materials – come at the same time as the US faces an affordable housing shortage and political leaders are debating a national infrastructure plan.

The American Institute of Architects said in a statement that, "any move that increases building costs will jeopardise domestic design and the construction industry, which is responsible for billions in US Gross Domestic Product, economic growth, and job creation."



DUBAI \$163 million tower contract

UAE-based Damac Properties has awarded a contract worth approximately AED600 million (\$163.3 million) to China State Construction Engineering Corporation (CSCEC) for the construction of one of the towers at Aykon City, overlooking Dubai Canal in Dubai, UAE.

The contract covers the main construction works for the tower, which contains serviced apartments. The tower includes two basement levels, a ground floor, and ten podium levels, in addition to a dedicated lifestyle and entertainment level, 53 residential floors and a rooftop.

"This is a major contract towards the realisation of Aykon City, one of Damac Properties' largest master developments in the heart of Dubai.

"CSCEC is one of the biggest contactors in the world and after careful consideration of various aspects, we agreed to the proposed partnership," said Mohammed Tahaine, senior vice president of commercial operations at Damac Properties.

The enabling work for the tower has already been completed, and it has been estimated that its main construction will use approximately 10,000 tonnes of steel, as well as more than 94,600 metric cubes of concrete.

FRANCE Salini Impregilo heads for Paris

It has been announced that Italian-based contractor Salini Impregilo has won a €203 million (US\$249 million) contract to extend the Paris Metro line to the airport at Orly, located south of the French capital of Paris.

The company said that this marked its entry into the Grand Paris Express — a massive project that will expand the city's public transport network to the periphery by 2030.

The contract, awarded to Salini Impregilo and its joint-venture partner Nouvelles Générations d'Entrepreneurs (NGE) by La Régie Autonome des Transports Parisiens (RATP), includes one of four sections that will make up the 14km extension of Line 14 South to the airport.

On Lot GC04, Salini Impregilo and NGE will excavate a 4.1km tunnel from Pont de Rungis station to the site of a new station at Orly. Work is about to start and will last about five years.

Costing approximately €30 billion (US\$36 billion), the Grand Paris Express will extend the city's RER rail and Metro network to the surrounding communities that belong to the Grand Paris metropolis, with the aim of revitalising the area's economy for its 7,000,000 residents. The first Metro line was inaugurated in 1900.

TURKEY A project to build the world's longest suspension bridge in Turkey is ready for construction after the Korean and Turkish companies who have the tender for the project succeeded in securing the level of finance they required.

The 1915 Çanakkale Bridge and Highway project over the Dardanelles Straits has secured US\$2.8 billion.

The bridge is being built by a consortium of South Korean and Turkish companies — Daelim, SK Engineering and Construction, Limak, and Yapı Merkezi.

The bridge will be 3.6km long and the project also includes the construction of 85km of connecting roads. It has a completion date of 2023, and its estimated cost is US\$3.8 billion.

AUSTRALIA Progress for Cross River Rail

The shortlisted companies for the contract to build Queensland's Cross River Rail have been announced.

The US\$4.3 billion scheme will extend the city's underground rail system by adding 10.2km of line, digging a 5.9km double-bore tunnel under the Brisbane river and the city's central business district and adding five stations to the network.

The contract is split into one for tunnels and stations, and the other for the rail systems. For the construction elements the shortlist is down to Pulse, the CIMIC Group-led consortium, including Pacific Partnerships, CPB Contractors, UGL, BAM, Ghella and DIF.

The second is Qconnect, which includes QIC, Capella Capital, Lendlease, John Holland and Bouygues, and finally CentriQ Partnerships which is Plenary Group, ACCIONA, GS Engineering & Construction, Salini Impregilo and Spotless Group.

The shortlisted firms for the rail systems contract are the River City Alliance (Laing O'Rourke, GHD, Aurecon, SYSTRA Scott Lister) and Unity Alliance (CPB Contractors, UGL, Jacobs and AECOM).

Deputy Premier Jackie Trad said the announcement followed an evaluation of the Expressions of Interest received for the project's two major works packages.

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www.intermatconstruction.com

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April 23-28, 2018
Paris, France (Intermat)
www.worldofconcrete.com

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Vienna, Austria
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Bauma CTT Russia

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Moscow, Russia
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Hillhead

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Buxton, UK
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Intermat ASEAN

Sept 6-8, 2018
Bangkok, Thailand
www.asean.intermatconstruction.com

Concrete Asia

September 6-8, 2018
Bangkok, Thailand
www.concrete-asia.com

SC&RA Crane & Rigging Workshop

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www.scranet.org

International Rental Conference (IRC)

November 26, 2018
Shanghai, China
www.khl.com/irc

Bauma China 2018

November 27-30, 2018
Shanghai, China
www.bauma-china.com

Bauma ConExpo India

December 2018 (date TBC)
Delhi, India
www.bcindia.com

FRANCE

Loxam revenues up sharply

Last year's flurry of acquisitions has seen French-based equipment rental company Loxam report a 48% increase in revenues to €1.37 billion (US\$1.69 billion) for 2017, with EBITDA (earnings before interest, taxes, depreciation and amortization) rising by 52% to €464 million (US\$572 million).

The record revenue figure includes the addition of 11 months of revenues from Hune and Lavendon, four months from Cramo's Danish business, two months from Nacanco in Italy, and a single month from Swan Hire in Ireland.

On a like-for-like basis group sales were up by 8.5%, buoyed by better economic conditions in France and the rest of Europe.

The acquisitions in 2017 increased Loxam's business outside of France, which now represents 39% of the total, up from 14.4% in 2016. Around 7% of revenues are generated outside Europe, mainly in the Middle East.

Loxam's generalist business in France remains its largest, representing approximately 46% of total revenues. The rest of its French operation, 15% of total group sales, is generated by specialist businesses for access, power, accommodation, heavy construction and events.

Gérard Déprez, Chairman and CEO of Loxam, said, "We are particularly satisfied by our performance during the fourth quarter, which concludes an outstanding year for Loxam, combining both organic and external growth."

US

New doubts over California's bullet train

A business plan released by the California High-Speed Rail Authority has shown that its projected cost for the bullet train



CANADA

Contracts for hydro dam awarded

A US\$1.2 billion contract has been awarded for the controversial hydroelectric dam in Canada

A CAD\$1.6 billion (US\$1.2 billion) contract has been awarded for construction of the Site C hydroelectric dam in northeastern British Columbia, Canada.

BC Hydro (a Crown corporation) awarded the contract to Aecon-Flatiron-Dragados-EBC Partnership to build the dam's generating station and spillways. Work will begin soon and there is a five-year completion target.

In a press release, BC Hydro said that the partnership expects to hire as many as 1,600 workers by the peak of construction in 2021.

In December, following a review from the BC Utilities Commission (BCUC), B.C.'s government decided to proceed with the dam, raising its expected cost from CAD\$8.3 billion (US\$6.3 billion) to CAD\$10.7 billion (US\$8.1 billion).

The project would have cost CAD\$4 billion (US\$3 billion) if it had been scrapped.

Two other smaller contracts have also been awarded — the CAD\$33 million (US\$25 million) contract to build the Site C substation to Nanaimo-based F&M Installations, and the CAD\$23 million (US\$17 million) contract to design, supply and commission the generating station and spillways powerhouse bridge and gantry cranes, which has been awarded to REEL COH.

The dam, the third across the Peace River, will flood an 83km stretch of valley west of Fort St. John. When complete, BC Hydro estimates Site C will provide enough power to heat and light as many as 450,000 homes a year.



PERU

Megaproject to modernise Lima

A major road project in Peru's capital, Lima, is underway to better connect 11 of the city's districts.

In excess of US\$700 million is being invested to build and upgrade 25km of road, 9km of which will be a new express road to Callao and 16km will be an upgrade to the Via de Evitamiento.

The renovation of the Via de Evitamiento includes the construction of an additional 9km lane in both directions, the renewal of pavements, and the building of nine pedestrian bridges with ramps.

The works also include the construction of a tunnel under the Rimac River, which will be part of a 1.8km road extension that includes 13 viaducts. The project is part of a public-private partnership granted by the Municipality of Lima to the Lamsac consortium, which is owned by Vinci Highways and is responsible for the concession.

GLOBAL

New sales manager at iC

Simon Kelly has joined *International Construction* magazine as the new sales manager.

Kelly, who has been with KHL for two years, was previously sales manager at sister magazine *International Rental News*, where he helped the magazine to reach some of its best sales figures and established close working relations with the rental industry.

Kelly said, "I'm excited to be joining such a well-respected magazine which is distributed around the world. Alister has been a big help and I'm looking forward to getting started."

Alister Williams, Sales Manager on *International Construction* for the past 12 years, will be taking up a new role as VP Sales in KHL's new Power Division based in the US.

The new Power Division comprises all the recently acquired titles within the D>P group — *Diesel Progress*, *Diesel Progress International*, *CompressorTech2*, *New Power Progress*, and all related sourcebooks and newsletters.

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HIGHLIGHTS

JAMAICA The Jamaican Government will be spending JMD\$12 billion (US\$ 95 million) to improve road infrastructure in the upcoming fiscal year under the Major Infrastructure for Development Programme (MIDP).

MIDP is being implemented by the Ministry of Economic Growth and Job Creation, with funding support from the Government and the Export/Import Bank of China. The larger works will be undertaken by the China Harbour Engineering Group (CHEC), with minor infrastructure works to be largely undertaken by Jamaican contractors under sub-contracts with CHEC.

NEW ZEALAND Four shortlisted companies for a NZ\$1.2 billion (US\$873 million) central interceptor wastewater tunnel for Auckland, New Zealand, have been announced.

Construction of the 13km tunnel from Western Springs and crossing Manukau Harbour under the seabed to the Mangere wastewater treatment plant is due to start next year. It is set for completion in 2025. The companies are CPB Contractors, Ghella-Abergeldie Harker Joint Venture, Pacific Networks, and a Vinci Joint Venture.

DUBAI A US\$1 billion theme park being constructed in Dubai is set to become the world's largest when it is completed. The World Legends Theme Park will be comprised of nine zones with various rides. It will be complemented by 9,700m² of food and beverage options and 9,500m² of retail space, all set within a temperature-controlled environment. It is expected to be completed by the end of 2020.

CHINA

Record-breaking sky bridge

Work has begun on a US\$3.8 billion sky bridge in the Chinese city of Chongqing

Singapore-based real estate company CapitaLand has begun to erect a record-breaking sky bridge as part of the RMB24 billion (US\$3.8 billion) Raffles City Chongqing urban district being developed on the Chaotianmen riverside in the Chinese city of Chongqing.

At 400m above sea level, it was said that the sky bridge – known as the Conservatory – would be the highest in the world. It will also link the greatest number of towers, spanning four 250m-tall skyscrapers and connecting to two other adjacent towers via cantilever bridges.

The curved accordion-shaped 'horizontal skyscraper' will measure 300m in length – taller than Singapore's tallest building laid on its side – 30m in width and 22.5m in height.

Lim Ming Yan, president and CEO of CapitaLand, said, "Erecting The Conservatory marks the culmination of five years of construction progress."

The Conservatory is made up of a continuous steel structure weighing almost 11,000 tonnes, and enclosed with a ring comprising 3,200 pieces of glass and 4,800 aluminium panels.

To erect it, the steel structure has first been divided into nine segments – four segments that are built in-situ above the four towers, three middle segments suspended between the four towers that will be pre-fabricated on the ground and hoisted into place by hydraulic strand jacks, and two cantilever segments that will be assembled in short sections from the two ends of the rightmost and leftmost towers.

Hoisting the three middle sections – each weighing up to 1,000 tonnes – to the designed height of 250m was said to mark a world-first. The



Conservatory's steel structure is scheduled to be fully erected by the middle of 2018, and it will be followed by the hoisting of the façade enclosure together with large trees and plants for the sky gardens.

Building information modelling technology was used to coordinate the complex structural and utilities layout of the Conservatory.

US

Bridge in Florida collapses

A recently installed pedestrian bridge in Florida, US, has collapsed onto a highway, resulting in the deaths of at least six people. The bridge – which was 53m long and weighed 950 tonnes – fell directly onto the highway, crushing cars beneath it.

The structure was built by Miami Construction Management and was only recently installed in a single morning over the eight-lane highway. MCM built the bridge by using a method called Accelerated Bridge Construction, in which the bridge was built on-site but to the side of the street to make the process faster and safer.

The bridge was to provide a walkway over one of the busiest roads in Florida and was located by Florida International University.

The US\$14.2 million project was funded by the US Department of Transportation and was supposed to last for more than a 100 years.

PHILIPPINES

Road project given go-ahead

The Philippines and Japan have signed a new loan deal that will see the expansion of a road in the Bulacan province in the Philippines. The loan deal is for JPY9.3 billion (US\$88 million) for the construction of the third phase of the Arterial Road Bypass Project.

The Philippine's Department of Finance (DOF) also noted that the Philippines will provide counterpart funding of PHP1 billion (US\$15 million) for the project, which has a total cost of JPY10.8 billion (US\$104 million).

The Arterial Road Bypass is a 24 km arterial road that will link the North Luzon Expressway in Balagtas, Bulacan with the Philippine-Japan Friendship Highway in San Rafael.

The agreement for Phase 3 of the provides for interest rates of 1.5% per annum for non-consulting services and 0.01% per annum for consulting services with a repayment period of 20 years. Phase 1 of the project was completed in 2012, and Phase 2 is expected to be inaugurated in May 2018.

Exchange rates: April 2018

| VALUE OF 1: | SYMBOL | AUS | BRL | UK£ | CNY | € | INR | YEN | MXN | RUB | SAR | ZAR | KRW | CHF | US\$ |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|
| Australian Dollar | AUS | | 0.39 | 0.549 | 4.90 | 0.628 | 50.4 | 81 | 14.43 | 44.3 | 2.91 | 9.11 | 837 | 0.734 | 0.775 |
| Brazilian Real | BRL | 2.57 | | 0.214 | 1.91 | 0.245 | 19.6 | 31.7 | 5.63 | 17.3 | 1.13 | 3.55 | 326 | 0.286 | 0.302 |
| British Pound | UK£ | 1.82 | 4.68 | | 8.9 | 1.14 | 91.8 | 148 | 26.3 | 80.7 | 5.30 | 16.6 | 1526 | 1.34 | 1.41 |
| Chinese Yuan | CNY | 0.204 | 0.524 | 0.112 | | 0.128 | 10.28 | 16.6 | 2.95 | 9.04 | 0.593 | 1.859 | 171 | 0.150 | 0.158 |
| Euro | € | 1.59 | 4.09 | 0.87 | 7.80 | | 80.2 | 130 | 23.0 | 70.6 | 4.63 | 14.51 | 1334 | 1.17 | 1.23 |
| Indian Rupee | INR | 0.020 | 0.051 | 0.011 | 0.097 | 0.012 | | 1.6 | 0.286 | 0.879 | 0.0577 | 0.181 | 16.6 | 0.0146 | 0.0154 |
| Japanese Yen | YEN | 0.012 | 0.032 | 0.007 | 0.060 | 0.008 | 0.619 | | 0.1772 | 0.544 | 0.0357 | 0.1118 | 10.3 | 0.0090 | 0.0095 |
| Mexican Peso | MXN | 0.069 | 0.178 | 0.038 | 0.339 | 0.044 | 3.49 | 5.64 | | 3.07 | 0.201 | 0.631 | 58 | 0.051 | 0.0537 |
| Russian Ruble | RUR | 0.023 | 0.058 | 0.012 | 0.111 | 0.014 | 1.14 | 1.84 | 0.326 | | 0.066 | 0.206 | 18.9 | 0.0166 | 0.0175 |
| Saudi Riyal | SAR | 0.344 | 0.883 | 0.189 | 1.685 | 0.216 | 17.333 | 28.019 | 4.965 | 15.243 | | 3.13 | 288 | 0.253 | 0.267 |
| South African Rand | ZAR | 0.110 | 0.282 | 0.060 | 0.538 | 0.069 | 5.532 | 8.942 | 1.585 | 4.865 | 0.319 | | 92 | 0.081 | 0.085 |
| South Korean Won | KRW | 0.0012 | 0.0031 | 0.0007 | 0.0059 | 0.0007 | 0.0602 | 0.0973 | 0.0172 | 0.0529 | 0.0035 | 0.0109 | | 0.00088 | 0.0009 |
| Swiss Franc | CHF | 1.36 | 3.50 | 0.75 | 6.67 | 0.86 | 68.64 | 110.95 | 19.66 | 60.36 | 3.96 | 12.41 | 1141 | | 1.056 |
| US Dollar | US\$ | 1.29 | 3.31 | 0.708 | 6.32 | 0.81 | 65 | 105.1 | 18.62 | 57.16 | 3.75 | 11.75 | 1080.24 | 0.947 | |

For example US\$ 1 = AUS\$ 1.29

Strong growth forecast

The Asia-Pacific region will lead global construction growth in 2018, with the developing economies in this region being the real stand-out performers, writes **Scott Hazelton**.

