MAY 2020 Vol 59 No 4

international construction

A KHL Group publication

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Yellow Table

World's top 50 OEMs ranked P21

CONSTRUCTION AND COVID-19

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FOUR-PAGE SPECIAL FEATURE INSIDE

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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
Av. Manquehue Sur 520, of. 205,
Las Condes, Santiago, Chile
Tel: +56 9 77987493
e-mail: cristian.peters@khl.com

GERMAN OFFICE
Niemöllerstrasse 9,
73760 Ostfildern, Germany
Tel: +49 711 34 16 74 0
e-mail: gabriele.dinsel@khl.com

CHINA OFFICE
KHL Group China
Room 769, Poly Plaza,
No.14, South Dong Zhi Men Street,
Dong Cheng District,
Beijing, PR China 100027
Tel: +86 (0)10 6553 6676
e-mail: cathy.yao@khl.com

KHL SALES REPRESENTATIVES

SALES MANAGER and UK/BENELUX
Simon Kelly, UK Head Office
Tel: +44 (0)1892 786223
e-mail: simon.kelly@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

AUSTRIA/SWITZERLAND/EASTERN EUROPE
Simon Battersby
Tel: +44 (0)1892 786232
e-mail: simon.battersby@khl.com

GERMANY/SPAIN
Petra Kaiser
Tel: +49 711 34167472
e-mail: petra.kaiser@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

SCANDINAVIA
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

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

The new normal?

Firstly, I hope this editor's letter finds you well. To borrow a quote from one of my favourite films, "Well, that escalated quickly." It doesn't seem like five minutes ago that I was making sure I had everything ready for the ConExpo show in Las Vegas – money, passport, conference schedule, dummies guide to winning at Blackjack book – and now I find myself in the seventh week of lockdown in the UK.

While – and it should go without saying – the human cost of Covid-19 is the most important factor, businesses and economies have been hit hard and it isn't sustainable for businesses to stay closed for too much longer, or for governments to be paying the wages for such a large percent of their population.

It is essential though that if countries reduce restrictions, they are done in a way that doesn't compromise people's health and wellbeing. That must always be the priority.

Of course, each country is at a different stage of its fight against Covid-19 and for some there is a chink of light beginning to appear at the end of the tunnel. Production in China continues to return to something like full capacity, some of the countries in Europe are beginning to relax lockdown rules and other countries, such as Australia and South Korea seem to have been relatively unaffected thus far.

Construction has been deemed 'essential' by most countries and work – to a greater or lesser extent – has been taking place on large infrastructure projects and sites needed to keep the lights on, so to speak.

The construction industry has been riding the crest of a wave over the last few years, as can be seen by the increasing sales of the world's top 50 Original Equipment Manufacturers in the annual Yellow Table.

To find out the exact sales figures you'll need to turn to page 21, but – spoiler alert – it is another increase and, in fact, takes the table to record heights. Of course, what goes up, must come down. Even without Covid-19, sales would have probably fallen next year; now the million (well, billion) dollar question is: just how much will they fall?

No matter how hard the fall is, there are reasons to be positive. Construction, as an industry, is better placed to bounce back than many other sectors, such as travel and tourism or even entertainment, and governments around the world will likely look to large-scale infrastructure projects to provide their economies with the proverbial shot in the arm. The industry is currently experiencing real pain, and that should not be dismissed or underplayed, but it will make it all the sweeter when the rebound happens. And it will happen.

Stay healthy.

Andy Brown
Editor

ISSN No: 0020-6415
USPS No: 021-895

https://subs.icon.khl.com/registrationselection

International Construction (USPS No: 021-895) is published 25th February 2020 by KHL Group and distributed in the US by DSW, 75 Aberdeen Rd, Emigsville, PA 17318-0437. Periodicals postage paid at Emigsville, PA. Postmaster: send address changes to *International Construction*, PO Box 437, Emigsville PA 17318-0437.

PLEASE NOTE: The default currency of *International Construction* is the US dollar; When the standalone dollar symbol ($) is used, it refers to the US dollar, unless otherwise stated.

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.

MAY 2020
Vol.59 No.4

international construction

International Construction, incorporating *Construction Industry International* and *World Construction,* is available free of charge on request to anyone who falls within the controlled circulation criteria. The official issue publication date is 18th May 2020.

The magazine is published 10 times a year. It is available to anyone who does not meet the criteria at an annual subscription rate of UK£215, US$345, €260.

BPA WORLDWIDE

STAFF LIST

Editor
Andy Brown
e-mail: andy.brown@khl.com
Tel: +44 (0)1892 786224
Deputy Editor
Joe Sargent
e-mail: joe.sargent@khl.com
Tel: +44 (0)1892 786211
US Deputy Editor
Jenny Lescohier
e-mail: jenny.lescohier@khl.com
Tel: +1 920 650 1579
Editorial Director
Murray Pollok
Editorial Team
Thomas Allen, Lindsey Anderson, Alex Dahm, Steve Ducker, Mike Hayes, Fausto Oliveira, Cristián Peters, Murray Pollok, Christian Shelton, D.Ann Shiffler, Leila Steed, Hannah Sundermeyer, Euan Youdale
Sales Manager
Simon Kelly
e-mail: simon.kelly@khl.com
Tel: +44 (0)1892 786223
Production & Circulation Director
Saara Rootes
Senior Production Executive
Anita Bhakta
Production Assistants
Charlotte Kemp
e-mail: charlotte.kemp@khl.com
Tel: +44 (0)1892 786262
Maria Clarke
e-mail: maria.clarke@khl.com
Tel: +44 (0)1892 786269
Design Manager
Jeff Gilbert
Events Design Manager
Gary Brinklow
Print & Digital Designer
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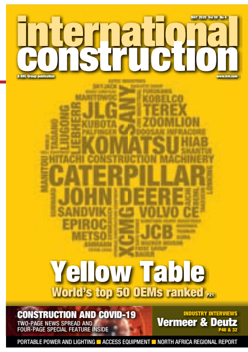
INSIDE

OUTSIDE



Yellow Table, page 21

HIGHLIGHTS

US A majority of US construction firms promptly received loan funds under the new Paycheck Protection Programme, enabling many of them to retain employees despite a surge in project cancellations, according to the latest survey by the Associated General Contractors of America.

Association officials said the job-saving measure appeared to be working but cautioned that longer-term recovery measures, like new infrastructure funding and establishing a recovery fund, are needed. "Most contractors report they have applied for the new federal loans, which are intended to enable small businesses to keep employees on their payrolls," said Ken Simonson, the association's chief economist.

FRANCE Vinci reported a, "very gradual" resumption of construction activity in France following the lockdown, while elsewhere the environment is more favourable with some countries like Germany seeing almost normal levels of activity, reported the company in its first quarter results.

The group said the pandemic continued to have a serious impact on its business and anticipated a "pronounced decline" in revenues over the next few months. "The pandemic is having a significant impact on the activities of all Group business lines, in both Concessions and Contracting", said Xavier Huillard, Vinci's chairman and CEO.

CANADA Ontario, Canada is extending hours for essential construction projects, such as those in the health care sector, to 24 hours a day due to the crisis caused by the coronavirus pandemic.

According to the Office of the Premier in Ontario, work on new hospital builds, expansions, and Covid-19 assessment centres will be able to continue any time of the night or day to help accelerate the construction of these projects and enable employers to take additional steps to protect the health and safety of workers on these job sites.

MEXICO Mexico has extended until 30 May social distancing measures to mitigate the coronavirus epidemic, causing alarm in the construction industry.

GLOBAL

Covid-19 to wipe 4% off construction equipment production

National lockdowns and factory closures could lead to lost production of 43,000 machines

Factory closures and national lockdowns around the world will cost the global construction equipment industry lost production of 43,000 machines this year, according to specialist market research and forecasting company Off-Highway Research. This is equivalent to 4% of last year's total output of 1.07 million machines.

At present the most significant impacts of closures are being felt in France, Germany, Italy and the UK, Europe's largest equipment producing countries. However, Off-Highway Research also highlights the experience of China, where the industry is now trying to make up for lost time.