Much of the Asia-Pacific region will see slower growth in 2018 after a stronger 2017 than had been expected. Asia-Pacific continues to lead global growth, expanding 5.1% last year compared to the global average of 3.3%. With few exceptions, 2017 economic growth was robust with strong demand for electronics components, recovering agricultural production, higher commodity prices, and better-than-expected consumption.

However, there is caution over further improvements during 2018 due to concerns over limited commodity price increases and fear that the demand for electronics components will falter. We expect China to expand 6.7% for 2018, but growth will be constrained by the government's policy objectives of mitigation of financial system risk, and pollution control, as well as efforts to closely control the housing market and heavy industry.

The rest of Asia will be impacted through supply-chain relationships for manufactured goods as well as weaker commodity prices and export volumes. The improving global outlook for advanced economies mitigates the impact of slower Chinese growth on the rest of Asia. Japan's economy will lose momentum after economic growth hit a four-year high in 2017, expanding 1.5% for 2018 in response to weakening household consumption and fixed investment.

We expect narrowing net exports to slow growth, due to a correction in electronics demand, as well as yen appreciation. For much of Southeast Asia, while the electronics boom boosted exports and industrial production significantly, concern remains over the sustainability of demand and the ability to maintain the pace of output growth.

Exports

However, countries with commodities exports (Malaysia, Indonesia and Singapore) should benefit from strength in prices. India's household and private capital expenditures are recovering from the negative impacts of demonetisation and the implementation of the unified goods and services tax (GST).

Japan's reform program is trapped by weak growth, limiting capacity to implement reforms to pension and tax systems, as well as adjustments to labor rules. The next consumption tax hike in Japan is due in late 2019, and we should see front-loaded consumption activity in mid-2019. Indonesia has made the most progress on reforms over the past few years, but momentum has slowed and the government has expressed concern that foreign investment has not picked up as strongly as hoped.

Inflation is expected to move above 2% for the first time in three years as raw materials, oil prices and other input costs rise. Purchasing manager's

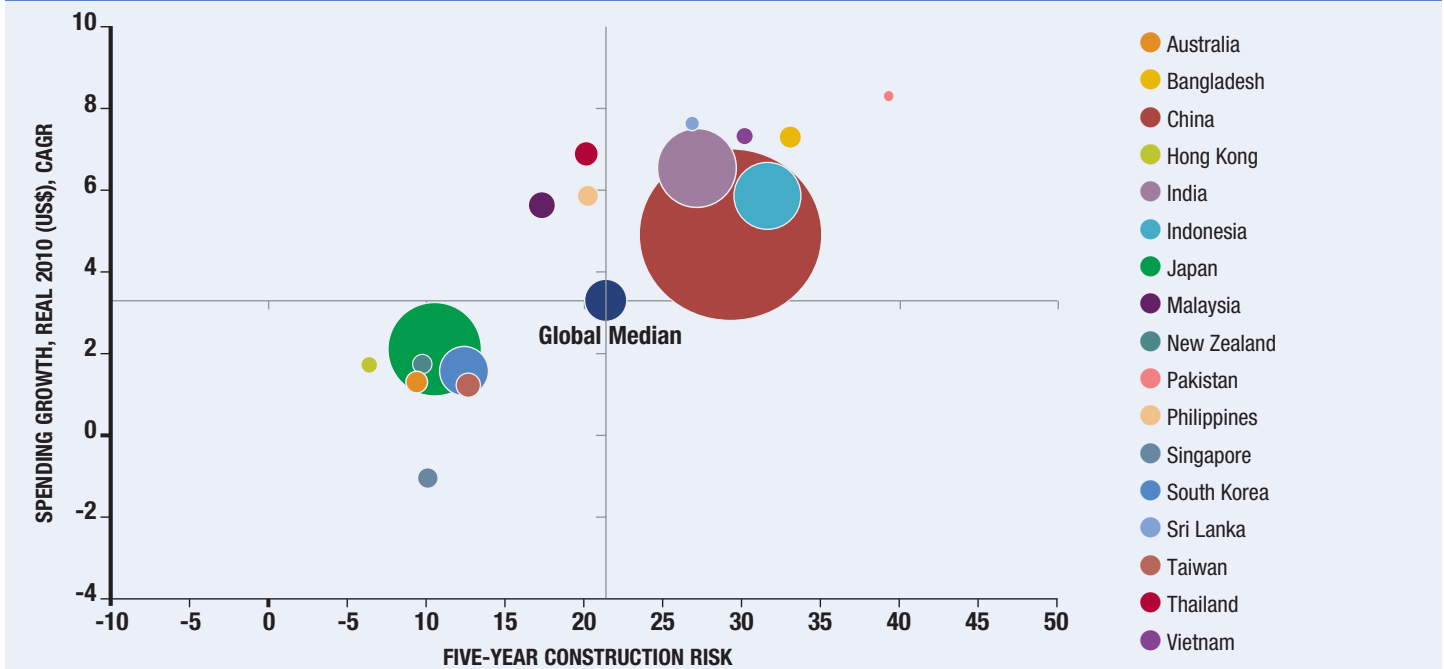
surveys suggest that manufacturers will pass on rising costs to customers. Currency depreciation will be a minor factor for inflation until late in the year, but supports a higher inflation outlook for 2019. With inflation modest, we do not expect significant monetary policy tightening until mid-2018.

Malaysia, which tightened in January 2018, is an exception, but should not move again this year. Additionally, there is some pressure for Korea and the Philippines to act. Otherwise, it will be mid-to-late 2018 before Asian central banks tighten monetary policy to head off inflationary expectations and stabilise capital flows and currencies.

Rapid growth in intra-regional exports suggests the emergence of a significant regional final market for goods and services, anchored in the continued growth of China and, increasingly, in the growing affluence in other large markets, such as India and parts of the Association of Southeast Asian Nations (ASEAN).

The Asian Development Bank estimates that export value to China in Korea, Malaysia, Philippines, Singapore, and Thailand increased about fivefold over the past 15 years. Yet intra-regional trade remains driven by global production chains, and APAC remains dependent on the US, Europe, and Japan as sources of final-stage demand.

Construction Markets Strengthen Across Asia



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offering above-average growth with some higher risk exposure.

The outlook for Asian construction falls into two camps; developed markets offer rather limited potential, although none are in recession, while emerging markets offer greater opportunity. Over the past two years, total construction growth potential has fallen. The region as a whole offers above-average potential, with certain key countries as solid bets for the medium- and long-term. **IC**

This export-led growth model was exposed by the collapse in global demand in 2008–09 and has been tested by weak demand in subsequent years. Businesses and policymakers understand the vulnerability of extreme export dependence, but mitigating that dependence is difficult.

Shifting the growth model toward domestically generated growth will take time. While it unfolds, the region risks subpar transitional growth, most evident in China and Singapore, and Indonesia's inability to accelerate growth out of the low-5% range.

New opportunities

Asia's manufacturing landscape is undergoing important changes, with both regional and global implications. As China moves up the value-added chain and away from heavy industry, due to rising incomes and labor costs that have eroded its competitiveness in low-cost industries, it will compete more directly with trading partners for investment and market share. While this presents a risk for Korea, Japan, Malaysia, and Singapore, new opportunities are arising for lower-cost countries such as Vietnam and Cambodia, as well as Indonesia and India.

These countries have the potential to benefit from improved market share as China exits low-end industries, but also from increased investment and outsourcing from the very countries now threatened by Chinese competition. There is

evidence that this is already occurring, with Korea and Japan boosting investments into ASEAN and a strong performance by Vietnam's manufacturing sector since 2015.

While a slowing China has led to a lower expectation of construction growth, Asia-Pacific will lead global construction growth in 2018 with an anticipated 4.5% increase. By comparison, global growth is expected to be 3.3%. The region will be led by Pakistan, the Philippines, Vietnam and Sri Lanka, with infrastructure the driving force at 7% growth.

The chart puts construction markets in a regional context. The vertical axis represents the five year outlook for compound annual growth. The size of the bubble reflects the 2016 size of the construction market in real US dollars. The horizontal axis reflects the risk of construction investment – including the ability to repatriate earnings, enforce a contract, protect a patent, obtain stable prices, and overcome regulatory hurdles. The risk score extends to 100. The cross-hairs represent global averages for construction market growth and risk.

The region's developed economies fall into the lower left quadrant, which features slower growth, but also relatively low risk. Malaysia, Philippines and Thailand have the enviable position of offering above-average growth with below-average risk. Indonesia and a band of smaller countries join China and India in



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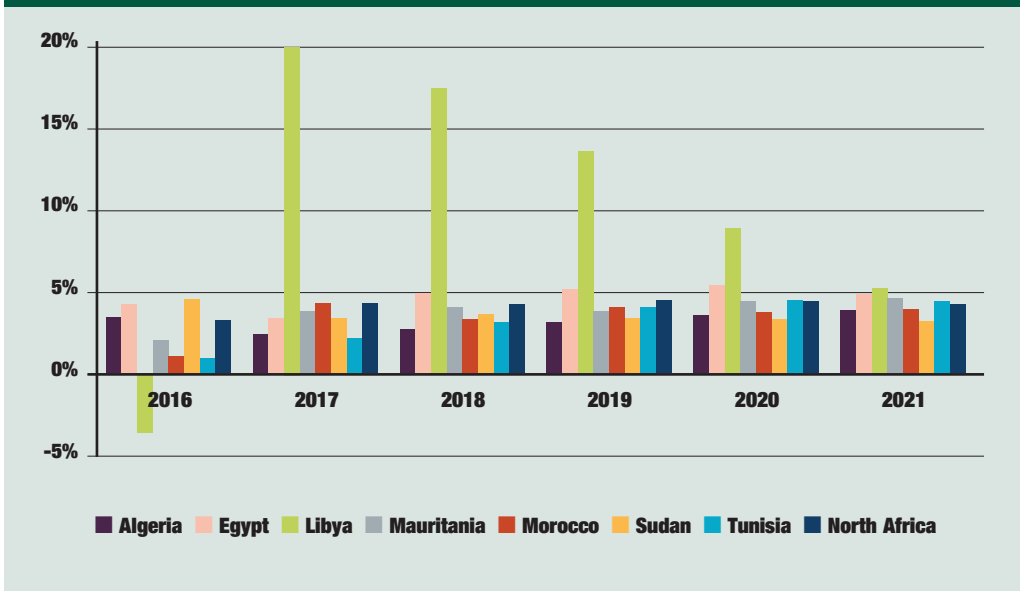
The countries making up North Africa have experienced vastly different fortunes in recent years but, partly due to large Chinese investment in the region, the signs are looking positive for steady growth

The outlook in North Africa (defined in this article as Algeria, Egypt, Libya, Morocco and Tunisia) is generally positive after some difficult years, particularly following the events of the Arab Spring In 2011. The Arab Spring is the term used to describe a series of protests and revolutions which began with the Tunisian revolution and spread to numerous other countries in the region.

A recent report from BNC Project Intelligence has estimated that the construction industry in North Africa has projects worth US\$473 billion currently in development and that, since 2011, the GDP (gross domestic product) of the region has grown at around 20%. However, this growth has by no means been shared equally across the different countries in the region.

It goes without saying that political instability is one way to severely curtail investment from the construction sector. While a degree of calm has returned, the region still has tensions bubbling under the surface and there are vast differences from

Growth in Real (2010) GDP (% Change)



country to country in this region, in terms of political stability, unemployment, construction projects and GDP.

Information provided by IHS Global Insight shows that in 2017 GDP growth in Libya alone reached 20%, with the other countries in the region hovering under the 5% mark. Looking ahead to 2021 and it is estimated that Libya, unsurprisingly, will not be able to keep up this staggering growth, with its GDP increase expected to drop to 5% by 2021, the same rate as Egypt, the region's traditional powerhouse.

New tunnels under the Suez Canal: as early as 2015/2016, Bauer constructed 120,000m² of diaphragm wall up to a depth of 50m for the future tunnel entrances and exits





A model of the proposed new capital of Egypt, which will be located 28km east of Cairo

The construction industry's future in Egypt looks strong at the moment, partly due to the economic program of Abdel Fattah el-Sisi, who has been President of Egypt since 2014.

The President has placed a strong emphasis on stimulating economic growth through major infrastructure projects, which has been helped by foreign investments. For instance, in 2016 China announced plans to invest EGP152 billion (US\$15 billion) into developing the country's infrastructure. Indeed, in 2017 the Egyptian Parliament passed the New Investment Law, which, among other things, provides tax incentives and guarantees specifically designed to attract more domestic and foreign investment into the country.

A new capital

The plan to build a new administrative capital in Egypt, 45km to the east of Cairo, was first publicly announced in 2015 and the first stage is expected to be finished by 2020. When completed, the Egyptian Parliament, Presidential Palace, supreme court and central bank will be moved there. The initial cost of the

first phases of the infrastructure build is expected to be \$4.5 billion and the new capital will be built over 714km², roughly the same size as New York City.

Much of the money for the project will come from China, with the China Fortune Land Development Company (CFLD) initially providing \$20 billion for the currently unnamed city. The China State Construction Engineering Corporation (CSCEC) has signed an agreement to build a Central Business District (CBD) in Egypt's new administrative capital. The deal is part of the two countries' bilateral cooperation within the framework of

China's Belt and Road Initiative.