Off-Highway Research managing director Chris Sleight said, "Factory closures and lockdowns in China cost the industry 6% of its production. Some OEMs didn't close at all, but most were shuttered for two-six weeks and then had to ramp up production once they re-opened. Activity is now very high as the industry is anticipating some government stimulus and something of a buying spree."

Prior to the Covid-19 pandemic, Off-Highway Research was forecasting a softening of global demand for equipment.

According to Sleight, "The industry reached a peak in 2018 and 2019, and we were already expecting a decline of 5% or so this year from those record-highs. Covid-19 will most likely exacerbate that, but we also expect a strong policy response from governments around the world to reinvigorate their economies. It is too early to put a figure on what the impacts will be.

"As disruptive as the closures and lockdowns are at the moment, I don't think lost production and supply chain difficulties will be the industry's main problem this year.

"The biggest challenge will be adapting to demand in the second half of the year. That will be volatile and most likely lower than the industry has enjoyed in the last two years."

The results from Off-Highway Research's survey of lost equipment production in 26 countries around the world is available to clients now via conference calls. Contact mail@offhighwayresearch.com if you would like to arrange a call. Results will also be published in a special complementary report which will be available to all clients.

GLOBAL

KHL offers the latest news in print and digital

With increasing numbers of people working from home KHL has reiterated that all of the company's magazines are available to view in digital format. Subscription to this is also free and can be done on www.khl.com

If you would like KHL to temporarily redirect your paper copy to a home address then simply e-mail at: circulation@khl.com

There is a rolling news story on the Coronavirus on the KHL website, providing construction-related stories from all over the world.

The editorial team are still producing the newsletter, Construction & Coronavirus, focusing on the impact that Covid-19 is having on construction; on sites, in factories, and in offices. Sign up for this at: https://tinyurl.com/sptfmgn

GLOBAL

Komatsu production update

Komatsu has issued an update on the status of its manufacturing facilities around the world, including the news that the company's UK factory will now be closed until 31 May, as opposed to opening on 17 April as previously planned.

The major OEM's statement also revealed that its Italian factory will open again on 3 May. It had originally been scheduled to open on 13 April.

Komatsu's factory in India was also scheduled to open on 3 May, extended from the initial date of 14 April.

In more positive news, production has resumed at the company's factories in Germany (on 14 April) and Russia (13 April). Komatsu's factories in China and the Middle East and Africa have been operational for some time.

The OEM's factories in Japan remain open despite Japan's Prime Minister Shinzo Abe expanding the state of emergency to apply to the entire nation.

Regarding the situation in Japan, the company said in a statement, "In light of the Japanese government's decision of 16 April to apply the state of emergency nationwide, Komatsu Group companies in Japan have thoroughly ensured infection preventive measures."

UAE

Dubai construction 'cracks'

Government spending cuts resulting from the coronavirus pandemic are delaying construction projects in Dubai and some say the move could further compromise an already stressed industry in this traditionally prosperous region.

According to a report in Bloomberg, Dubai's government is freezing all hiring and cutting administrative spending by at least 20% across all departments as the coronavirus pandemic stymies state revenue.

Bloomberg reported that a letter sent by Director General Abdulrahman Al Saleh to all state departments during the week of 6 April said the emirate's department of finance had ordered a 50% reduction in capital spending and a delay to new government construction projects.

The crisis caused by the coronavirus has shut down much of this middle east transport and business hub which is heavily dependent on tourism, trade and retail. Meanwhile, lower oil prices are adding to the economic challenges in the region.

According to GlobalData, the Dubai government's decision to rein in spending, while arguably a necessary step, will deepen the cracks in the local construction sector.

EUROPE

Troubling times for Europe

The latest survey by CECE (Committee for European Construction Equipment) paints a bleak picture of the region's construction equipment market, with 61% of OEMs reporting significant reductions in production and a further 15% at zero production.

The survey – conducted between 23 and 27 April – shows that OEMs are facing a customer base severely impacted by the crisis, with OEMs reporting only 5% of contractors working fully, and just 20% of dealers and 11% of rental companies operating at full capacity.

The proportion of customers not working at all remains low – less than 5% in the case of both contractors and dealers – but it was a significant 15% of rental companies.

CECE said, "In all categories of the CECE flash survey on Covid-19, there is an evident deterioration of the situation compared to last month's and the current focus on market demands is a powerful warning sign that the worst is yet to come for the industry."

In terms of sales expectations for the year, 60% of OEM respondents expect a decrease of between 10% and 30%, with a further 25% forecasting a fall of more than 30%. Some 12% are expecting falls of up to 10%. It is feared that the next survey may paint a bleaker picture

JAPAN

Contractors halt work

Major Japanese construction contractors Kajima Corporation, Obayashi Corporation and Taisei Corporation have revealed that they plan to halt construction nationwide until early May in response to the expanded state of emergency called by the Japanese government over the Covid-19 pandemic.

Japan's Prime Minister Shinzo Abe recently expanded the state of emergency from Tokyo, Osaka and five other districts to apply to the entire nation.

According to the *Japan Times*, Kajima and Obayashi plan to halt work until 6 May and Taisei through to 10 May.

Kajima, which has about 700 construction sites across the country, said some projects may go ahead as usual if they are urgent.

Japan was, initially at least, not as badly hit by Covid-19 as many other countries in the world but has seen the number of cases increase rapidly recently. This development prompted the government to expand the state of emergency to the whole country.

Cases in Japan recently passed 15,000. According to a survey by the *Asahi Shimbun* newspaper, three-quarters of Japanese said they were going out less than usual, but only just over half felt they were reaching Abe's target of reducing contact with other people by 80%.

HIGHLIGHTS

According to the Mexican Construction Chamber of Commerce (CMIC), about a fifth its 12,000 members are at risk of closing permanently due to the halting of construction and building work. Between 13 March and 6 April, almost 19,500 construction workers lost their jobs, and CMIC said this figure could be 25 times larger by the end of the month.

RUSSIA A report from the Eastern European Construction Forecasting Association (EECFA) has revealed that, as cases of Covid-19 soar, the government is insistent that construction projects continue.

Only projects in Moscow and the Moscow region have been curtailed, where the largest number of virus cases have been recorded. Russia recently reported an increase of 10,600 in confirmed cases – the biggest daily rise since the crisis began – and the figure for the country stands at more than 145,000 cases. The construction industry is likely to be one of the hardest hit, with social distancing on sites difficult to maintain.

Please note that all information was correct at the time of the magazine going to press. This is a fast-developing situation; please make sure you visit www.khl.com to view a rolling news story on the impact of Covid-19 on the construction industry.

CHINA

'Record' excavator sales

Excavator sales by Chinese OEMs reached record levels in March, according to data from China Construction Machinery Association (CCMA).

According to the CCMA total excavator sales hit a record-high of 49,408 last month, up 11.6% year on year.

Of this total the vast majority of sales were domestic, with 46,610 units sold in March in China. Excavators sold for export were a much smaller number of 2,798 units, although this was an increase of 17.7%.

Excavator sales in the first quarter for Chinese OEMs were down 8.2% compared to the first quarter of 2019 at 68,630 units, although exports were up by almost 35%.

The decline in sales is not surprising given how the country was affected by the outbreak of Covid-19 for much of the first quarter of the year – that sales are only down by 8.2% is partly due to March's record sales.

INDIA

India's largest diameter TBM

India's largest diameter tunnel boring machine (TBM) was recently packed at China Railway Construction Heavy Industry's (CRCHI) industrial park in Changsha, China, and will be shipped to Mumbai where it will be used for a costal road project.

The Slurry TBM has an excavation diameter of 12.19m, is 80m long, weighs 2,300 tons, has an installed capacity of 7,280kW and a gradeability of 5%.

It is said to be the largest diameter TBM among all Chinese TBMs exported to India and the largest one ever in India.

The 29km Mumbai Coastal Road is a key transport project in India.

The CRCHI Slurry TBM will bore a tunnel section of 1,920m. The tunnel construction faces complicated geological conditions that require excavation in deep overburden and will pass through a compound stratum of basalt, breccia and shale.

US

Sales drop 27% for Cat

First quarter results show a drop in sales for world's largest construction equipment manufacturer

Sales of Caterpillar construction equipment were down 27% in the first quarter of 2020 compared to the same quarter last year, contributing to a 41% drop in profits for the segment.