Another large-scale construction project in Egypt is the plan to upgrade the rail system. In March 2017, Egypt's Transport Minister Hesham Arafat said that the country was targeting

Chinese influence

The size of Chinese influence in the region has been growing

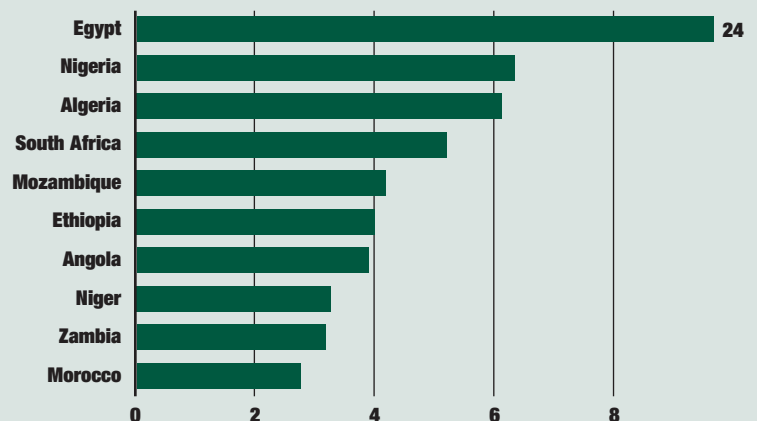
China has invested very heavily into Africa, especially since the start of the millennium, and the continent is seen by China as one of their most important markets. According to data from the China Africa Research Initiative at Johns Hopkins School of Advanced International Studies in Washington, China-Africa trade was worth \$10 billion in 2000; by 2014, this figure had skyrocketed to \$220 billion.

Egypt is the top beneficiary of Chinese investment, with the country estimated to have received \$24 billion between 2003 and 2017. In terms of other Africa countries, the south of the country receives the bulk with just two North African countries making the list – Algeria was third on the list, with approximately \$6 billion, and Morocco tenth, with just under \$3 billion.

Regarding different sectors of Chinese investment, it is clear how important the construction sector is to China. Data from the Johns Hopkins School shows that while China invested \$10 billion into financial services and \$13 billion for manufacturing. These figures are dwarfed by the combined figure of over \$50 billion invested by China into Africa in the construction and mining sectors – more than all other sectors combined.

Top 10 African destinations for Chinese investment

Total capital investment, 2003-2017 (\$bn)



Source: fdi markets



Bauer Egypt recently commenced specialist foundation engineering work on phase 3 of the Cairo Metro

An artist's impression of the new Egyptian capital – the initial cost of the project has been put at \$4.5 billion

up to \$810 million of new investment in new rail and metro projects. The bulk of this investment has been earmarked for three high-speed rail lines running from Luxor to Cairo, from Alexandria to Cairo, and from Luxor to Hurghada, which will have a combined value of \$731 million.

The Cairo Metro line is a \$3.5 billion project, which is expected to significantly ease traffic in the busy capital, Cairo. Work began on a new, third metro line in 2008, and one of the companies involved was Bauer Egypt, which was involved in numerous phases. In September 2017, Bauer Egypt started the specialist foundation engineering work for Phase 3, which will run below the river Nile and include six underground stops.

A 250,000m² diaphragm wall with a depth up to of 83m and about 180,000m³ of underground sealing is to be constructed for this purpose. Four BC 40 trench cutters and one BC 30 cutter unit mounted on Bauer MC 128 and MC 96 duty-cycle cranes are being used. The underground sealing element will be executed using five BG 28 drilling rigs with extended masts for drilling up to 83m. This work is expected to be completed in April 2019.

Chasing tourism

Morocco's desire to become one of the top-20 tourist destinations in the world by 2020 has had a positive effect on the construction sector. This can be seen in the building of giant hotels, such as the \$300 million Anantara Al Houara Resort. The country's desire to increase tourism is not the only driver though; with the urban population growing at 4% per year, the government has begun a New Cities program that is aimed at creating 15 new cities by 2020.

As in Egypt, transport spending is high on the list in Morocco, and the country is aided in this respect by a €300 million (US\$371 million) loan from the African Development Bank to support the investment plans of Office National des Chemins de Fer (ONCF), the national rail company.

ONCF is investing heavily in Morocco's transportation infrastructure, with \$13 billion due to be invested by 2035. Plans include the construction of almost 2,000km of major rail lines linking the country's largest cities, in addition to urban and high-speed rail.

Elsewhere in the country, Chinese and Moroccan contractors



“ The plan to build a new administrative capital in, Egypt 45km to the east of Cairo, was first publicly announced in 2015 and is slated to be finished by 2020 ”

have agreed to work together to build Africa's tallest skyscraper in the Moroccan capital, Rabat. China Railway Construction Corporation (CRCC) and Travaux Generaux de Construction de Casablanca (TGCC) will partner on the project, which is being developed by Morocco's BMCE Bank of Africa.

At a height of 250m and an estimated cost of \$375 million, the 55-storey Rabat Bouregreg Tower will incorporate ecological and sustainable design concepts. As well as having a number of luxury apartments, the tower will host hotels and office space, while the lower structure will include prominent public

spaces for the arts and culture.

On completion, the tower will be the centrepiece of a wider project, to develop the Bouregreg valley in Rabat, which is in itself part of the 2014-2018 Integrated Development Program dubbed 'Rabat, City of Light, Moroccan Cultural Capital.'

Ongoing support

Partly due to its geographical position located near Europe, many governments seem eager for Tunisia to succeed and, as such, the country has received loans from numerous countries, such as Germany, Qatar, France, and Saudi Arabia.

The country has also received support from international institutions. For example, the European Investment Bank (EIB) has pledged €250 billion (US\$309 billion) of support by 2020, which includes specific projects, such as a €150 million (US\$185 million) loan agreement for investment in modernising the country's roads, especially in Tunis, the capital and largest city.

One of the government's key projects was actually launched in 2016: Tunisia 2020, which aims to develop several projects in transport, tourism, energy and utilities, education, healthcare, communications, industry, and housing. ➤

The Grand Mosque of Algiers is set to be the third largest in the world





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“ Chinese companies are involved in many projects in Algeria, including building the Grand Mosque of Algiers a \$1.3 billion project ”

A current project is the building of the Grand Mosque of Algiers (Djamaa El Djazair), a \$1.3-billion project that will become the world's third largest mosque, after those in Mecca and in Medina, Saudi Arabia, when completed.

This plan proposes to allocate €3.5 billion (US\$4.3 billion) to road infrastructure projects, including €600 million (US\$742 million) for the construction of motorways, €620 million (US\$767 million) for upgrading existing roads and €360 million (US\$445 million) for infrastructure development in the Greater Tunis area.

As well as the above investment, the Tunisian government recently announced that a new airport that meets all international standards will be built by 2030. The estimated cost of the project is TND2.05 billion (US\$840 million). The airport will be located in the province of Bizerte, about 80km north of Tunis and, when completed, will be the tenth in the North African country.

Security issues

Despite investing huge amount of money into the construction sector in the past, Libya is lacking in skills in this sector and is therefore particularly reliant on foreign workers, something that is made problematic by security issues. Towards the end of 2017, representatives from three South Korean construction companies visited Tripoli to assess whether conditions have sufficiently changed in the country to permit them to restart work on three power stations.

Hyundai and Doosan were building the 1400MW Khaleej Power station at Sirte — work on which began in 2007 — Daewoo was building the power station at Zueitina, and Hyundai was expanding the Tripoli West station. The projects were said to be worth LD4 billion (US\$3 billion). However, the companies pulled their workers out in mid-2014 because of security concerns and, at the time of writing, have not yet returned.

Chinese companies have been involved in many projects in North Africa, with Algeria being no exception. Chinese firms were involved in the construction of the Autoroute A1, a 1,200km highway that cut across the country from east to west.

Most construction is now completed on the project, which it is estimated cost approximately \$11 billion. However, some work is still taking place, and another Chinese company, CITIC Construction, has been awarded the main construction contract for the Algerian East-West Highway, a part of the Artery Motorway Section in Batna.

The project is located at Bourdj Bou Arreridj near the Tunisian border and will include the construction of the remaining 84km of the eastern section of the East-West highway. The project is expected to take about 36 months to complete.

The Tunisian government has received financial help from governments and financial institutions

China State Construction Engineering Corporation (CSCEC) were awarded the contract several years ago, and the project is nearing completion. Work on the building began in 2012 and it was originally expected to be completed in 2017, but the project has suffered delays.

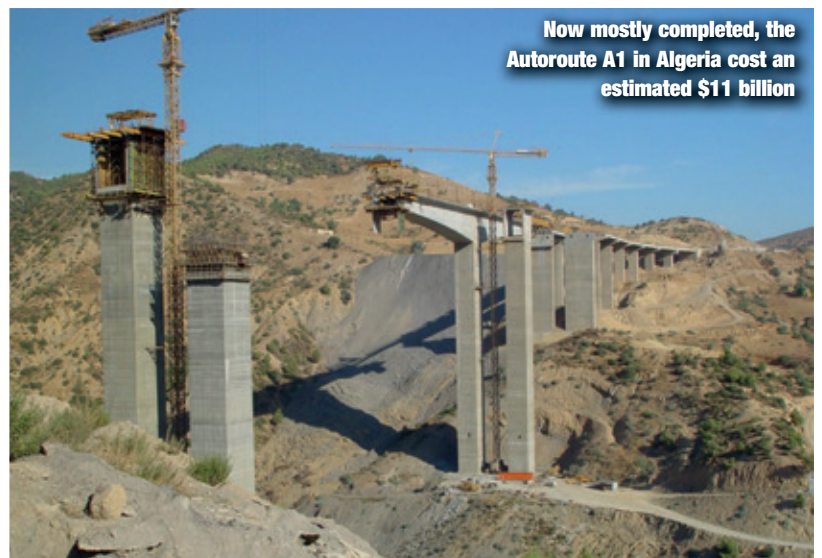
The building, which will be 265m high, will be visible across Algiers, the capital of Algeria. It has been reported that workers are currently on 24-hour shifts in an effort to finish the project, which has over 2,300 workers, engineers and construction managers on site.

The mosque will include several independent buildings over 20ha, with a total built-up area of more than 40ha.

It was said that the mosque will have a mechanism capable of absorbing earth movements, which can decrease the effect of a magnitude 9 quake to that of a 3.5 tremor.

One of the tasks was to finalise coating on the dome — to perform the job required the installation of a suspended platform 33.6m in the air, something that the deputy director of the planning department, Cao Qi, called, “a technical prowess in the field of construction and civil engineering.”

Djamaa El Djazair will also be equipped with a conference room, a museum for Islamic art and history, a research center on the history of Algeria, the Koran House center, commercial buildings, a restaurant, a library, an amphitheater, a plaza, underground parking with capacity for 7,000 cars, and numerous outbuildings. **IC**



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Equipment top 50

After several years of declining figures for the world's leading equipment manufacturers, this year the Yellow Table reports strong growth, especially in Asia, and the highest sales since 2013 for the top 50 equipment manufacturers

Last year, 2017, was a strong year for the construction industry, so it is no surprise that the figures for the top 50 equipment manufacturers have grown. In last year's Yellow Table, the combined equipment sales of the top 50 amounted to just under US\$130 billion – in 2017 this figure increased to a much healthier \$162 billion, representing an increase of 21.5%.

Looking at the top five companies on the list gives an indication regarding just how good a year 2017 was. The top five companies remain the same, the only difference being that Volvo and Liebherr swap places, with the former climbing one position and the latter dropping to number five on the list.

Caterpillar – still the world's largest construction OEM – saw sales rise from \$21.3 billion in 2016 to \$26.6 billion; Komatsu enjoyed a rise from \$14 billion to \$19.2 billion; Hitachi from \$6.5 billion to \$8.3 billion; Volvo from \$5.9 billion in 2016 to \$7.8 billion in 2017; and, making up the top five, Liebherr saw sales rise from \$6.1 billion to \$7.3 billion. In 2017 the construction sales of the world's top five manufacturers combined equalled a staggering \$69.3 billion.

Data revealed by Off-Highway Research – read the full news story on page six of this issue – showed the extent to which the global market has recovered when it comes to equipment sales. One of the key drivers of this growth was China, where equipment sales increased by an astonishing 82%, taking units sold in the world's most populated country to above 200,000 for the first since 2014.

Big movers

The biggest mover in China, regarding equipment categories, was crawler excavators, which sold 125% more units in 2017 than in 2016. Mini excavators also saw a significant increase, growing by 88%. With this data in mind, it is no surprise that Chinese companies have experienced the most growth on the table this year. XCMG has risen two places, from eighth to sixth, and Sany Heavy Industries jumped three spots from eleventh to eighth.

Looking slightly further down the list, and the companies which saw the biggest positive move on the table are – you've guessed it – Chinese.

Sunward, which was number 47 on last year's table has risen seven places to number 40. The company, founded in 1999, produces different types of equipment, but is heavily involved in excavators, producing ranges in mini, small, medium and large. The 125% growth in crawler excavators in China and Sunward's surge up the table are surely not unrelated.

Looking at the other side of the coin and there are a couple of Japanese companies that have

experienced a more difficult year in relation to the Yellow Table. Although with Komatsu and Hitachi, Japan makes up two of the top five, 2017 was a more challenging year for Kobelco, which dropped four places to 17th on the list. However, the largest drop was Tadano, which slumped seven spots from 20th to 27th.

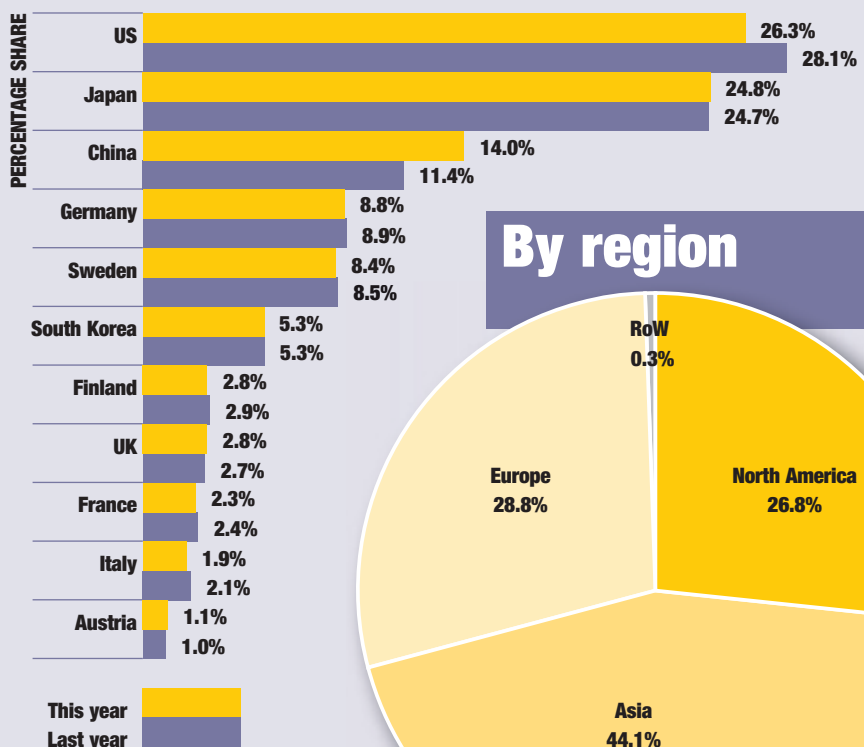
The crane company said that the mobile crane market had particularly influenced their negative sales. The firm's financial results for their third quarter (April 2017 to December 2017) showed that total sales for the company declined by 6.3% compared to the previous fiscal year, and the sales of mobile cranes declined from 78,762 to 65,089, a decrease of 13%. Sales of mobile cranes decreased inside and outside of Japan.