The company announced total first quarter 2020 sales and revenues dropped 21% from the same period last year, from US$13.5 billion to US$10.6 billion.

The decline was due to lower sales volume driven by lower end-user demand and the impact from changes in dealer inventories. Dealers increased machine and engine inventories by about US$100 million during the first quarter of 2020, compared with about US$1.3 billion during the first quarter of 2019.

Total sales of construction equipment were reported to be US$4.306 billion in the first quarter of 2020, a decrease of US$1.567 billion, compared with US$5.873 billion in the first quarter of 2019.

Construction Industries' profit was US$640 million in the first quarter, a fall of US$445 million compared with US$1.085 billion in the first quarter of 2019.

Caterpillar reported financial results for the remainder of 2020 will be impacted by continued global economic uncertainty caused by Covid-19. As such, it withdrew its earnings guidance on 26 March and is not currently providing a financial outlook for 2020.

"We have taken decisive actions to enhance our strong financial position, while continuing to execute our strategy for profitable growth," said Caterpillar Chairman and CEO Jim Umpleby. "Caterpillar has faced and overcome many challenges in our 95-year history. Our goal is to emerge from the pandemic an even stronger company."

AUSTRALIA

Green light for Australia's tallest building

The government of Victoria in Australia has given the go-ahead for the construction of a tower called Green Spine that, at a height of 365m will become the tallest building in Australia.

Located in Melbourne, the tower is part of the AUS$2 billion (US$1.3 billion) Southbank project, which is being developed by local property company Beulah International.

The Green Spine, designed by Dutch architect UNStudio, will be a cantilevered structure composed of two towers, both with a twisting geometric glass façade and terracing.

The taller of the two will be a 356m residential building and will be crowned by a publicly accessible botanical garden. The second 252m structure will accommodate offices and a hotel. The project is expected to generate 4,700 construction jobs.

SWEDEN

Online product launch

Aquajet, a hydrodemolition robot manufacturing company, will introduce a new product through a worldwide digital launch on 27 May at 2pm Central European Summer Time (CEST).

The company was due to launch the product at an Open Day but has decided on a digital launch due to the Covid-19 pandemic.

The 35-minute event will be in a webinar format with 20 minutes to see the new product, followed by 15 minutes of Q&A.

Aquajet CEO Roger Simonsson, chief engineer Ronnie Hilmersson and director of sales Patrik Andersson will highlight key features of the new equipment.

"We originally planned to share this exciting new technology at our Aquajet Open Days, but world events changed that plan," said Roger Simonsson, Aquajet CEO.

ITALY

Salini Impregilo becomes Webuild

The contractor Salini Impregilo has announced it will change its name to Webuild. The company said it is now in a position to, "contribute to the revival of the Italian economy within the context of an infrastructure investment plan capable of creating thousands of jobs".

A statement from the firm said the new name points to the group's evolution as a global contractor, while retaining a strong base in Italy.

Webuild will continue to be a driving force of Project Italy, part of a plan announced last year as Salini merged with Astaldi.

The plan is aimed at strengthening the national sector of public works and construction in Italy, which represents 8% of the country's GDP. Project Italy will have a combined order backlog of €42.5 billion (US$46 billion).

The Webuild group will have 70,000 employees globally. Along with details of the new name and direction, the company released the annual financial results for Salini Impregilo, reporting a profit in 2019 of €70.96 million (US$77 million).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HIGHLIGHTS

CHINA Chinese manufacturer XCMG reached a production milestone as its 200,000th wheeled mobile crane came off the line in Xuzhou.

The country's largest crane manufacturer introduced its first model, a 5 tonne capacity truck crane, in 1963. XCMG said it is the number two mobile crane manufacturer in the world and claimed it made a third of all the wheeled cranes operating worldwide.

SWEDEN Volvo Construction Equipment has reported a fall in first quarter sales of 17% compared to the same period in 2019. The manufacturer reported net sales in the three months to March 31 of SEK 20.14 billion (US$2.1 billion), against SEK24.2 billion (US$2.55 billion) the previous year.

Only South America showed increased revenues, by 2%, while North America and Europe suffered the worst declines of 25% and 20% respectively. Asia, despite remaining the single biggest geographic market, was down 10% despite a recovery in the Chinese market during March.

UK The British Chambers of Commerce has told PM Boris Johnson that the country's construction industry will need long-term support, following the easing of its current lockdown status.

In an open letter, the Chambers' president Baroness Ruby McGregor wrote, "The fight against the virus must remain the top priority, but the planning and communication of a carefully phased approach to lifting lockdown must begin immediately if we are to harness the public health and economic benefits, both now and in the future."

GLOBAL

World's most expensive cities to build in revealed

The most expensive – and cheapest – cities to build in have been revealed by Arcadis

The most expensive and cheapest cities in the world to build in have been revealed in the annual Arcadis International Construction Cost Index (ICC).

The report revealed that the top three most expensive cities to build in are: London, New York and Hong Kong while the cheapest cities to build in around the world are all in India: Bengaluru, New Delhi and Mumbai.

According to the report, although multiple factors influence a city's position in the index, the main factor is the level of specification and quality, which can vary over time. The report says that, "the costs of high-end hotels and residential buildings have increased significantly in cities such as London, reflecting a global market for luxury developments that only affects a small sub-set of the cities.

"Looking forward, enhancements to specifications to deliver low-carbon developments are likely to further increase differentials. We expect to see this effect emerging first in Europe, with the universal adoption of the requirement for the delivery of near zero-energy buildings in the public and private sector from 2020 onwards."

Arcadis said that the report was finished just as the scale of the Covid-19 pandemic was becoming clear.

"Just as Covid-19 is leading to a search for new forms of resilience for public health and essential services, in time, we will also need to do the same within the construction industry," said Andrew Beard, Arcadis' global head of cost & commercial management.

US

Jacobs to be carbon neutral

US-based engineering and construction firm Jacobs has released a Climate Action Plan as the company claims that it will be carbon neutral this year and carbon negative by 2030.

Jacobs' Climate Action Plan commits to help solve the climate crisis by achieving and maintaining 100% renewable energy, net zero carbon for the company's operations and business travel in 2020 and carbon negative for its operations and business travel by 2030.

A recent report revealed that building and construction are responsible for 39% of all carbon emissions in the world, with operational emissions (energy used to heat, cool and light buildings) accounting for 28%.

"Today, we reveal a plan that sets us apart – capturing the shared passion, pride and drive of our people as we work to preserve our planet for future generations," said Jacobs Chair and CEO Steve Demetriou.

DENMARK/GERMANY

Green light for Fehmarnbelt

Work on the construction phase of the €7.4 billion (US$8 billion) Fehmarnbelt project, connecting Denmark and Germany, will commence in January 2021, according to the developer, Femern A/S.

The 18km road and rail link – set to be the world's longest undersea tunnel – will stretch across the Bay of Kiel, between the German island of Fehmarn and the Danish island of Lolland.

In March, the European Commission (EC) approved the financing for the project, allowing Femern to activate the main construction contracts with the Femern Link Contractors (FLC).

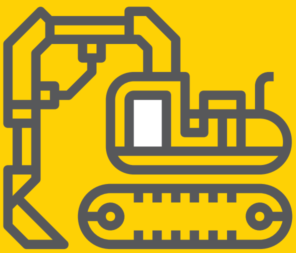
The harbour at Rødbyhavn has been under construction since November 2019, with completion expected by the end of 2021. The harbour will act as a gateway to a vast manufacturing facility that will supply the concrete elements for the tunnel itself.

Exchange rates: May 2020

VALUE OF 1:		AU$	BRL	UK£	CNY	€	INR	YEN	MXN	RUB	SAR	ZAR	KRW	CHF	US$
Australian Dollar	AU$		0.33	0.507	4.23	0.549	45.9	67	14.49	47.2	2.24	10.42	734	0.584	0.596
Brazilian Real	BRL	3.03		0.167	1.40	0.181	15.1	22.0	4.78	15.6	0.74	3.44	242	0.193	0.197
British Pound	UK£	1.97	5.98		8.4	1.08	90.5	131	28.6	93.0	4.41	20.6	1448	1.15	1.18
Chinese Yuan	CNY	0.236	0.715	0.120		0.130	10.83	15.7	3.42	11.14	0.528	2.462	173	0.138	0.141
Euro	€	1.82	5.52	0.92	7.72		83.6	121	26.4	86.0	4.08	19.00	1338	1.07	1.09
Indian Rupee	INR	0.022	0.066	0.011	0.092	0.012		1.5	0.316	1.028	0.0488	0.227	16.0	0.0127	0.0130
Japanese Yen	YEN	0.015	0.046	0.008	0.064	0.008	0.689		0.2177	0.708	0.0336	0.1566	11.0	0.0088	0.0090
Mexican Peso	MXN	0.069	0.209	0.035	0.292	0.038	3.16	4.59		3.25	0.154	0.719	51	0.040	0.0412
Russian Ruble	RUR	0.021	0.064	0.011	0.090	0.012	0.97	1.41	0.307		0.047	0.221	15.6	0.0124	0.0126
Saudi Riyal	SAR	0.447	1.355	0.227	1.893	0.245	20.507	29.765	6.480	21.088		4.66	328	0.261	0.267
South African Rand	ZAR	0.096	0.291	0.049	0.406	0.053	4.399	6.386	1.390	4.524	0.215		70	0.056	0.057
South Korean Won	KRW	0.0014	0.0041	0.0007	0.0058	0.0007	0.0625	0.0907	0.0197	0.0642	0.0030	0.0142		0.00080	0.0008
Swiss Franc	CHF	1.71	5.18	0.87	7.24	0.94	78.47	113.90	24.80	80.69	3.83	17.84	1256		1.020
US Dollar	US$	1.68	5.08	0.850	7.1	0.92	76.9	111.6	24.3	79.08	3.75	17.48	1231	0.98	

For example US$ 1 = AU$ 1.68

PROTECT TODAY TO BUILD TOMORROW



Many construction projects are affected in these challenging times.

Here are some ways you can look after your valuable mobile equipment, whether it's locked down or working overtime.

PROTECT

- Re-grease anti-friction bearings
- Lubricate all pin and bush points
- Clean breathers, drain water from hydraulic tanks and cover

PRESERVE

- Park on level ground, not slopes or soft surfaces
- Move into shade where possible
- Periodically run equipment for at least 30 minutes

PREPARE

Check...

- Battery charge status
- Oil levels and components
- For leakage and oil condition
- Brake operation
- Lubrication of all pin and bush points

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HIGHLIGHTS

HILTI has acquired the assets of Concrete Sensors, a provider of connected devices, software, and services that help enable improved decision making and accelerated construction schedules through a better understanding of the concrete curing process.

Traditionally, monitoring the curing phase required the use of cumbersome laboratory equipment and involved considerable time delays. Boston-based Concrete Sensors uses a wireless sensor embedded into concrete that provides real-time data as the concrete cures.

After data is collected, the Concrete Sensors mobile app then shares the status of the concrete's estimated strength, temperature, and relative humidity.

OXBLUE, a technology company based in Atlanta, Georgia in the US, announces the development of artificial intelligence (AI)-based technology for enhancing social distancing awareness on construction sites.

The new technology uses artificial intelligence (AI) to determine when two or more people are in close proximity.

"With a global pandemic, harnessing the power of technology to solve the construction industry's immediate challenges is our top priority at the moment," said Chandler McCormack, CEO of OxBlue.

TRIMBLE has released the latest version of its Earthworks Grade Control platform introducing a host of new features, including for dozers and excavators.

Earthworks Grade Control Platform version 2.0 introduces Horizontal Steering Control for dozers. This is said to automatically control the machine to follow any horizontal alignment without operator assistance.

Another first is Augmented Reality for excavators. This enables users to easily understand 3D models, cut/fill information, slope data and other bench points and reference points on the in-cab display in context, without the need to interpret complex 2D plans or stakes.

BAM unveils electric road roller

Dutch contractor claims it has built the world's first electric road roller in the 10 to 12 tonne segment

Netherlands-based contractor BAM says the company has built and commissioned the world's first fully electric 10 to 12-tonne road roller.

The electric road roller was created by converting an older road roller model, with the conversion process taking a year and a half. Thanks to its electric propulsion, the roller emits no carbon dioxide or nitrogen and is much quieter than conventional models.

According to BAM, compared to other heavy equipment, electrification of road rollers is relatively simple as they don't have to perform repetitive heavy lifts tasks or prolonged excavation tasks. Much like a car, a roller needs energy mostly for driving and steering and a roller does not need to have an extensive driving range.

Compared to the roller's original diesel engine, the electric conversion saves seven litres of fuel per hour. With the electric road roller BAM reduces its carbon emissions by approximately 236 kilograms per day. On an annual basis, with 180 days of operation, the roller reduces BAM's CO2 emissions by more than 42,000 kilograms.

BAM said as the demand for sustainable solutions continues to grow, the company considers this electric road roller to be the first step towards developing a fully emission-free paving train.

New ecosystem for 'smart' construction

A group of Finnish companies have developed an 'ecosystem' for collecting data on the design and maintenance of buildings, with the aim of creating a global standard and speeding the automation of construction.

The seven companies, including the contractor YIT and tech giant Nokia, say that the ecosystem – known as KEKO – will enable the collection, analysis and automatic application of data in building maintenance and design.

The seven companies are: Kone, Nokia, YIT, Caverion, Halton, Netox and state-owned researcher VTT, which is coordinating the project.

KEKO is a two-year project and has been running since the end of 2019. One hundred new use cases for building data are currently being examined – these cases will then be used as the foundation for developing concepts for potential digital solutions. The viability and feasibility of the concepts will be validated in 2020 and 2021.

Mika Nieminen, Halton Group's strategy and business development director, said, "There is an unprecedented amount of building data as well as companies and organisations producing it in the world today. By making the data easily available in one platform for players of all sizes and points of view, we are opening whole new possibilities for creating human-centric indoor environments."

Bentley Systems virtually connects construction

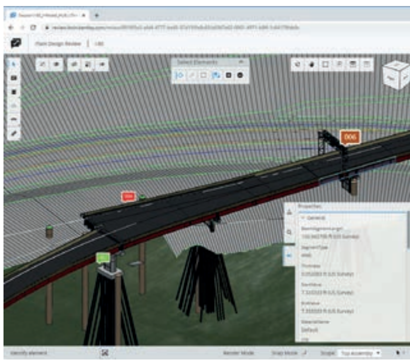
Bentley Systems has opened up its ProjectWise 365 cloud service, including waiving subscription fees through 30 September, 2020, to virtually connect infrastructure project participants forced to work from home due to the Covid-19 pandemic.

ProjectWise 365 is said by the company to help extend the reach and accessibility of BIM and infrastructure engineering data to aid collaboration and design review across the whole construction process.

As an 'instant-on' cloud service accessed through a web browser to simplify design review, transmittals, RFIs, information sharing, and issues resolution, ProjectWise 365 is suited for quick adoption while working from home, something which is currenly more important than ever.

"The enterprises using ProjectWise Design Integration for work sharing, have been telling us that they credit ProjectWise for sustaining their project productivity over the forced transition to work from home," said Dustin Parkman, VP, project delivery for Bentley.

"Now, by broadly and immediately opening up access to our new simplified ProjectWise 365 cloud service, we're extending ProjectWise advantages in collaboration and design review to infrastructure engineering project teams at every scale. By fully 'digitally' enabling every infrastructure professional, we hope to support their resilience in surmounting this crisis."



ProjectWise 365 is said to extend the reach and accessibility of BIM

Tough times ahead

The sharp decline in the price of oil will lead to many countries in the Middle East experiencing economic pain and shrinking construction activity. **Scott Hazelton** reports

The precipitous decline in petroleum prices and revenues will have a severe impact on oil and gas exporters. While the Gulf Cooperation Council members have adequate credit ratings to borrow money to narrow their financial gaps, others (such as Iran and Iraq) do not. The Covid-19 pandemic also will inflict damage on the travel and tourism sector; Jordan, Israel and Bahrain will be hit hard.

The result will be a downturn for at least the next several quarters, with sharp declines in investment, personal consumption and government spending. The region's dismal prospects may even undermine political stability.