There was only one new company in this year's list, Sakai Heavy Industries. The Japanese >

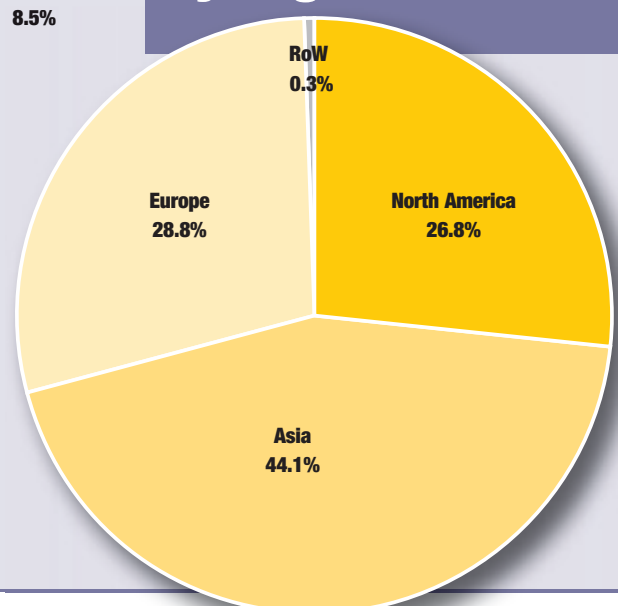
By country

Share of Yellow Table revenues

This pie chart shows that revenues have increased for Asia – helped by the performance of Chinese companies – by just over 2% and in the rest of the world by 0.1%. Europe and North America have both experienced a decline – Europe by only 0.4% and North America by 2%. Please note that these figures represent the revenues of the companies listed in the Yellow Table, and as such are not representative of the revenues generated within the regions themselves, or individual countries, as a whole.



By region



2018 Yellow Table

| 2018 | 2017/ Change | Company | Country | Construction Equipment sales (US\$ million) | Share of total | Backhoe Loaders | Mini or midi Excavators (0 - 13 t) | Compact or skid- steer loaders | Powered Access | Telescopic Handlers | Cranes |
|------|-----------------|---------------------------------------|---------|--|-------------------|--------------------|---|---|-------------------|------------------------|--------|
| 1 | 1 ↗ | Caterpillar | US | 26,637 | 16.4% | ✓ | ✓ | ✓ | | ✓ | |
| 2 | 2 ↗ | Komatsu | JP | 19,244 | 11.9% | ✓ | ✓ | ✓ | | ✓ | |
| 3 | 3 ↗ | Hitachi Construction Machinery | JP | 8,301 | 5.1% | | ✓ | ✓ | | | ✓ |
| 4 | 5 ↗ | Volvo Construction Equipment | SE | 7,810 | 4.8% | | ✓ | ✓ | | | |
| 5 | 4 ↘ | Liebherr** | DE | 7,398 | 4.6% | | | | | ✓ | ✓ |
| 6 | 8 ↗ | XCMG** | CN | 6,984 | 4.3% | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7 | 6 ↘ | Doosan Infracore | KR | 6,232 | 3.8% | | ✓ | ✓ | | ✓ | |
| 8 | 11 ↗ | Sany** | CN | 5,930 | 3.7% | ✓ | ✓ | | | | ✓ |
| 9 | 7 ↘ | John Deere* | US | 5,718 | 3.5% | ✓ | ✓ | ✓ | | | |
| 10 | 12 ↗ | JCB** | UK | 4,611 | 2.8% | ✓ | ✓ | ✓ | | ✓ | |
| 11 | 9 ↘ | Terex | US | 4,363 | 2.7% | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 12 | 10 ↘ | Sandvik Mining and Rock Technology | SE | 4,292 | 2.6% | | | | | | |
| 13 | 14 ↗ | Zoomlion** | CN | 3,796 | 2.3% | | ✓ | | | | ✓ |
| 14 | 16 ↗ | Wirtgen Group | DE | 3,690 | 2.3% | | | | | | |
| 15 | 17 ↗ | Metso | FIN | 3,290 | 2.0% | | | | | | |
| 16 | 15 ↘ | Oshkosh Access Equipment (JLG)** | US | 3,165 | 2.0% | | | | ✓ | ✓ | |
| 17 | 13 ↘ | Kobelco Construction Machinery | JP | 3,115 | 1.9% | | ✓ | | | | ✓ |
| 18 | 18 ↗ | CNH Industrial | IT | 2,626 | 1.6% | ✓ | ✓ | ✓ | | ✓ | |
| 19 | 19 ↗ | Hyundai Construction Equipment | KR | 2,400 | 1.5% | ✓ | ✓ | ✓ | | | |
| 20 | 22 ↗ | Kubota | JP | 2,296 | 1.4% | | ✓ | | | | |
| 21 | 21 ↗ | Sumitomo Heavy Industries | JP | 2,253 | 1.4% | | ✓ | | | | ✓ |
| 22 | 24 ↗ | Wacker Neuson | DE | 1,883 | 1.2% | | ✓ | ✓ | | ✓ | |
| 23 | 25 ↗ | Manitou | FR | 1,800 | 1.1% | | | | ✓ | ✓ | |
| 24 | 27 ↗ | Palfinger | AT | 1,791 | 1.1% | | | | ✓ | | ✓ |
| 25 | 31 ↗ | Liugong** | CN | 1,709 | 1.1% | ✓ | ✓ | ✓ | | | ✓ |
| 26 | 23 ↘ | Manitowoc | US | 1,581 | 1.0% | | | | | | ✓ |
| 27 | 20 ↘ | Tadano | JP | 1,531 | 0.9% | | | | ✓ | | ✓ |
| 28 | 26 ↘ | Atlas Copco Construction Technique | SE | 1,490 | 0.9% | | | | | | |
| 29 | 28 ↘ | Fayat Group | FR | 1,417 | 0.9% | | | | | | |
| 30 | 33 ↗ | Lonking** | CN | 1,375 | 0.8% | | ✓ | ✓ | | | |
| 31 | 30 ↘ | Hiab | FIN | 1,226 | 0.8% | | | | | | ✓ |
| 32 | 29 ↘ | Astec Industries | US | 1,185 | 0.7% | | | | | | |
| 33 | 38 ↗ | Shantui** | CN | 1,033 | 0.6% | | ✓ | | | | |
| 34 | 32 ↘ | Ammann** | CH | 972 | 0.6% | | | | | | |
| 35 | 36 ↗ | Bauer** | DE | 924 | 0.6% | | | | | | |
| 36 | 37 ↗ | Kato Works** | JP | 828 | 0.5% | | ✓ | ✓ | | | ✓ |
| 37 | 35 ↘ | Skyjack** | CA | 787 | 0.5% | | | | ✓ | ✓ | |
| 38 | 34 ↘ | Takeuchi | JP | 777 | 0.5% | | ✓ | ✓ | | | |
| 39 | 42 ↗ | XGMA | CN | 701 | 0.4% | | ✓ | | | | |
| 40 | 47 ↗ | Sunward | CN | 626 | 0.4% | | ✓ | ✓ | | | |
| 41 | 41 ↗ | Haulotte Group | FR | 577 | 0.4% | | | | ✓ | ✓ | |
| 42 | 39 ↘ | Aichi | JP | 540 | 0.3% | | | | ✓ | | |
| 43 | 49 ↗ | Bell Equipment | ZA | 514 | 0.3% | | | | | | |
| 44 | 43 ↘ | Furukawa** | JP | 482 | 0.3% | | | | | | ✓ |
| 45 | 48 ↗ | Foton Lovol | CN | 482 | 0.3% | | | | | | |
| 46 | 40 ↘ | Yanmar** | JP | 433 | 0.3% | | ✓ | | | | |
| 47 | 45 ↘ | Merlo** | IT | 375 | 0.2% | | | | ✓ | ✓ | |
| 48 | 44 ↘ | Sennebogen** | DE | 372 | 0.2% | | | | | | ✓ |
| 49 | 46 ↘ | Hidromek | TR | 330 | 0.2% | ✓ | | | | | |
| 50 | NEW | Sakai Heavy Industries | JP | 325 | 0.2% | | | | | | |

* - fiscal year, ended March 31st 2017 ** - estimate

| Concrete Equipment | Dozers/crawler loaders | Compaction/road building | Graders | Excavators (13t+) | Wheeled Loaders | ADTs | Rigid Haulers | Drilling/foundations | Breakers & attachments | Crushing & Screening | Website |
|--------------------|------------------------|--------------------------|---------|-------------------|-----------------|------|---------------|----------------------|------------------------|----------------------|---------------------------|
| | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | www.caterpillar.com |
| | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | www.komatsu.com |
| | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | www.hitachi-c-m.com |
| | | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | www.volvo.com |
| ✓ | ✓ | | | ✓ | ✓ | ✓ | | ✓ | | | www.liebherr.com |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | www.xcmg.com |
| | | | | ✓ | ✓ | ✓ | | | ✓ | | www.doosaninfracore.co.kr |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | www.sany.com.cn |
| | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | | www.deere.com |
| | | ✓ | | ✓ | ✓ | | | | | | www.jcb.com |
| | | | | ✓ | ✓ | | | | | ✓ | www.terex.com |
| | | | | | | | | ✓ | ✓ | ✓ | www.sandvik.com |
| ✓ | ✓ | | | ✓ | | | | ✓ | | | www.zoomlion.com |
| | | ✓ | | | | | | | | ✓ | www.wirtgen-group.com |
| | | | | | | | | | | ✓ | www.metso.com |
| | | | | | | | | | | | www.jlg.com |
| | | | | ✓ | | | | | | | www.kobelco-kenki.co.jp |
| | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | www.cnh.com |
| | | ✓ | | ✓ | ✓ | | | | | | www.hhi.co.kr |
| | | | | | | | | | | | www.kubota.co.jp |
| | | ✓ | | ✓ | | | | | | | www.shi.co.jp |
| ✓ | | | | | | | | | ✓ | | www.wackerneuson.com |
| | | | | | | | | | | | www.manitou.fr |
| | | | | | | | | | | | www.palfinger.com |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | ✓ | www.liugong.com |
| | | | | | | | | | | | www.manitowoc.com |
| | | | | | | | | | | | www.tadano.co.jp |
| | | ✓ | | | | | | ✓ | ✓ | | www.atlascopco.com |
| ✓ | | ✓ | | | | | | | | | www.fayat-group.com |
| | | ✓ | ✓ | ✓ | ✓ | | | | | | www.lonkinggroup.com |
| | | | | | | | | | ✓ | ✓ | www.hiab.com |
| | | ✓ | | | | | | | ✓ | ✓ | www.astecindustries.com |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | www.shantui.com |
| ✓ | | ✓ | | | | | | ✓ | | | www.ammann-group.ch |
| | | | | | | | | ✓ | | | www.bauer.de |
| | | | | ✓ | | | | | | | www.kato-works.co.jp |
| | | | | | | | | | | | www.skyjack.com |
| | | | | | | | | | | | www.takeuchi-mfg.co.jp |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | www.xiangong.com |
| | | | | ✓ | | | | ✓ | ✓ | | www.sunward.cn |
| | | | | | | | | | | | www.haulotte.com |
| | | | | | | | | | | | www.aichi-corp.co.jp |
| | | | | | ✓ | ✓ | | | | | www.bell.co.za |
| | | | | | | | | ✓ | ✓ | ✓ | www.furukawakk.co.jp |
| | | | | | | | | | | | www.lovol.com |
| | | | | | | | | | | | www.yanmar.co.jp |
| | | | | | | | | | | | www.merlo.com |
| | | | | ✓ | | | | | | | www.sennebogen.de |
| | | | ✓ | ✓ | ✓ | | | | | | www.hidromek.com.tr |
| | | ✓ | | | | | | | | | www.sakainet.co.jp |

company produces soil compactors, asphalt rollers, road maintenance equipment, and light equipment. They replace the Indian company BEML, which, despite posting a decent increase on last year's figure, dropped out of the table.

In terms of market share, US firms are still the leaders but by a margin that is now looking increasingly slight. US firms accounted for a 26.3% share of the revenues generated by the top 50, which is a decline from last year and not too far ahead of Japanese companies at 24.8%. The biggest movers in this field were Chinese companies, who saw their revenue share increase from 11.4% to 14%, helped by some very strong growth by a number of Chinese firms on the list.

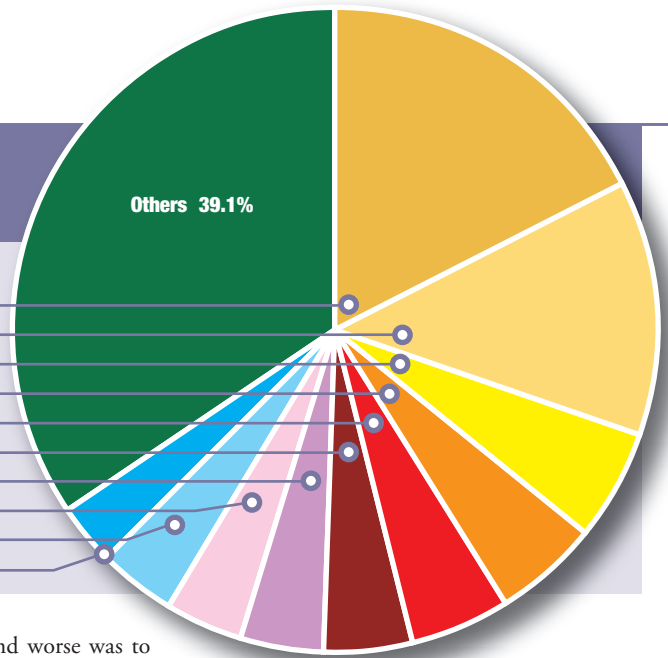
Most of the other countries in the table remained stable with many, such as Finland, Germany, Sweden, the UK and South Korean, either staying at exactly the same percentage or only moving either way by 0.1%.

Outlook

As the graphs and analysis of the Yellow Table indicate, 2017 has been a buoyant year for the sector. A caveat has to be made though; this growth comes in the light of several years of declining sales. From a high in 2012 of \$186 billion, the market dropped considerably: in 2013 it fell 12% to \$163 billion, in 2014 the

Top 10 Company shares

- Caterpillar 16.4%
- Komatsu 11.9%
- Hitachi 5.1%
- Volvo 4.8%
- Liebherr 4.6%
- XCMG 4.3%
- Doosan 3.8%
- Sany 3.7%
- John Deere 3.5%
- JCB 2.8%



final figure was \$159 billion, and worse was to come. 2015 was a more modern annus horribilis for the industry, with sales declining 16% from the previous year to \$133 billion – the lowest figure since 2009. The 3% drop in 2016 to \$130 billion seemed low in comparison to what has gone on before, but was still a decline.

The figure of \$163 billion for 2017 is therefore very welcome but must be tempered by where it has come from, and we should not lose sight of the fact that it is roughly at the same level as 2013. The signs so far point to a 2018 that will experience growth, although probably not at the same level as in 2017.

As ever, what happens in China will have a large influence, and there are hopes that the country's 'One Belt One Road' infrastructure projects, which were launched by the government towards the end of 2016, will continue to drive across-the-board rises in construction equipment sales, particularly larger earthmoving machines.

The North America economy has been enjoying growth recently, with the US seeing growth of 3.2% in the third quarter of 2017 and 2.6% in the final quarter of the year. Those in the construction industry will be waiting to see what progresses with President Trump's proposed tariff of 25% on imported steel and 10% on aluminum, and with his plan to invest \$1.5 trillion in infrastructure projects. Both could have a sizeable influence on the construction industry and those operating within it.

Following on from a number of difficult years for sales of construction equipment, it is more likely that this table next year will reflect growth of considerably less than the 21% seen here, but should record solid gains nonetheless. **iC**

Revenues at highest since 2013

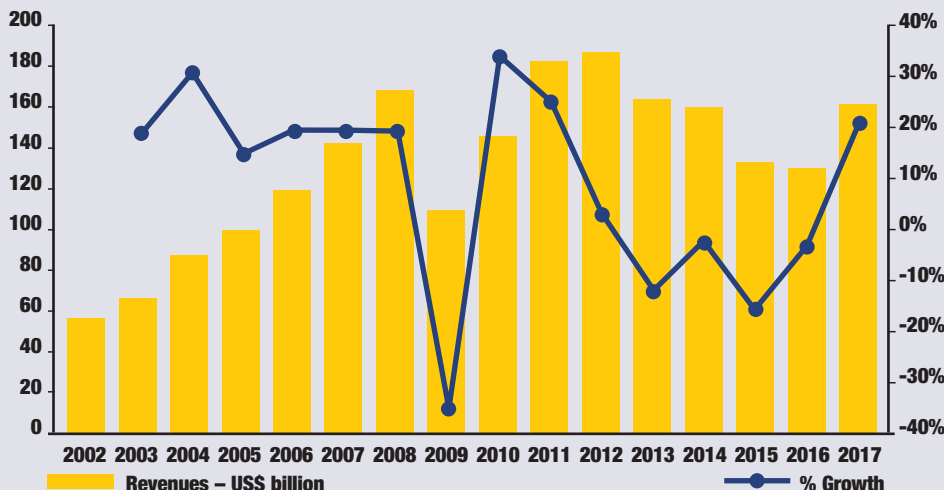
Equipment sales recover strongly in 2017 after several years of declining sales

In 2016, the decline in construction equipment sales revenues for the companies in the Yellow Table was -3%, which equates to a fall of \$3 billion from 2015. The results for 2017 are markedly different, with the sector basking in the warm glow of an increase of 21.5% – a strong figure of \$32 billion.

As discussed in the article, China played a key role in this rise and it will be hoped that demand continues to be high on the back of the government's numerous infrastructure projects, which are often on a gigantic scale.

The early signs in 2018 are that commodity prices will continue to rise, with some commodity reserves being eaten away by strong demand, leading to the increase in prices. Add into this the strong overall economic global outlook for 2018, which will likely generate higher demand for commodities.

The optimism that this year's results have brought should be marginally cautioned, with 2018 unlikely to see the same level of growth that 2017 enjoyed.



Methodology

Positions in the Yellow Table are based on sales in the 2017 calendar year in US Dollars. Currencies have been converted to Dollars based on the average exchange rate over the course of 2017. Data was gathered from a variety of sources including audited accounts, company statements and reputable third-party sources.

In Japan, India and certain other countries, the use of the fiscal year (ending 31 March) has made it impossible to establish calendar year information. In these cases, fiscal year results were used. In some cases iC has made an estimate of revenues based on historical data and industry trends. While every effort has been taken to ensure information in this report is accurate, iC does not accept any liability for errors or omissions.

If you would like to comment on the Yellow Table, or feel your company should be included, please e-mail the editor at andy.brown@khl.com

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Set to come alive

Once an inert material, concrete is beginning to come to life in different ways, reports **Thomas Allen**

It might have been considered science fiction a decade ago, but today concrete is being brought to life by new innovations that enable it to flex under pressure, convert the sun's energy into electricity, and even heal itself.

Researchers at Binghamton University in the state of New York, US, have been working on a way to impregnate concrete with fungus spores to create a self-healing material.

Trichoderma reesei is a type of fungus that has the capacity to secrete calcium carbonate. By incorporating spores into concrete as it is being mixed, along with the necessary nutrients, it is believed that they could lie dormant until cracks appear, at which point the spores would be activated by the arrival of water and oxygen, prompting them to germinate and seal the cracks with calcium carbonate.

In this way, the problem of larger cracks would be stopped before they got the chance to start, by the closing up of micro-cracks.

Congrui Jin, an assistant professor of mechanical engineering at Binghamton University, said, "Without proper treatment, cracks tend to progress further and eventually require costly repair. If micro-cracks expand and reach the steel reinforcement, not only the concrete will be attacked, but also the reinforcement will be corroded."

It was suggested that this could provide an inexpensive way to deal with widespread underinvestment in infrastructure. However, the research is still in its early stages, with the biggest challenge being to find a way for the spores to survive the mixing process and then lie dormant.

With that said, cracks in concrete may be a thing of the past. Researchers at another university in the US, the University of British Columbia (UBC), have recently developed a type of concrete that can stretch.

The so-called 'eco-friendly ductile cementitious composite' (EDCC) has had its molecular structure altered to give it the malleability and ductility of a metal. This means that it can withstand higher

“Cracks in concrete may be a thing of the past”



Plastering a wall with earthquake-resistant concrete

tensile forces. In fact, it was said to be capable of withstanding earthquakes as high as 9.1 on the Richter scale.

What's more, the material does not have to form the main structural frame of a building; it can simply be sprayed on as a thin coating, enabling buildings to be retrofitted for earthquake resistance.

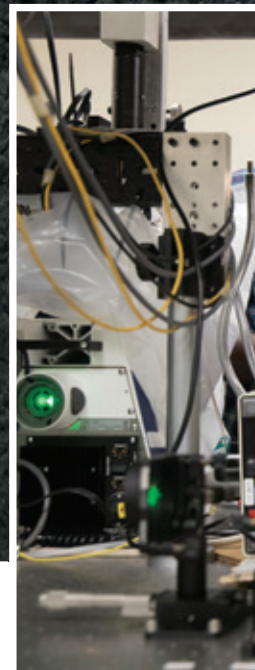
It is the addition of plastic fibres, fly ash and other industrial additives that give the concrete its flexibility, with the fly ash earning the material its eco-friendly label.

Nemy Banthia, a professor of civil engineering at UBC, said, "By replacing nearly 70% of cement with fly ash – an industrial by-product – we can reduce the amount of cement used. This is quite

an urgent requirement as one tonne of cement production releases almost a tonne of carbon dioxide into the atmosphere, and the cement industry produces close to 7% of global greenhouse gas emissions."

Also helping to make concrete more eco-friendly is the photovoltaic concrete façade developed by cement maker LafargeHolcim and solar equipment firm Heliatek, working in collaboration.

The cladding solution combines LafargeHolcim's Ductal panels with Heliatek's HeliaFilm, a flexible and lightweight solar film. It was said to boost a building's ability to generate energy



The new WS-SL20 self-levelling wheel saw from Bobcat is designed to cut through asphalt, rock and concrete

“ A ten-storey building with 60% of its façade covered in this cladding system could generate approximately 30% of its annual energy requirement ”



independently and offer a reliable, decentralised and low-carbon energy supply. It has been estimated that a ten-storey building with 60% of its façade covered in this cladding system could generate approximately 30% of its annual energy requirement.

Gérard Kuperfarb, head of growth and innovation at LafargeHolcim, said, “With this Ductal/HeliaFilm solution, building owners and developers, as well as architects and engineers, will be able to mitigate the energy costs of a building while enjoying the many benefits of a very light, low-maintenance and long-lasting cladding solution.”

A pilot project is planned for later this year.

It's good to talk

As if flexing, healing and generating energy were not enough, concrete is also learning to talk.

The French start-up company 360SmartConnect recently won the components and accessories award in the Buildings & Concrete category at this year's InterMat Innovation Awards for its connected concrete concept, which enables concrete to communicate.

Historically, construction work has been documented to keep track of the process, to coordinate activities, or simply for a contractor to be paid. However, with a large number of actors involved over an extended period of time, the sheer quantity of

Nigeria's longest concrete road

24km road in the state of Ogun has been commissioned

AG-Dangote Construction Company – a joint venture between Brazilian company Andrade Gutierrez and Nigerian firm Dangote – was recently commissioned to create what was said to be the longest stretch of uninterrupted concrete road in Nigeria.

To construct the 24km road between the towns of Itori and Ibese, in the state of Ogun, AG-Dangote used a Wirtgen SP 500 slipform paver.

However, before work could begin with the paver, the substrate had to be prepared with compacted laterite and a 20cm layer of crushed rock.

Wirtgen's machine could then lay down a new 7.5m-wide and 20cm-thick road in two separate passes over a period of six months using the inset method. During this time, a steady convoy of about 15 concrete-mixing trucks provided the paver with a constant supply of concrete, depositing their loads directly in front of the machine.

The concrete itself was produced using limestone extracted from Dangote's open-cast mine in Ibese, where 14 Wirtgen 2500SM surface miners were used.

After completion of the paving work, a concrete cutting machine cut slits at right-angles into the road surface at intervals of 3.65m so that the resulting joints could be filled with expandable material, with the intention of preventing potential tension cracks.



Wirtgen's SP 500 slipform paver at work in Nigeria

Congrui Jin working on self-healing concrete with students at Binghamton University, US

data can get out of hand and confusion can be caused by the use of different systems and processes to deal with all of that data.

360SmartConnect offers a solution in which NFC (near-field communication) devices are embedded into the concrete structure, directly connecting various stakeholders through the physical building itself.

Since WebApps provide controlled and direct access to data without the need to install specific software in advance, people involved in the construction process are able to use a standard smartphone to scan the NFCs. This gives them immediate access to a centralised data source that can be updated in real time, using cloud services, and can even be linked to BIM (building information modelling).

In this way, 360SmartConnect's system was said to optimise the building process by making it more transparent, flexible and efficient.

With an estimated 200-year lifespan, the connected concrete solution was also said to have applications that extend >



Smartphones can be used to access data using 360SmartConnect's technology

“ There is the risk that concrete vibrators can negatively affect the finish of the surface if excessively high vibrator speeds are used ”

beyond the construction phase, for example providing a framework for e-concierge services in residential buildings.

When it comes to pouring concrete, setting times are important, and it is for this reason that ELE International has introduced a new rugged pocket penetrometer for field testing concrete.

The compact device helps to measure setting time and the initial set of a concrete mix, which is the semi-hardened, partially hydrated condition after which workability is not possible.

The test can be used to assess the effects of admixtures, water content or cementitious materials on the setting time of concrete, and may also be applied to prepared mortars and grouts.

The new pocket penetrometer from ELE International – soil and concrete versions



360SmartConnect's NFC devices are embedded into the concrete structure

Engineering manager Richard Windsor said, “The most important feature of the new penetrometer is that it is made from ground and polished stainless steel with a special wear-resistant coating to prevent rust.”

Heavier and more robust than its predecessor, the new penetrometer also features a calibrated spring, a new low-wear indicator ring to avoid scratching, and it is supplied with a protective carrying case.

Vibration control

It is important to remove air bubbles from concrete when pouring it, but there is the risk that concrete vibrators can negatively affect the finish of the surface if excessively high vibrator speeds are used. The higher the speed, the more water separation occurs and the bleed water collects on the form faces, subsequently resulting in the need for surface blemishes to be patched up. The labour and materials for this inevitably cost time and money.

To overcome this issue, Minnich launched the M-Box vibration control solution at World of Concrete 2018.

The power converter allows high-cycle vibrator operators to control the vibrations per minute (vpm) of up to two vibrators by converting the 230V, single-phase output of a 3,500W generator to a 230V, three-phase output. ➤

Bringing concrete production in-house

German-based firm purchases concrete mixing plant from Ammann

SMM Sonderbau, owned by the German-based Müller construction company, is devoted to the non-stop production of special and standard concrete varieties. It was set up by Müller with the intention of supplying the company's pre-fabrication plant with concrete independently of external materials suppliers, as well as individual customers purchasing fresh concrete.

To this end, Müller decided to purchase a stationary CBS 110 SL Ebla concrete mixing plant from Ammann.

Part of the reason for choosing this particular piece of equipment was its robust, galvanised modular design. The single-shaft mixer used in the plant's frequency-controlled mixer drive was said to have been made particularly tough since it is the main wearing part in the machine. Wirtgen's Elba Wear Protection extends the service life of this component by preventing liquid concrete escaping from worn gaskets, which could otherwise damage the bearings.

SMM Sonderbau worked with Ammann to equip their CBS 110 SL Elba with additional special features. These included the fitting of an integrated high-pressure mixer cleaning system and two swivelling hoppers with separate control. One of the hoppers ensures safe and clean loading of fresh concrete for self-collectors, while the other contains cleaning water and dirty water, needed for daily cleaning by the integrated cleaning system.

Michael Müller, joint CEO of SMM Sonderbau, said, “Especially when it comes to producing special varieties such as SCC (self-compacted concrete) and UHPC (ultra-high performance concrete), the combination of an Ammann plant with the frequency-controlled mixer drive is working extremely powerfully.”

SMM Sonderbau's plant is fitted with two hoppers that can be swivelled separately



The new fully-synchronised chemical wet shotcrete dosing system from Reed

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Other developments



Gomaco's 3300 paver

The 3300 multi-application paver will be displayed on Gomaco's stand at Intermat 2018.

The company said it had re-imagined the GT-3300 with the latest technology, including the G+ control system and Gomaco Remote Diagnostics.

It features true right-side or left-side paving capabilities with extreme steering, Smart Leg and Track Positioning, and a Smart Telescoping Mould mounting system.

Ausa's dumpers

In the US, Ausa has been focusing its efforts on the concrete sector, where the company has seen strong growth and is expecting positive developments in the future.

There has been a growing interest in using dumpers rather than pumps, which Ausa attributes to the fact that dumpers are more productive, safer and faster. Also, pumps require the costly rental of generators, trucks, and the pumps themselves.

Ausa's best-selling machines in the US are the six-tonne capacity D600APG, with

its articulated chassis, the 2.5 tonne capacity D250AHG, and the 3.5 tonne capacity D350AHG, with hydrostatic transmission.

Curb Fox's 5000-T slipformer

Curb Fox's 5000-T multi-purpose slipformer can now

be equipped to pave sections up to 3m wide. This is in addition to its existing ability to handle the full range of curb and gutter, sidewalk, and median barrier work.

The machine is powered by a larger 37kW engine – with the option of a 55kW engine – and up to 6.82 tonnes of weight can be added. Heavy-duty tracks are also available as optional extras.

Bobcat's wheel saw attachment

The new WS-SL20 self-levelling wheel saw attachment from Bobcat is approved for use on the company's S630, S650, S770 and S850 skid-steer loaders, T590, T650, T770 and T870 compact track loaders, and A770 all-wheel steer loader.

Designed to cut through asphalt, rock and concrete surfaces, the saw has a variable segments wheel, which allows the user to quickly change the width of the wheel in the field, instead of replacing the complete wheel in a workshop.

Its self-levelling feature makes it possible for the attachment to follow and adapt to the contours of the ground.

Minnich M-Box operators are then able to select from speeds of 6,000, 8,000 or 10,800vpm depending on the concrete load.

When concrete is not being poured, it is being sprayed as shotcrete, and this requires specialised pumps.

Finland-based Reed recently developed a new fully-synchronised chemical wet shotcrete dosing system that uses one of the company's shotcrete pumps and its LPP-D0.5 FlowRox chemical dosing pump.


The new chemical pump dosing system is driven hydraulically, removing the need for external AC power or on-board DC-AC converters. It was also said to be able to deliver high torque at a low displacement, facilitating the slow stroking that is sometimes needed when shotcreting.

Duane Remus, the director of technical development at Reed, said, "There is a closed-loop monitoring system to ensure chemical accuracy, and that there is actual chemical in the line."


"When chemical is not present for a predetermined time, the entire pump system shuts off and an alarm sounds to ensure safety." **IC**




Minnich's M-Box power converter



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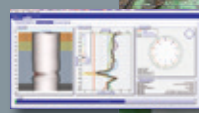
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TIP Reporter shows soil profile and reinforcing cage

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Pocket-sized power

Working with a pallet fork, the tapered lift arm of the Liebherr L508 compact loader offers parallel guidance over the entire lifting range

Katherine Weir explores the compact loader market, and how quick coupling and multiple attachments have increased the versatility of these machines

In areas where larger machines reach their limits, compact equipment swoops in to save the day. Ideal for confined spaces and urban areas, compact – or mini – loaders are reliable helpers on construction sites, even in tough conditions.