Drop in oil prices

World oil supply will exceed demand in the first half of 2020 by approximately 1.8 billion barrels; 200 million barrels more than the upper end of estimated available crude oil storage capacity. Low oil prices will lead to reduced upstream spending and fewer new wells drilled. We expect the Brent crude oil price to drop from an average of US$64/barrel in 2019 to US$29/barrel this year before recovering to US$36/barrel in 2021 and US$51/barrel in 2022.

Two large forces darken the Saudi Arabian outlook: the impact of measures against Covid-19 and related cutbacks to domestic demand, and the fall of oil output in combination with lower prices. Either force would sharply curtail growth; their combined impact will throw the economy into recession in 2020 and 2021, with a contraction of real GDP (Gross Domestic Product) of 4.3% in 2020 and 2.1% for 2021.

Liquidity and credit conditions will substantially worsen in 2020, provoking support packages from the government and monetary authorities. Fixed investment spending will face a strong blow as public-sector finances deteriorate. Capital expenditures for oil production will be curtailed, and execution of existing projects will be delayed. Large deficits will make fiscal cuts unavoidable.

Meanwhile, the government will put on hold the US$19 billion four-year programme to stimulate private-sector activity, targeting key sectors including housing and manufacturing. We expect most of the related projects to face delay as the Saudi fiscal position worsens.

Iran's GDP likely contracted 7.7% in fiscal year 2019 (April 2019 – March 2020). We believe that after averaging close to 1.1 million bpd (barrels per day) in the first six months of 2019 (compared with 2.4 million barrels per day in the first half of 2018), Iranian oil exports have slumped to under 600,000 bpd in the second half of 2019 and will be squeezed further in 2020.

In addition, nonhydrocarbon activity is expected to contract 1.7% in FY 2019 and decline an average of 0.5% from FY 2019 to FY 2021. The abrupt decline in purchasing power amid surging inflation and shattered confidence in the economy will reduce fixed investment through 2020.

Heightened geopolitical uncertainty and strained access to dollars will further drag on fixed investment. There is potential for investors from Russia or mainland China to buttress economic activity, but economic pain will be severe through 2020 at least. The recession should bleed into FY 2020 (April 2020–March 2021), with GDP posting a decline of 3.7%, before flat growth of 0.2% in 2021.

The UAE will also be affected by the global recession, but it has the budgetary capacity to sustain low oil prices for a while. The UAE is buying time for its real estate market, allowing banks to increase the maximum share of real estate loans on their balance sheets. The real estate sector has been struggling for several years, however, and it is unlikely that these measures will prevent further price and rent declines.

The UAE cut various tariffs, including the municipal tax for hotels, water and electricity bills, and road tolls for the remainder of the year and eased bureaucratic regulation around multiple registration requirements. These measures will buy time for the hospitality and real estate sectors until demand returns to normal. Dubai is vulnerable to the effects of a prolonged economic downturn as it suffers from substantial oversupply in the real estate market, as well as reduced travel as Covid-19 impacts tourism.

World Expo under threat

Dubai is to host Expo 2020 in October, but the impact and duration of Covid-19 has increased the likelihood that the event will be postponed or significantly reduced in scope. Dubai estimates that Expo 2020 will increase GDP by 1.5%. The loss of this could reduce the influence Dubai has on policymaking within the UAE and increase the likelihood of further monetary assistance being required from Abu Dhabi.

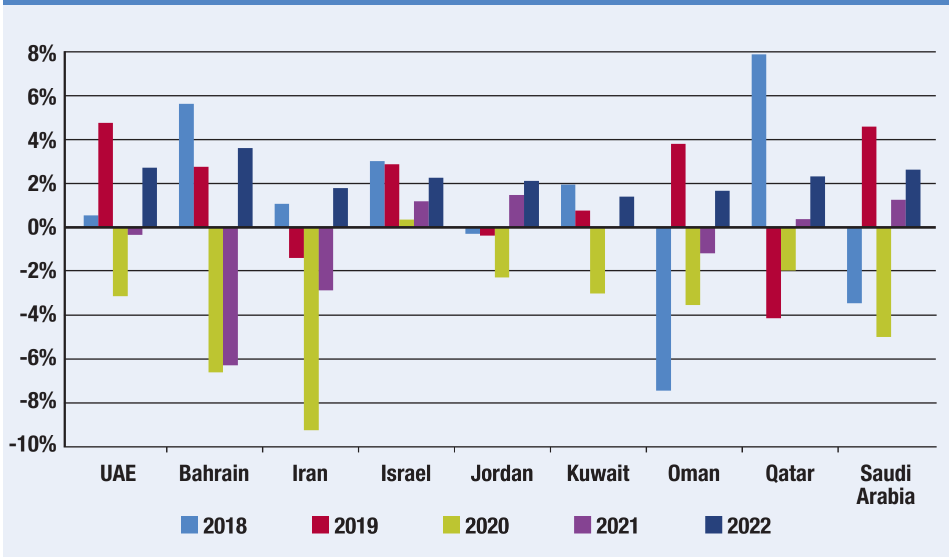
Qatar recorded its first annual GDP contraction (0.3%) since 1993 during 2019, and the construction sector recorded its first annual contraction since data started in 2010. To mitigate the disruption from the pandemic and lower oil prices, Qatar introduced a US$23 billion support package; equivalent to over 10% of GDP.

The package included guarantees for local banks to grant interest-free loans to private companies affected by the pandemic, among other provisions. The Qatari economy will shrink by 1.6% in 2020, marking its second consecutive year with a contraction.

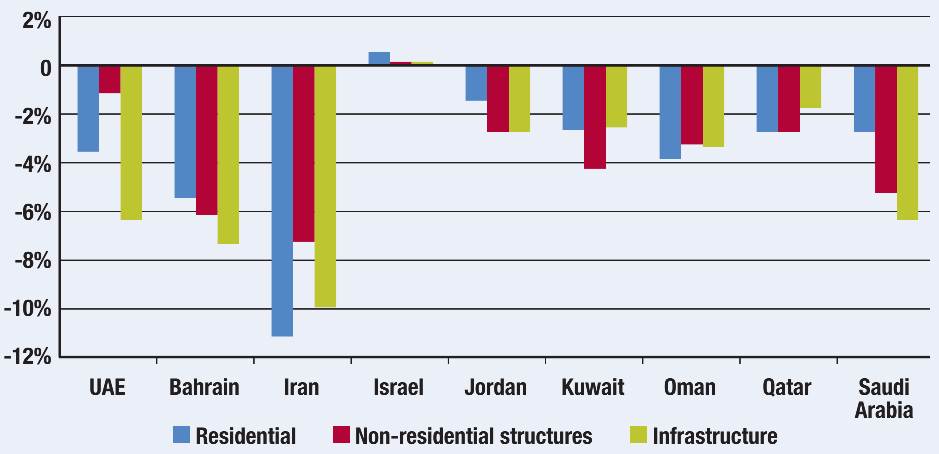
Qatar's fiscal revenues are likely to fall over 30% and public debt is likely to exceed 90% of GDP by end-2020. Qatar still aims to devote a big part of its budget to capital expenditure, but some of the important infrastructure projects related to the 2022 World Cup are complete, which will lead capital spending to drop in the coming months. Financing will help fuel the ambitious diversification targets the government has set.

The chart on the left-hand page indicates the

Construction market performance across the Middle East



Growth outlook (constant US$2010) by structure and country for 2019



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challenges of lower oil production and prices on petroleum exporting nations. Oil-poor Israel is the only country with construction growth in 2020, and that will be weak. The extended outlook for weak global oil demand will continue to depress prices in 2021, and many oil exporters will see further contraction.

The chart above indicates the risk of infrastructure to regional development. This is funded with oil revenue in most cases, and the poor outlook for the sector, combined with the additional costs of fighting Covid-19, has dire consequences for a huge sector that normally leads regional construction growth.

The region features some of the world's strongest population growth. Yet housing construction is often government subsidised, and so a victim of reduced funding. This is compounded by reduced consumer confidence in most economies.