Compact loaders can manoeuvre in the tightest of areas and manufacturers are placing strong focus on in-cab designs and operator comfort to stand out in this niche market. Power, performance and precision are also key factors for contractors looking for the best machine.

Construction giant Liebherr offers two compact loaders in its broad wheel loader range – the L506 and L508, with tipping loads of 5.2 and 5.5 tonnes respectively. The company said that the machines can be used for a wide range of different applications thanks to their compact design, providing ‘exceptional flexibility and guaranteed stability in all respects’.

Ideal for confined spaces, the loaders’ compact and low-line design (of under 2.5m) automatically gives them a lower centre of gravity, ensuring maximum stability even on terrain that is uneven.

“ By applying a hydraulic quick change, changing tools can also be done easily and quickly without having to move away from the machine ”

Liebherr said that the ‘finely tuned relationship’ between the operating weight and tipping load on the L506 and L508 models also increases the productivity of the loaders.

Visibility for the operator is improved with the conical design of the lift arm, giving an optimal view of the wheel loader equipment and the working area before them. The key feature of these loaders, however, is the hydraulic quick hitch. Described by Liebherr as a ‘true asset’, the quick hitch increases the versatility of the compact loaders, allowing the operator to change the numerous tools as required.

Looking forward to Intermat, Paris, at the end of April, the manufacturer will complete its new Stereoloader range, between 5.5 and 9.2 tonnes of operating weight, with the premiere of two new models – L507 and L509. These compact loaders will join their larger counterparts, the L514 and L518, which were released in the summer of 2017.

The stereo steering – a balance of articulated steering and a steered rear axle – allows the operator to control the attachment more accurately while reducing the tilt angle of the loaders to 30° with ‘consistently high manoeuvrability’. Liebherr said that the centre of gravity on this range remains in the middle, even when transporting heavy loads.

As well as this compact range of loaders, the company will also be showing the L576 XPower – its largest loader. This 26-tonne machine meets emission stage IV/Tier 4f and has the power-split XPower traction drive.

As JCB celebrates 25 years of skid steer production, the company is launching seven new large-platform skid steer loaders and compact tracked machines. The machines feature a new Hi-Viz boom, which is mounted 50mm lower to further improve visibility from the cab.

Liebherr has already introduced two new Stereoloader models, the L 514 (pictured) and L 518. It will be interesting to see how Liebherr transfers the modern design to the smaller L 507 and L 509 machines



JCB's Powerboom skid steer loaders and compact tracked loaders have led the way in terms of operator visibility and ease of access. JCB said it was improving that visibility further, with the launch of seven Hi-Viz models. Based on the firm's large skid steer platform, the previous 225 becomes the 250, and the 260 is renamed the 270. The 300 and the 330 remain unchanged.

On the compact tracked loader side, the 225T is now the 250T, the 260T becomes the 270T, and the 300T is unchanged. All of the Hi-Viz models feature a new JCB Powerboom loading arm, which is mounted 50mm lower than in the previous generation. This improves the view across the boom to the operator's right-hand side.

At the start of 2018, John Deere launched the G-Series mid-frame skid steers and compact track loader (CTL). Developed from customer feedback, the 320G and 324G skid steers, and the 325G compact track loader are said by the company to offer low daily operating costs, peak productivity and maximum uptime. The new mid-frame models join their large and small-frame counterparts to round out the full line of skid steers/CTLs available from John Deere.

The new mid-frame models boast a 52 to 55 kW range to deliver increased performance and higher pushing power. All three models are capable of loading a 3m sidewall dump truck or hopper, and to help operators reach new heights in a medium-sized package, the 324G skid steer and 325G CTL have a height to hinge pin of 3.2m.

Lifting performance

USA-based manufacturer Vermeer has recently added a new mini skid steer to its range of loaders. The S925TX was said by the company to provide impressive lifting performance and the power to conquer the most demanding applications.

It has a tip capacity of 1.2 tonnes, a rated operating capacity of 0.4 tonnes, and a maximum pin height reach of 84.5 inches.

The new mini skid steer has a dual auxiliary system that allows the operator to switch between high flow for ground-engaging attachments and low flow for greater control. Its universal mounting plate also offers the versatility to fit a broad range of Vermeer-approved attachments.

Jon Kuyers, senior global products manager, said, "With the S925TX model, we've designed a machine that can deliver a higher lifting performance than most other machines in the compact utility loader segment while still maintaining a compact size and impressive hydraulic attachment welding performance."



The BB124 box blade attachment fitted on the Caterpillar 299D2 compact tracked loader



The new T870 from Bobcat offers 10% more lift capacity than the previous roller suspension model



The new Vermeer S925GTX mini skid steer from Vermeer has a radial lift path

The S925TX is available in three engine options: an 18.2kW Kubota V1505 diesel engine, a 29.8kW Kubota WG1605 gas engine, or a 26.2kW Kubota V1505 diesel engine. Contractors can also opt for either 18cm or 23cm wide tracks that produce five and four psi of ground pressure respectively.

Bobcat, part of the Doosan company, is celebrating its 60th anniversary of both the company and the Bobcat skid steer loader – the M-400, said by the firm to be the first 'true skid steer loader'.

In March of this year, Bobcat launched its new T870 compact tracked loader. This machine has a new torsion suspension undercarriage, replacing the previous T870 model which had a roller suspension system.

It has torsion axles that dampen vibration, combining the comfort of roller suspension and the stability of a solid mount undercarriage. The torsion suspension improves not only ride quality, but also absorbs stresses and vibrations encountered on the job.

The company said that the new T870 offers 10% more lift capacity than the previous roller suspension model and is available in a wide range of standard and optional features. It is also available in a range of configurations to match emissions and requirements for all European, Middle Eastern, African, Russian, >

Box blade attachment

Designed to achieve accurate grading and levelling at speed

Designed for grading and levelling for commercial properties, housing developments, roadways and car parks, the 2.1m and 2.4m box blade attachments can be operated both manually and automatically with the use of laser or GPS grading systems.

The BB124 can be used on skid steer loaders, compact tracked loaders, and multi-terrain loaders, and was developed to integrate AccuGrade – Caterpillar's grade control system. The company said that with this attachment, operators can achieve concrete prep, car parks, back-filling, designs for athletic fields, and grading in buildings and tighter spaces.

Caterpillar said that the attachment offers 'high levels of grading accuracy while increasing productivity and reducing operating costs'.



COMPACT LOADERS

and Commonwealth of Independent States (CIS) markets.

Bobcat said, “Auto track tensioning increases uptime by automatically ensuring the proper track tension. This eliminates the need to manually adjust the loader’s track tension with a grease gun and provides consistent tensioning to minimise the chance of loosening and de-tracking in tough working conditions.”

Demanding applications such as grading, lifting, landscaping, trenching, ship trimming, rental, demolition, construction, and planing are achieved with the T870 loader, as well as the ability to run powerful attachments like wheelsaws – to cut trenches for cable or pipe laying – and the forestry cutter attachment.

Multiple attachments

Also new from Bobcat is the expansion of the company’s self-levelling planer attachment range. The two new model sizes – the 50cm PSL50 and 120cm PSL120 – are designed for use with Bobcat’s high flow compact loaders.

Introduced to meet customer demands, the PSL50 planer has the same features as the Bobcat PSL60 model with self-levelling, side-shift, and tilting. This size was said to be particularly suited to the requirements of fibre optic projects.

The new PSL120 is similar to the existing PSL100 attachment and was said by the company to be ideal for road maintenance – the increased width was said to provide 20% more productivity.

Both planers are compatible with the



Bobcat has added two new model sizes – the 50cm PSL50 and 120cm PSL120 – to its self-levelling planer attachment range, designed for use with Bobcat’s high-flow compact loaders

Bobcat water kit, and the fully hydraulic design ensures all functions can be controlled from the operator seat. The PSL50 and PSL120 planers weigh 870kg and 1,145kg, offering cutting depths with a standard drum of 17 and 13cm and maximum cutting angles left and right of plus or minus 15° and plus or minus 8°, respectively.

As well as the self-levelling planers, Bobcat also offer 70 different types of attachments that can be fitted to its range of compact loaders.

Another manufacturer investing in a wide range of attachments for its loader range is Netherlands-based Tobroco. The company calls its new Giant skid steer – SK252D – ‘a multifunctional all-rounder that helps to make work easier and more efficient’.

Most of the changes in this range of skid steers have been applied to the enclosed mechanics of the machine, such as a new valve block providing extra user-friendliness and the ability to perform tasks precisely. The loader also has a larger hydraulic pump for more power and higher yield.

Depending on the work, a large number of different tyres can be selected – these can even be changed on site to give the skid steer loader a width of between 76 and 110cm.

By applying a hydraulic quick change, changing tools can also be done easily and quickly without having to move away from the machine, the company said.

The two diesel variants are available with an integrated diesel particulate filter that was said to reduce emissions by more than 90%, making it suitable for use indoors. The skids can also have a cyclone filter so that the air filter will pollute less quickly and last longer.

Tobroco said, “The smallest Giant has also proven its worth in construction and demolition. Not only by the removal and transport of various loads, but also for demolition work by the use of a hydraulic hammer. Due to its low weight, it is possible to use the machine inside a building to break and demolish.”

Last year, Case Corporation unveiled a new hybrid concept to the compact equipment sector. The DL450 compact dozer loader – also known as Project Minotaur – was said by the company to be ‘a first-of-its-kind, fully-integrated design that matched the best operating characteristics of a compact track loader (CTL) with a crawler dozer’.

The DL450 was said to provide the power and performance of a small dozer that also serves as a loader, which can run all the attachments that a contractor currently owns for skid steers and compact tracked loaders. A date for the launch of the machine is yet to be confirmed. **IC**



John Deere launched the G-Series mid-frame skid steers and compact track loader at the start of the year



Tobroco calls its new Giant skid steer – SK252D – ‘a multifunctional all-rounder that helps to make work easier and more efficient’

Industry expert

Udo Blum, compact wheel loader product manager for EMEA, Volvo CE, provides his view on the sector

WHAT ARE YOUR MAIN MARKETS AROUND THE WORLD FOR COMPACT LOADERS, AND HAVE THERE BEEN ANY AREAS THAT HAVE SEEN LARGE GROWTH RECENTLY?

While skid and tracked steer compact loaders are popular in the Americas, compact wheel loaders are the dominant form in Europe, concentrated in France and Germany, where as much as 60% of the European market resides. Demand for this type of product is relatively stable, ahead of new emissions regulations that will come into effect in 2020.

HOW HAVE THE DEMANDS OF CONTRACTORS CHANGED IN RECENT YEARS REGARDING WHAT THEY WANT OR NEED THESE MACHINES TO DO?

The traditional use of small wheeled loaders has been with a bucket attached, and this was followed by forks for materials handling duties. In recent years more customers are seeing compact wheeled loaders as tool carriers that employ special attachments. These include street cleaning, snow removal, salt sprayers, and even grass cutters. The flexibility of a small, agile machine that is relatively fast-moving is opening it up to a wider range of applications.

HOW DO YOU SEE THE FUTURE DEVELOPMENT OF COMPACT LOADERS?

Development efforts in the short-term are looking towards the forthcoming emissions regulations, and the need to incorporate diesel particulate filters into the machines. Looking to the future, it is almost inevitable that some level of electromobility will be developed, given that these small machines are suited to the technology, and that they often find themselves working in inner city urban environments, where their low or even zero emissions are welcomed.



VOLVO L28F compact



JCB celebrates 25 years of skid steer production by launching seven new large-platform skid steer loaders and compact tracked machines



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Grandfather's Bridge
in Helsinki, Finland

Linking together

Teamwork and innovation are key ingredients
in successful bridge projects, reports **Thomas Allen**

Challenges posed by the construction – and indeed maintenance – of bridges demand collaboration and are pushing contractors and equipment manufacturers to innovate in different ways.

Building Information Modelling (BIM) was used from start to finish on the recent construction of the Grandfather's Bridge in Helsinki, Finland, which has a span of 144.3m, a width of 4m, and a deck that is hung with 22 tension-rod pairs.

With the aim of achieving paperless design and construction, software company Tekla – owned by Trimble – created new practices for transferring BIM data from one project party to another. Tekla wanted to make its software easy for the contractor Kreate to use, since the firm was new to using the technology.

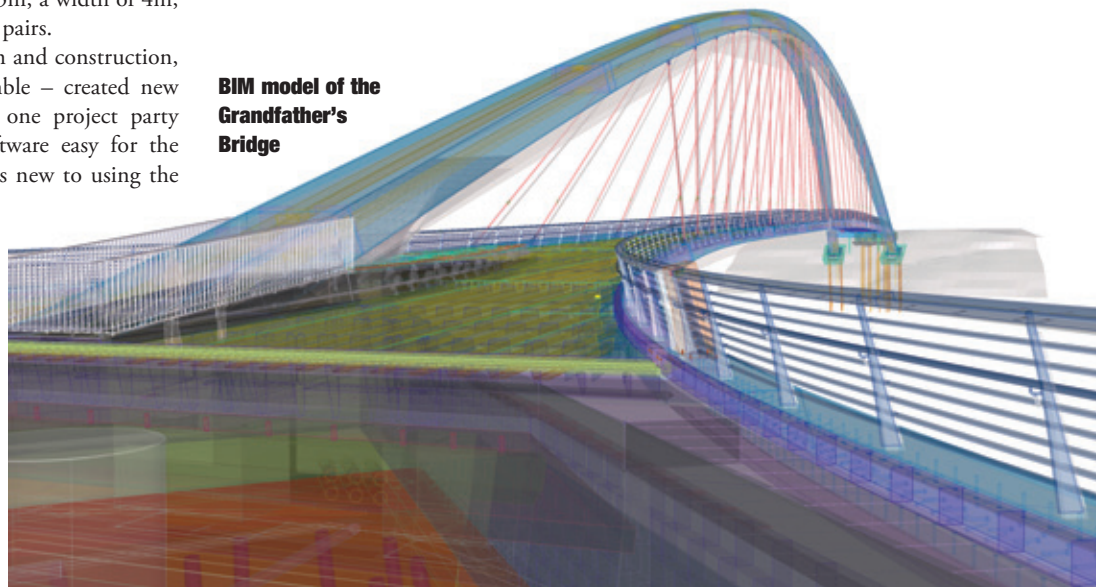
Aki Kopra, project engineer at Kreate, said, "In the bidding phase of this project, the Building Information Model was an official and binding document. I think that this type of method is becoming more common, but for me this was the first project in which we had a fixed model to support our estimation calculation during the bidding phase."

By streamlining the bridge's planning process, BIM helped to avoid errors further down the line, resulting in savings.

Jarkko Savolainen, building information specialist at A-Insinöörit Oy, the project's BIM consultants, said, "The planning process is easier and clearer with BIM. It also provides more transparency for all the different parties of the project. BIM allowed the site crew to see and understand the structure of the bridge. This makes planning work, as well as the entire project, more fluent, quicker and flawless."

BIM was used not only for the design of the Grandfather's Bridge, but also for setting up schedules and monitoring and supporting the fabrication and erection of various elements. The >

**BIM model of the
Grandfather's
Bridge**



Making way for the new

Innovations in bridge demolition could solve a number of issues

According to the American Society of Civil Engineers, 40% of the 614,387 bridges in the US are at least 50 years old, and 9.1% are structurally deficient. It has been estimated that the US has a bridge rehabilitation backlog of \$123 billion.

In light of these figures, demolition equipment manufacturer Brokk is expecting there to be a spike in the bridge demolition workload if and when funding comes through from President Trump's infrastructure plan.

The company said it has seen a growing trend towards the use of remote-controlled demolition and hydro-demolition machines, primarily due to the cost savings they offer to the contractors and benefits they provide to construction workers. As the industry is faced with a skills shortage and growing insurance premiums, the higher cost of demolition robots becomes a more worthwhile investment.

Traditionally, bridge decks are demolished by numerous workers using handheld pneumatic tools and excavators to break through concrete to expose the rebar below. This method comes with the risks of harm to workers and damage to the rebar.

However, remote-controlled demolition machines are able to deliver more power with greater consistency, removing more material in a shorter space of time, and they can do so without causing damage to the rebar. This is especially true of hydro-demolition robots. Typically, jets of water at pressures of about 20,000psi tear away the concrete but leave the metal bars unscathed and clean. Furthermore, the machines do not cause significant vibrations, minimising the possibility of microfracturing that could threaten bridge stability.

Brokk has also suggested that remote-controlled robots could help to overcome the problem of the skills shortage by attracting young workers by appealing to their fondness for technology. Their greater safety is another attractive feature, allowing operators to stand at a safe distance from flying debris and edges that pose a falling risk.



Operated from a distance, Brokk's demolition robots help to mitigate the risk of harm caused to construction workers



The high-pressure jets of water used in hydro-demolition strip away concrete without damaging the rebar beneath

status of the steel structures, for example, was broken down into three phases for scheduling: design, fabrication and installation.

This facilitated fluid collaboration between the construction site and fabrication operations because the workshop that manufactured the steel structures was connected to the model and its schedules were synchronised.

The project parties chose Tekla Model Sharing to access the combined model, meaning that everyone involved was able to use a constantly updated model. This included the client, the City of Helsinki, who could be shown visualisations of the project as it progressed.

Collaboration is a common theme of such large-scale projects as bridges. Denmark-based Ramboll has been called upon to provide support for the construction of a 21.8km-long sea bridge in India.

Set to be the longest sea bridge in the country and costing an estimated \$2.2 billion, the Mumbai Trans Harbour Link will connect Mumbai and the satellite city Navi Mumbai, a planned township of Mumbai off the west coast of the Indian state of Maharashtra. Ramboll has signed a contract to provide design services and technical support during the construction process. It will be acting as advisor for the Indian and South Korean joint venture Tata Projects-Daewoo.

Their responsibilities will include geotechnical studies, the design of the foundations and column superstructure, and the supervision of the building site.

With its six-lane highway – with two emergency exit lanes – the bridge is expected to play a crucial role in the future growth of India by providing access to new jobs and housing for hundreds of thousands of people in fast-growing Navi Mumbai.

In its first year of operation, it has been estimated that 62,000 cars will use the bridge every day. This number is projected to increase to about 200,000 over the next 30 years of operation, assuming the Navi Mumbai International Airport becomes operational in that time.

Ramboll said the project will provide full-time employment for 50 of its bridge experts in India, the UK and Denmark during the design and construction phase. It forms part of Ramboll's



2020 strategy to extend its global activities and strengthen its position as an international player in bridge design.

Lars Thorbek, global division director for major crossings at Ramboll, said, “We are counting strongly on bridges and tunnels. We expect revenue to increase by 35% globally by the end of 2020 – in a market that is expected to grow by just under 6% in the same period. The North American, Scandinavian and German markets are expected to be particularly favourable.”

Construction will begin mid-2018, with completion scheduled for the end of 2022.

Meeting new demands

Growing amounts of traffic have also led to a major – and complicated – bridge project in Germany. Hochtief PPP Solutions is working in partnership with DIF, BUNTE, and lead contractor ViA6West to completely replace the Neckar viaduct at Heilbronn, as part of a €1.3 billion (US\$1.6 billion) expansion of the A6 motorway between Weinsberger junction and Wiesloch/Rauenberg.

Although the existing 1.3km-long bridge – built in the 1960s – was renovated in 2003 at a cost of €17 million (US\$20.9 million), it is struggling to cope with the amount of traffic; it is now used by approximately 100,000 vehicles every day.

“ The planning process is easier and clearer with BIM. It also provides more transparency for all the different parties of the project ”

Meva's Mammut 350 formwork system in action on the new Neckar viaduct in Germany



Doka is responsible for delivering the formwork for the foundations, piers and superstructures of the twin bridges in Slovakia



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BRIDGE CONSTRUCTION

The plan is to construct a new six-lane bridge over the Neckar valley. However, Gerald Hauke of ViA6West said, "A change to the route taken by the motorway and thus an overlap of old and new parts in the area of the abutments and connecting structures would involve immense extra costs." As a result, a temporary bridge is being constructed alongside the old bridge, for redirected traffic, before the old bridge is dismantled and the new bridge is built.

The temporary bridge is being constructed in two sections – the foreland bridge, which is being launched with a launching girder, and the section over the Neckar valley, for which an incremental launching method will be used. The two sections will meet and be connected near the Neckar island.



Twin bridges over Route I/18 and the Hričov reservoir in Slovakia

Once the temporary bridge is completed, the existing bridge will be demolished, and the foundations and piers for the new one will be created. These will be poured using Meva's Mammut 350 formwork system and will require a special formwork solution that Meva planned using a 3D computer program.

Then, in 2022, 40 hydraulic cylinders regulated by a computer- and camera-controlled system will be used to move the deck of the temporary bridge laterally onto the new piers, positioning it with millimetre accuracy to complete the new bridge.

Cutting Edge Hydrodemolition with AQUA CUTTER robots



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Truss girders had to be installed across the carriageway of the Williams Bridge in a single night

by Peri – in collaboration with scaffolding specialists from Steigerbouw Van der Panne – which combined two of Peri's existing systems – Peri Up and Variokit.

To begin with, truss girders had to be assembled across the carriageway in a single night. The girder package was pre-assembled at Peri's facility in Schijndel and then the 21m-long girders were transported to the site on heavy-duty trucks. A mobile crane raised the girders onto the VST heavy-duty towers positioned on the sides of the bridge, as well as on the shoring and working scaffold temporarily erected in the middle of the bridge.

The LGS Lattice Girder System from the Peri Up Modular Scaffolding Kit was also used for scaffolding the pylon legs,

enabling the creation of a projecting 10m protective roof on both sides. It also allowed a 12m working platform to be installed between the pylon legs.

To prevent materials from falling onto the road or into the River Mass, the Peri Up Flex Working Scaffold was enclosed with a shrink foil, which required anchoring to deal with the high winds that blow in from the North Sea. **ic**

“ 40 hydraulic cylinders regulated by a computer- and camera-controlled system will be used to move the deck of the temporary bridge laterally onto the new piers ”

ViA6West will be responsible for the operation and maintenance of the viaduct until the end of 2046.

A pair of bridges are also under construction in Slovakia. The twin bridges – one for each direction of travel – will form a flyover at kilometre 7,500 of the D3 motorway, straddling Route I/18 and the Hričov reservoir.

The 1.5km-long bridge will be composed of span lengths that range from 30.5 to 110m in length. The central spans over the River Vah are being formed by a box girder with a variable depth of between three and six metres, segmentally cast in symmetrical cantilevers.

The remaining spans will have a double-tee cross-section, with a constant depth of three metres. They are being cast one at a time on stationary or mobile scaffolding. In this instance, the cross-section is being formed by a twin-T girder with a constant height, partly joined to the box girder with a variable height.

Doka is responsible for delivering the formwork for the two bridges' foundations, piers and superstructures. To meet with the project's tight deadline, the Austrian-based company supplied four pairs of its Cantilever Forming Travellers, Top50 large-area formwork, Staxo 100 load-bearing towers, and Doka 250 stair towers.

Again, collaboration has been key, with local structural engineers, Doka's subsidiary Česká Doka, and the Global Expertise Center Infrastructure in Amstetten, Austria, working together to make the handling and modification of the formwork traveler easier.

Bridge maintenance

As the idiom about the painting the Forth Bridge suggests (a job so big that by the time you get to the end you have to start at the beginning again), bridges can be challenging structures to maintain once completed.

This is true of the cable-stayed Williams Bridge in the centre of Rotterdam in the Netherlands, which recently needed refurbishment work to be carried out on its two 60m-high pylons. It was said to be one of the most difficult scaffolding projects ever carried out in the Netherlands.

Since the bridge is an important link between the northern and southern parts of the city, it was required by the Municipality of Rotterdam that traffic not be impeded by the works. So, to avoid resting the 200-tonne scaffolding structure on the carriageway, a project-specific scaffold solution was designed

Peri formwork being used on the Williams Bridge in Rotterdam, the Netherlands





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Editor **Andy Brown** (left) and **Wanchun Zhou** (right) from Sany

Sany Heavy Industry is a major player in the Chinese construction market and has ambitious goals regarding worldwide sales, as **Andy Brown** found out



Grand ambition

Spring is fast approaching as I meet with Wanchun Zhou, Vice President of Sany Heavy Industry, in the restaurant of a prestigious central London hotel. Mr Zhou, who is responsible for overseas sales in all territories except the US, India and Europe, would be forgiven for having a spring in his own step, given the growth of the company.

In our latest *International Construction* Yellow Table article, we estimated Sany's construction equipment sales to be \$5.9 billion in 2017, putting them into the top ten on the list. With 2017 being a strong year for construction in China (Off-Highway Research suggested sales of construction equipment exceeded 200,000 units for the first time since 2014), it is perhaps unsurprising that the China-based company is performing so well. However, its sights are set on increasing sales elsewhere.

Sany produces mini, small, medium, large, and wheeled excavators



"South and Eastern Asia is the number one market for the business and is growing very fast," confirms Mr Zhou. "India is the number two market, and then the Middle East and Latin America."

He stressed, though, that, "the Chinese market is, and will always remain, our main market." This makes perfect sense – with a population of 1.3 billion and China's Belt and Road Initiative, the region has been the main driver for the company's growth. Data from Off-Highway Research found that countries along the Belt and Road route accounted for 30% of Sany's overall sales in 2016-2017.

However, if the business is to expand at the rate those at the top clearly want it to, then it needs to increase sales in different overseas markets – especially in more developed ones.

Mr Zhou mentions several times that there are more opportunities than challenges for the company, but admitted that an issue the company is facing is one of perception, and this affects sales in some overseas markets.

"It can be a challenge to get people in different countries to try our products; they think because they are Chinese and not as expensive, they will not be as good. But they see the quality when they try them. It can take time for people to see that the production and quality of the product is good and to perhaps change an image of China that they might have," he commented.

Due to this perception, there seems to be an acknowledgment that the company may not initially grow as quickly in different markets compared to some of the other larger European or US-based equipment manufacturers. However, the company thinks that once it has overcome this initial barrier, it will be able to challenge its competitors in these markets.

At the moment, the bulk of the company's sales come from emerging markets, with a relatively small amount coming in Europe and North America, despite Sany having offices in Georgia, the US, Bedburg, Germany, and Russia.

So, just how ambitious is the company going forward? When I posed this question, Mr Zhou carefully put down his cup of tea and raised the fingers of both his hands. "For the overseas group we want to achieve sales of \$10 billion within the next five years." It is a big figure – and time will tell whether the firm is able to meet these goals or not – but certainly shows no shortage of ambition. **iC**

Final call for Intermat

With **Intermat 2018** just round the corner, we highlight those companies we have not previously mentioned and look ahead to the event

Event details

To note in your diary



WHAT? Intermat and World of Concrete Europe
WHERE? Paris-Nord Exhibition Centre, Paris, France
WHEN? Monday 23 to Saturday 28 April, 2018
OPEN: 0900 to 1800
WEBSITES: paris.intermatconstruction.com
www.worldofconcreteeurope.com

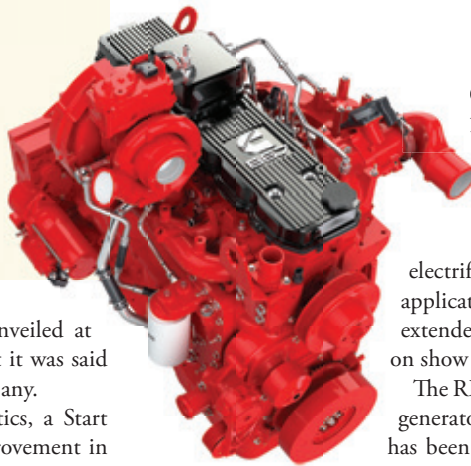
A new concept for **Ausa** dumpers will be unveiled at Intermat – a totally redesigned concept that it was said would set the line for the future of the company.

Among its features are the equipping of telematics, a Start & Stop system, the Full Visibility System, an improvement in several safety parts, and its different driving modes for a more efficient fuel consumption.

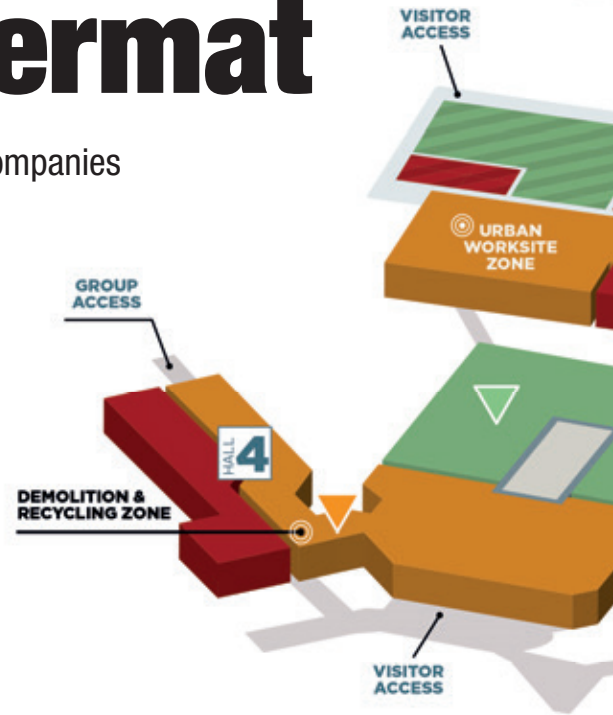
Introduced in 2017, the D450AHG will be sold from April this year. Ausa is increasing its capacity range with this new 4.5 tonne dumper, which it said fitted a need in the construction sector.

At Intermat, it will be equipped with the Full Visibility System – a safety system that provides two cameras with infrared night-vision, eight proximity sensors, and a TFT screen in the driver's position.

Cummins said it was expanding its portfolio of products to reflect the alternative power needs of the future



The D450AHG from Ausa will be sold from April this year



Other Ausa machines on show will include the D 100 AHA, the company's most compact dumper; the Taurulift T144H Plus telehandler; and the Ausa T235H, which is the biggest telehandler from the company.

Cummins will be revealing its first electrified powertrain system for off-highway applications at Intermat. The company's new range-extended electric vehicle driveline (REEV) will be on show at stand F021 in hall 5A.

The REEV combines battery power with a compact engine generator, using a four-cylinder Stage V F3.8 engine, and it has been designed to replace a standard driveline that uses larger Cummins or competitive diesel engines with a capacity of up to nine litres for a range of applications, from wheeled loaders to excavators.

By using a high-efficiency traction motor to provide continuous torque of 1,850Nm, it was said that the need for gear shifting had been eliminated while noise from the powertrain was significantly reduced.