The Middle Eastern construction market is notoriously volatile between dependence upon global energy markets and exposure to regional political turmoil. Both factors remain at work, but the collapse of energy demand clearly dominates the near term. Unfortunately, it is likely that it will take an extended period before oil demand recovers and existing oversupply is worked out of the system. We expect the Middle East construction market to struggle under pressure for 18 to 24 months, at least. iC

North Africa fights battles

Covid-19, dropping oil prices, plus poverty and political unrest threaten the region. **Jenny Lescohier** reports

No geographic region has been spared the health and economic crisis caused by the Covid-19 pandemic, but North Africa is particularly troubled as it faces additional challenges resulting from related and ongoing problems associated with the oil market.

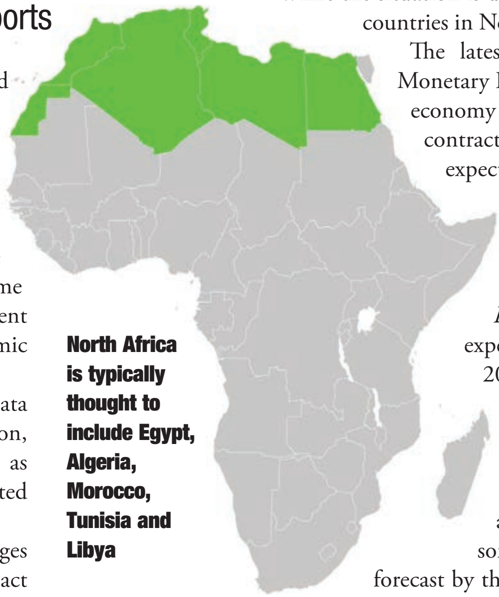
Construction output for the Middle East and North Africa (MENA) region struggled before Covid-19, due to heavy reliance on the oil market, political unrest in some countries and widespread poverty. As a result of the current crisis, analysts are predicting a more significant economic contraction than previously projected.

In mid-March, data and analytics company GlobalData forecast 2020 construction output growth at 1.4% for the region, but has since cut its projection to -0.8%. For perspective, as recently as the fourth quarter of 2019, the region was expected to see 4.6% growth.

"Oil and gas dependent countries will face funding challenges given the decline in oil prices, which will have a negative impact on investment in major public-funded development projects," explained Yasmine Ghozzi, economist at GlobalData.

"Although an historic agreement on production cuts was reached on 12 April between OPEC members and the group's major oil producing allies to cut production by 9.7 million barrels per day, oil prices are set to remain at low levels given the severe decline in global demand."

Ghozzi continued, "In North Africa, the [Covid-19] outbreak threatens to devastate Egypt's US$12.5 billion-a-year tourism industry, which accounts for 12% of GDP [Gross Domestic Product], and will likely have a severe impact on the commercial buildings works, as investment plans in the hospitality sector are expected to be halted, if not cancelled outright."



North Africa is typically thought to include Egypt, Algeria, Morocco, Tunisia and Libya

The great lockdown

While the situation is difficult all around, economists say some countries in North Africa are faring better than others.

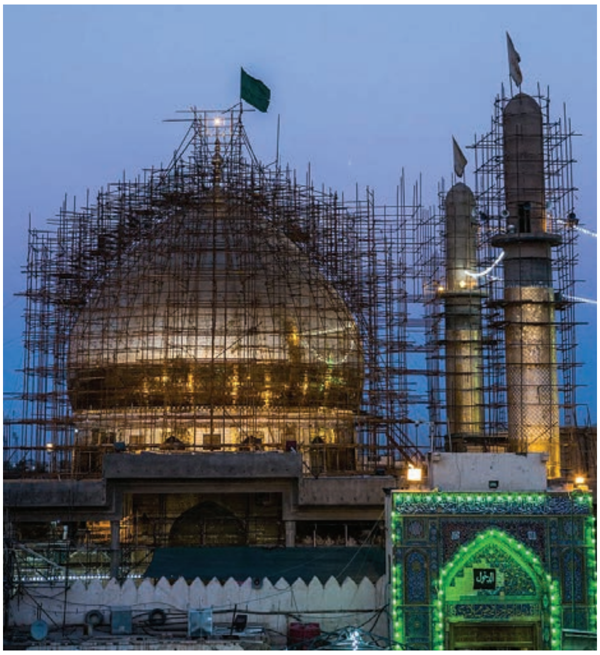
The latest predictions from the International Monetary Fund (IMF) indicated that almost every economy across the MENA region is forecast to contract this year. Egypt is the only country expected to post any growth, at 2%, which is much lower than the 5.6% expansion seen in 2019.

According to the World Economic Outlook, April 2020: *The Great Lockdown*, oil exporters are generally expected to fare worse than oil importers in 2020. While those selling oil are expected to suffer a 3.9% contraction in their economies, those which rely on imports are forecast to see a decline of 0.8%. Across the MENA region as a whole, the decline is set to be 3.3%, some 5.9 percentage points lower than forecast by the IMF in its previous World Economic Outlook in January.

The latest prediction for the MENA region is slightly worse than what's predicted for the global economy, which is expected to shrink by 3% this year, the IMF reported. These figures are based on the assumption the lockdown conditions that

Egypt's economy relies on tourism, which has been shut down due to the pandemic

Egypt is the shining star of North Africa economically



Without an effective vaccine, several areas in North Africa could become new hot spots for Covid-19

on many fronts

Algeria faces the steepest decline in the region

North African construction output growth for 2020 is projected to contract -0.8%

governments have imposed will peak in the second quarter of this year and start to be reversed in the second half.

Gita Gopinath, economic counsellor and director of the IMF's Research Department, noted in the report that if lockdown conditions need to be significantly extended, the economic outlook will naturally darken accordingly. As it is, the so-called 'Great Lockdown' will represent, "the worst recession since the Great Depression, and far worse than the Global Financial Crisis."

Gopinath also wrote that the cumulative loss to global GDP over 2020 and 2021 from the coronavirus crisis could be as much as US$9 trillion, more than the economies of Japan and Germany combined.

Egypt on hold

Under positive economic conditions, Egypt is the shining star in North Africa, relying heavily on its bustling tourism industry, but that has been severely hobbled by the ongoing pandemic.

Egyptian President Abdel Fattah al-Sisi recently postponed the moving of civil servants to a planned new administrative capital city to 2021, as well as the completion date of other large construction projects, due to concerns over Covid-19.

This is the latest setback in Egypt's plan to create a new administrative capital. The project had already been subject to delays, cost increases and question marks over its suitability.

The government's plan to build a new capital approximately 700km² in size 45km to the east of Cairo has an estimated cost of US$58 billion.

> "The Covid-19 outbreak threatens to devastate Egypt's US$12.5 billion-a-year tourism industry"

The first group of civil servants was to be transferred to the government district in the still under-construction new administrative capital this June. However, according to a statement from the government the decision to delay was made, "due to the circumstances and repercussions of the process of combating the spread of the new coronavirus either at the national level or globally."

The government also postponed the launch of other large building projects, including the Grand Egyptian Museum and the National Museum of Egyptian Civilization to next year. The Grand Egyptian Museum was due to open during the last quarter of 2020, and the official launch of the National Museum of Egyptian Civilization, which was opened partially in 2017, was planned for 2020.

Trouble in Maghreb

North Africa, specifically the Maghreb region which is made up of Morocco, Tunisia and Algeria, is bracing for an unprecedented economic contraction, even if the coronavirus crisis were to be >

Egypt aims to revitalise tourism

Construction of US$254 million cultural hub slated

Despite the current pandemic crisis causing widespread economic turmoil in North Africa and elsewhere, the government of Egypt reportedly has plans to construct a tourist and cultural hub at a cost of over US$254 million in Magra El-Oyoun Fence, a historical site constructed in the 16th century during the Mamluk era.

Egypt plans a tourism hub on an ancient archaeological site

The project, which reports suggested is on schedule, is planned to be executed in two phases, according to Construction Review Online. The first phase will be completed in two years while the second will be completed within five years. The project is said to include the construction of two theaters, one of which will be open air, as well as the development of cinemas, restaurants, markets, a handicraft center, art galleries, multipurpose halls and studios with accommodations.

Reports said the project will be implemented at the site of Egypt's decades-old tannery complex which was situated in the Magra El-Oyoun Fence. The government recently announced it had completed the relocation of all tannery workshops and factories in this area to the eastern Cairo region, giving way for the restoration of the archaeological site and its surroundings.

The project aims to develop the region, conducting cultural activities and giving space to showrooms and industries related to the archaeological area and museums.

contained soon, according to Arezki Daoud with *The North Africa Journal*.

The economic growth outlook for Morocco was already compromised before the appearance of Covid-19. The country is experiencing the second year of a severe drought, which has already halved the production of wheat in 2019 to about 5.7 million tons, down 50% from 2018. This trend is expected to continue this season, heavily impacting the entire economy, Daoud stated.

"Then came the coronavirus, which will likely have more adverse effects on the broad economy, even if the country's energy bill will naturally be reduced due to the drop in oil prices," Daoud reported. "Morocco's High Commission for Planning (HCP), which is one of the main sources of official data, has already warned that its forecast will be revised downward… likely shaving their January growth forecast of 3.5% to something like 2%."

> "Oil and gas dependent countries will face funding challenges, creating a negative impact on major public-funded development projects"

Daoud added, "Even assuming that this rate is too optimistic, a 2% GDP growth will mean the worst economic performance for Morocco in over 20 years."

A large problem for Morocco is that its traditional and strongest trading partners are in turmoil, Daoud stated. France is a major consumer of Moroccan goods and a major source of tourists to the kingdom, but with tourists staying home, the travel and lodging industries in Morocco are bracing for several months of crisis.

In Tunisia, many economists are speaking of a double-digit GDP contraction that could reach -15%, Daoud reported, noting that nearly one quarter of a million workers in the tourism sector have already been laid off.

Just as in the case of Morocco, industrial output in Tunisia is set to further contract due to a decrease in global demand and the sectors that are expected to be most affected are those that are labour-intensive. The service industry will not be able to compensate the losses recorded elsewhere, and that could have an impact on the more than half a million workers employed in that space, Daoud reported.

Algeria will likely show the most decline on the economic front in the Maghreb region. Having benefited from peak oil prices in the 2000s, the country is facing a steeper fall from far above, with the potential for more political turmoil over the next two years.

Is tourism dead?

Beyond the difficulties involved in implementing large-scale social-control measures, even for regimes with a high coercive capacity and an authoritarian nature, the economic and social cost of the drastic restrictions being imposed by Arab governments can be overwhelming and, ultimately, unbearable. This is according to Haizam Amirah-Fernandez in the paper, *Coronavirus In Arab Countries: Passing Storm, Opportunity For Change Or Regional Catastrophe?*

"In the most extreme situations, millions of refugees and internally displaced persons living in camps or substandard housing without minimum conditions of hygiene and health, the human cost could be massive if the pandemic reaches them," Amirah-Fernandez wrote. "In the absence of an effective vaccine against Covid-19, several areas in the Middle East and North Africa could become new hot spots for the virus that causes it, leading, in the worst case scenario, to the isolation of the region from the rest of the world for a long period of time."

Pre-pandemic perspective

Real estate projects dominated the market before Covid-19

Even though all forecasts and reports made prior to the onset of the Covid-19 pandemic must now be rewritten, it's helpful to get some perspective on where things stood just a couple of months ago. In the case of North Africa, it was all about the construction of real estate.

According to The Africa Construction Trends Report (2019), real estate projects constituted the majority of construction in North Africa. This accounted for 32.2% of the number of projects and 24.2% in terms of US dollar value.

The Transport sector accounted for 25.3% of the region's total number of projects and 27.3% in US dollar value terms. The US$10.2 billion Algerian Hauts-Plateaux Motorway is one such transport project which aims to unlock and link the cities of Algeria's highland areas that run parallel to the country's East-West highway. These cities include Saida, Batna, Khenchela, and Tebessa, the report said.

The Energy & Power sector accounted for only 17.2% of total projects in the North Africa region, but included the largest share of projects by value at 28%. Egypt's FourWinds Coal-Fired Power Plant is one such project.

Private domestic companies accounted for the largest share of construction activities within the region, producing 39.1% of projects. Egyptian construction companies were the most visible firms, building 24 of the 34 private, domestically constructed projects in North Africa.

Chinese construction firms accounted for 12.6% of construction in the region, representing a slight decrease from 12.8% last year.

North Africa's top ten largest projects accounted for 54% of the total US dollar value of projects in all of the region. The top five projects were all US$10 billion or more in value.

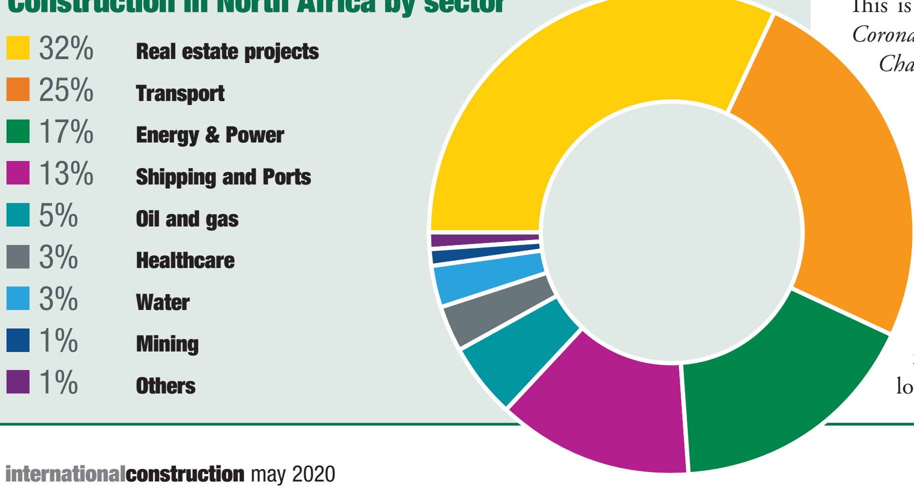
The top ten projects were concentrated in the region's two largest economies, Egypt and Algeria, with eight and two projects respectively.

Three coal-fired power plants in Egypt, with a combined value of US$25.5 billion, were indicative of the government's efforts to increase power supply and subsequent industrial economic activity in the country, according to the report.

North Africa accounted for 19.2% of projects on the continent and 29.1% in terms of US dollar value. The number of projects in North Africa decreased by 25.3% from the previous year, while the value of projects decreased by 2.4%.

Within the region, Egypt had the most projects with 49, followed by Algeria with 17 projects, and then Morocco with 16 projects.

Construction in North Africa by sector



The first blow to these regional economies was received by the tourism industry, with massive cancellations of trips and tourist services.

"As tourism is a labour-intensive sector, the almost total paralysis of its economic activity due to the global coronavirus crisis is a severe blow," Amirah-Fernandez wrote. "This comes at a time when projections earlier this year predicted a significant growth in tourism revenues throughout the region during 2020."

Amirah-Fernandez continued, "As if all this were not enough, the Covid-19 crisis has been compounded by the oil price war initiated by Saudi Arabia on 7 March, which has caused the price of crude oil to plummet to levels almost 20 years ago.

"The fall in demand from China, the main importer of Saudi oil, once it was hit by the coronavirus, led Riyadh to seek a deal to cut production with other oil-producing countries. Moscow's refusal to follow suit led Saudi Arabia to increase its production and offer discounts to its buyers in order to gain market share. This, in turn, caused Russia to increase its production. The oversupply, coinciding with the economic slowdown caused by the pandemic, has led to an abrupt collapse in the price of oil, something that was not contemplated in any of the major forecasts at the beginning of the year." **iC**

The abrupt collapse in the price of oil is having a negative impact on the construction industry

A 2% GDP growth this year will reflect the worst economic performance for Morocco in over 20 years

World's top 50 revealed

Construction equipment sales among the world's biggest OEMs increased to record-breaking levels in 2019, but the industry waits to see the full impact of Covid-19

Construction equipment sales have seen several years of good growth following on from 2013-2016 when the sales for the world's top 50 OEMs (Original Equipment Manufacturers) in the Yellow Table declined. Sales for the year 2019 continued this mini-trend, with more growth. However, with the world currently in the grip of the Covid-19 pandemic, next year's table is almost certain to see a decline in sales.

The headline figure from this year's table is that the combined sales of the 50 companies on the list is US$202.7 billion. This is a record-high, and the first time in the history of the Yellow Table that sales have topped the US$200 billion mark.

This figure of just under US$203 billion is a 10% increase from the last table, when combined equipment sales for the top 50 OEMs in 2018 was US$184 billion.