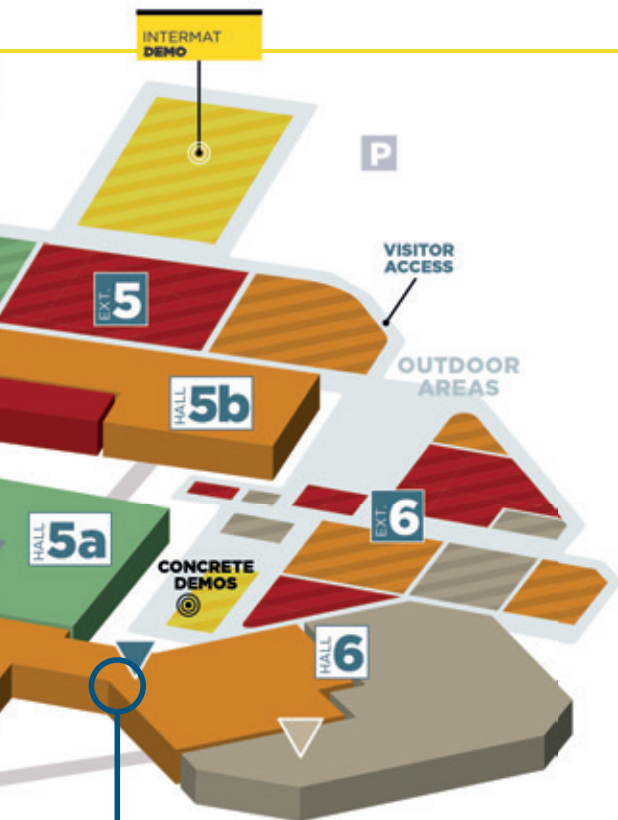
Also, an instant peak torque boost of up to 3,400Nm was said to be available when the machine meets difficult working conditions.

Cummins' new system was said to be particularly well suited to jobsites where especially low emissions are required, such as in urban locations.

GOMACO's new 3300 multi-application slipform paver, designed for the European market, will be on display at Intermat. GOMACO has re-engineered the original GT-3300 with the latest in technology, including the G+ control system and GOMACO Remote Diagnostics (GRD).

The 3300 features true right-side or left-side paving capabilities with extreme steering, Smart Leg and Track Positioning, and a Smart Telescoping Mold mounting system. The GOMACO 3300 is capable of slipforming multiple applications, including curb and gutter, safety barrier, sidewalk, and undermounted paving.

The 3300's design includes a 6.1m-long conveyor with four-way hydraulic positioning for perfect placement of



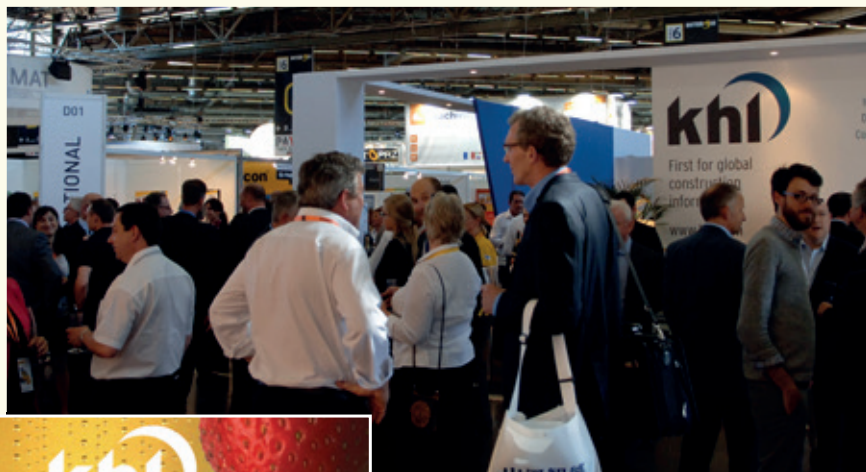
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Come and meet the *International Construction* team at the KHL stand, 6-C001

Champagne and Strawberries

KHL's renowned event to appear at Intermat 2018

KHL's legendary champagne and strawberries event will be held on Wednesday 25 April at Intermat. Located on stand 6-C001, the traditional, invitation-only event will take place from 3.00pm to 5.00pm. *International Construction* editor Andy Brown and deputy editor Thomas Allen look forward to seeing all KHL clients and media partners at the event.



the concrete into the hopper from either side of the 3300. The conveyor hydraulically folds to reduce the overall transport length of the paver to help accommodate international shipping requirements. The 3300 is also available with a 5.2m-long charging auger for receiving concrete.

For the first time, **Jekko** will participate in Intermat, at the Fassi Group stand E5-M-026 of Fassi France.

At the stand curated by Fassi France in the outdoor area, a selection of lifting equipment will be displayed.

Jekko products are designed to work in confined spaces, allowing easy access through a single or double door. Weights and dimensions do not compromise lifting capacity or working radius, with the advantage of being able to operate with reduced loads on the ground and in attics. A complete range of models equipped with diesel, electric or battery-powered

engines with a wide range of manual, hook or hydraulic jibs, rocker arms and handling accessories for pipes, beams or glass. All accessories are integrated with the functions and safety devices of the machines.

There will be three Jekko models on display at Intermat, the first being the

SPX424 mini telescopic crawler crane with stabilisers – easily transportable and manoeuvrable, it does not require long to set-up and is a practical lifting system that saves time, while ensuring high levels of safety and lifting capacity.

The second is the JF40 articulated crawler crane – an articulated truck crane mounted on self-propelled crawler tracks. Finally, there will be the new Multi-Loader JML25, a self-levelling transport platform with crawler tracks.

A highlight of the **Liebherr** stand will be the 450 tonne-capacity LTM 1450-8.1 with its 85m boom and eight-axle carrier. First seen in prototype form at the 2016 Bauma show in Germany, this crane is strong enough, in many applications, to compete in the 500-tonne class, Liebherr said.



This is the first time that Jekko will be showcasing their equipment at Intermat



Cummins engines and Dana transmissions are used on the Liebherr LRT series rough terrain cranes

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Off Highway Research will use the event to present updated forecasts on the global construction equipment industry and launch new market intelligence products.

Among these will be the Global Volume & Value Service PLUS. This will build on the company's existing Global Volume & Value Service, which provides worldwide equipment sales broken down by country and equipment type in unit (volume) and US dollar (value) terms.

The enhanced PLUS Service will go into greater detail, with sales by up to six weight/size classes per product type, again in unit and dollar terms. This will provide 524 data points per year, compared to 224 in the standard service.

Swedish tiltrotator manufacturer **Rototilt** will be showing its new R2 model for the first time at the Paris show. Based on the Rototilt R product platform, the R2 will replace the RT20B. The company said this meant new smart features with Innovative Control System (ICS) and SecureLock. The new tiltrotator was said to manage significantly higher breakout torque and have an increased machine span of 3 to 6.5 tonnes.

The ICS comes with a display that is said to help operators gain easier adjustment options and a better overview of the tiltrotator system. Rototilt said that its quick couplers improved safety, prolonged service life and preserved excavation geometry. Its series of quick couplers is now being expanded with the new S40, S45 and S50 models.

Sany Europe has promised that it will have almost its full range of excavators at Intermat, including a number of new machines. The company said that it would use the show to tell customers that it is in the European market.

Among the new machines on the 550m² stand will be the SY26 in the mini excavator range, plus the SY50 midi and SY500 large excavators. Sany said that it had excavators available in Europe between 1.5 and 50 tonnes, and the new models bridged the gaps in the range.

Its European portfolio is continuously being expanded, it said, through the support of research and development engineers based at its European headquarters in Bedburg, Germany.

The 673E telescopic boom crawler crane from **Sennebogen** is an updated model. Work has been done on the upper body and for the operator includes the Max Cab, which is 70mm longer than the previous one. It has a climate-controlled seat and the joysticks are designed in-house.

The new 673E has more space

Sennebogen has updated its 673E telescopic boom crawler crane



Topcon will be showcasing automated technology at the event

between the upper and lower sections to allow better access for maintenance. The metal walkways are now designed to stay on the crane during transport, which helps with set up and dismantling times. Time is also saved when mounting the fly jib as it is now a swing away type.

Topcon Positioning Group said it would present the latest in cutting-edge construction workflows at Intermat 2018. Topcon experts will show construction and geospatial automated work processes that provide cost, time and productivity benefits.

"It is no secret that there is a huge gap in terms of the demands for creating and maintaining global infrastructure and the capacity that is available within the industry. In fact, the deficit is projected to be in the region of US\$12 trillion," commented Ulrich Hermanski, vice president of the EMEA construction business at Topcon Positioning Group.

"The reality is that we need to find quicker, more cost-effective and productive ways to build. Automated technology is key to achieving this, helping to save money before and during the build – as well as throughout maintenance cycles. Events like Intermat offer a great stage for the construction industry to come together and understand which technology is the best to implement and how to adopt it successfully."

Volvo Penta will present its full range of

EU Stage V solutions at Intermat, including D5, D8, D11, D13 and D16. Each solution features a high-performance engine and perfectly matched exhaust aftertreatment system (EATS), to comply with the next EU emissions level. The company's Stage V

range is optimised for tomorrow and keeps the highest focus on maximised uptime and fuel efficiency, along with ease of installation, operation and maintenance. The range offers power from 105 to 565kW.

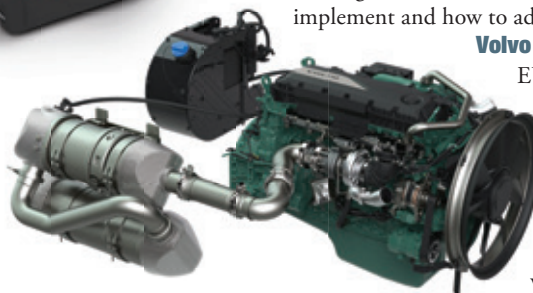
"Our Stage V diesel engine range provides manufacturers and operators with all they need to power their equipment with optimum performance," said Johan Carlsson, chief technology officer at Volvo Penta. "We offer customers the benefit of an exceptional engine and exhaust aftertreatment system that together reduce fuel consumption and minimise emissions." He added, "All of our Stage V solutions are easy to install, easy to operate and easy to maintain, and are all optimised for our customers' future needs."

Stage V regulations for Europe will be implemented in 2019, requiring new emission limits for diesel engines. The scope of the legislation is set to widen as engines below 19kW and above 560kW will be regulated for the first time. And although current Stage IV regulations limit the overall mass of particle emissions, Stage V will also constrain the number of particles emitted. **iC**

Rototilt will be displaying its new R2 model for the first time at the Paris show



Volvo Penta's Stage V D8 engine and exhaust aftertreatment system (EATS)



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Robust recovery

The global construction equipment market enjoyed a remarkable rebound last year, with sales surging by 25%. China was a key driver of the growth, but it was a strong year for many other major markets.

Global construction equipment sales exceeded 880,000 units last year, compared to the 702,000 sold in 2016. The main driver of this increase was China, where demand was up by 82%. However, it was notable (and rare) that each individual country in Europe, along with India, Japan and North America, experienced increased sales in 2017.

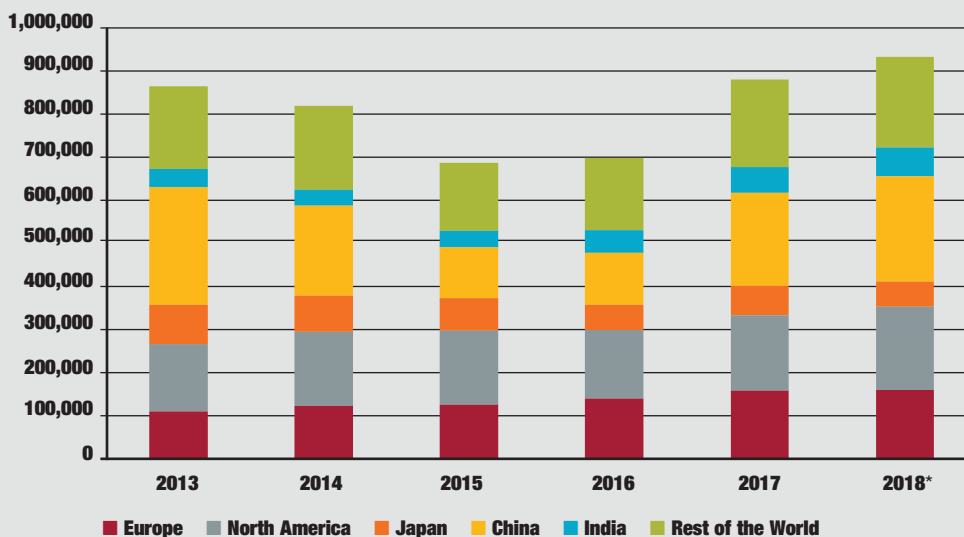
More measured growth is expected in 2018, with sales forecast to climb another 7%. The drivers of this will be the developing Asian economies of China and India, along with North America. The Japanese market is forecast to decline by some 13% next year, while Europe will stagnate at its current high level.

China

Having bottomed-out in 2016, following a painful four-year recession, the Chinese market bounced back strongly in 2017.

“ This was the first year in China’s history that crawler excavators outsold the former mainstay product of wheeled loaders ”

Global construction equipment sales, 2013-2018



SOURCE: Off-Highway Research

*projected figure

About Off-Highway Research

Off-Highway Research is the world’s leading provider of market intelligence and forecasts for the global construction equipment industry. With offices in the UK, China, India, the USA and Japan, it offers unrivalled market insights, helping its clients to set their global strategies, and plan and invest for profitable growth.

■ For more information, please visit www.offhighway.co.uk

Off-Highway Research

Sales surged by 82%, taking the market back above 200,000 units for the first time since 2014.

Perhaps most significant last year was the huge rise in crawler excavator sales, which were up 125% from 43,900 units in 2016 to 98,800 in 2017. This was the first year in China’s history that crawler excavators outsold the former mainstay product of wheeled loaders. The other key high-growth area last year was the mini excavator segment, which grew 88%.

Western Europe

Equipment sales in Western Europe rose 12% to over 160,000 units in 2017. This took demand to its highest level since the global financial crisis, although it was still some 25% lower than the remarkable peak of 210,000 units sold in 2007. However, the boom of the mid 2000s took the market to unsustainably high levels, resulting in a prolonged and painful crash. At today’s volume of around 160,000 units, the European market can be regarded as being healthy and buoyant.

North America

After a year of uncertainty in the run-up to the November 2016 US presidential election, the North American construction equipment market returned to growth last year. Sales were up 11% to 173,188 units.

With growth in the US economy accelerating, the construction equipment market is expected to rise to more than 193,000 units this year — a 12% increase. Growth is forecast to be evenly spread across the spectrum of equipment types.

Japan

The 14% rise in construction equipment sales in Japan last year was predominantly due to the 33% growth seen in the crawler excavator segment. However, this up-tick is seen as a temporary improvement, and sales of this key product are expected to drop back this year, pulling down the overall market.

India

Robust growth continued in India last year, with a 14% increase in construction equipment sales following on from the 36% surge seen in 2016. This took the market size to a new record level of more than 60,000 units, surpassing the previous high that was seen in 2011. With further growth of 13% expected this year, the industry is forecast to scale new and unprecedented heights.

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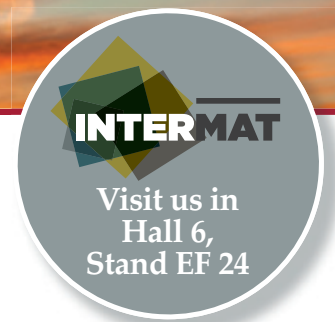
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