Even though this figure for 2019 is a record-high, it is worth highlighting that the percentage rate of growth is slowing. For example, the Yellow Table in 2017 saw growth of 25.5% compared to 2016; the Yellow Table in 2018 saw growth of 13.5% and for this year growth has slowed again to 10%.

The growth rate has been slowing and would have likely slowed again next year, if not contracted; and that was in a 'normal' world. With Covid-19, OEMs having to shut down or reduce production at factories and governments advising citizens to self-isolate it is a not a question of if sales reduce next year; rather it is by how much. Both Caterpillar and Volvo Construction Equipment (Volvo CE) have released results from their first quarters of 2020: Cat saw sales down 27%, Volvo CE saw a drop of 17%.

Returning to this year's list, and Caterpillar retain their position at the top of the table, with sales of US$32.8 billion. A disclaimer: last year, in error, the mining equipment figures for Cat were not included and so their overall figure was underreported.

Number two on the list is Komatsu, with the company enjoying solid, if unspectacular growth. However, it is behind this historical top two of the Yellow Table where matters get really interesting.

Last year John Deere jumped from number nine to number three, a quite spectacular rise. Although Deere enjoyed good sales, the main reason for this was the acquisition of the highly successful Wirtgen Group. On this year's list John Deere retains its position at number three – but only just.

Deere is only marginally ahead of Chinese company XCMG, which has risen from number six last year to number four with sales of US$11.1 billion. XCMG are followed on the list by another Chinese company, Sany, which also enjoys a rise in the rankings; this time from number seven last year to number five.

A number of China-based OEMs have seen a remarkable rise up the table in the last few years. They have been helped by the country's Belt and Road Initiative but also by many of the companies recognising that to be successful in markets such as Europe and North America the service and aftercare they provide needs to be commensurate with their Western counterparts.

Volvo CE has dropped a place from number five to number six – the company is heavily investing in compact electric equipment which could prove to be a shrewd move in the future. The second Japanese company in the top ten is Hitachi at number seven, with the firm dropping three places, followed by Liebherr which holds steady at number eight. The top ten is rounded off by Doosan at number nine before a new entry into the top ten by Chinese firm Zoomlion, which saw sales increase impressively from US$4.3 billion to US$6.2 billion.

>

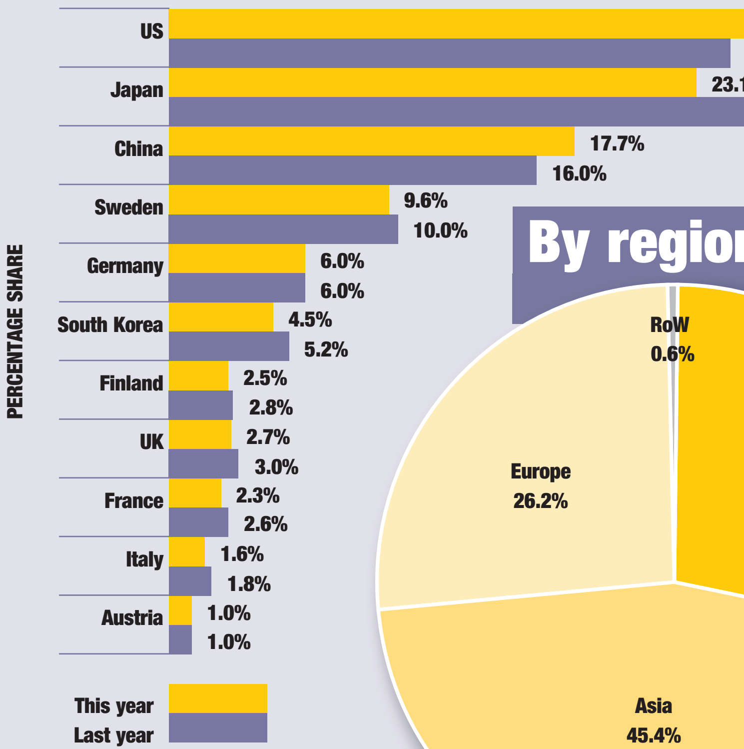
By country

Share of Yellow Table revenues

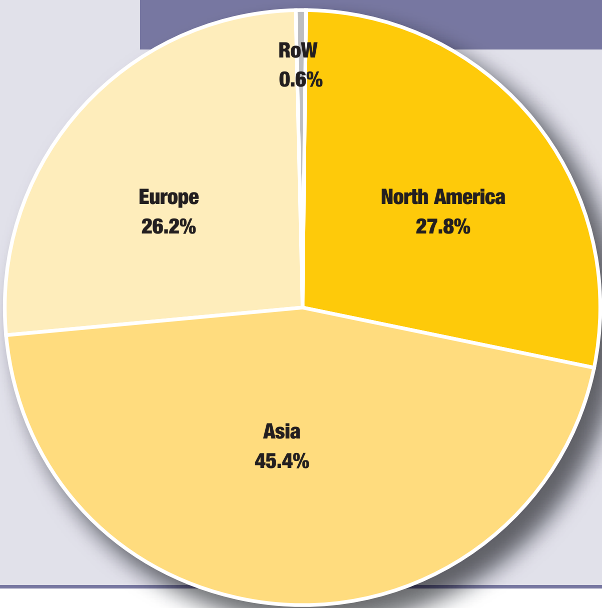
The information below indicates that revenues have decreased – slightly – in Asia from last year's 46.7% of the total amount generated to 45.4%. This is despite a strong rise in the table from some Chinese firms, in particular XCMG, Sany and Zoomlion who all saw their rankings increase.

North America sees a slight increase from 25% to 27.8%, helped by the strong showing of Caterpillar, the world's largest OEM by sales. Europe saw a marginal decline from last year's percentage of 27.8% to 26.2%. The Continent has two companies in the top ten: Volvo CE at six and Liebherr at eight.

Please note that these figures represent the revenues of the companies listed on the Yellow Table, and are therefore not representative of the revenues generated within the regions themselves or individual countries as a whole.



By region



2020 Yellow Table

2020	2019/ 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	32,882	16.2%	✓	✓	✓		✓	
2	2 →	Komatsu	JP	23,298	11.5%	✓	✓	✓		✓	
3	3 →	John Deere	US	11,220	5.5%	✓	✓	✓			
4	6 ↑2	XCMG**	CN	11,162	5.5%	✓	✓	✓	✓	✓	✓
5	7 ↑2	Sany**	CN	10,956	5.4%	✓	✓				✓
6	5 ↓1	Volvo Construction Equipment	SE	9,381	4.6%		✓	✓			
7	4 ↓3	Hitachi Construction Machinery	JP	8,989	4.4%		✓	✓			✓
8	8 →	Liebherr	DE	8,565	4.2%					✓	✓
9	9 →	Doosan Infracore	KR	6,689	3.3%		✓	✓		✓	
10	13 ↑3	Zoomlion**	CN	6,270	3.1%		✓				✓
11	12 ↑1	Sandvik Mining and Rock Technology	SE	5,934	2.9%						
12	10 ↓2	JCB**	UK	5,500	2.7%	✓	✓	✓		✓	
13	11 ↓2	Terex	US	4,353	2.1%	✓	✓	✓	✓	✓	✓
14	14 →	Epiroc	SE	4,181	2.1%						
15	16 ↑1	Oshkosh Access Equipment (JLG)	US	4,079	2.0%				✓	✓	
16	15 ↓1	Metso	FIN	3,635	1.8%						
17	17 →	Kobelco Construction Machinery	JP	3,371	1.7%		✓				✓
18	22 ↑4	Kubota	JP	2,866	1.4%		✓				
19	21 ↑2	Liugong**	CN	2,820	1.4%	✓	✓	✓			✓
20	18 ↓2	CNH Industrial	IT	2,768	1.4%	✓	✓	✓		✓	
21	19 ↓2	Sumitomo Heavy Industries	JP	2,671	1.3%		✓				✓
22	20 ↓2	Hyundai Construction Equipment	KR	2,450	1.2%	✓	✓	✓			
23	23 →	Manitou	FR	2,346	1.2%				✓	✓	
24	28 ↑4	Wacker Neuson	DE	2,131	1.1%		✓	✓		✓	
25	25 →	Palfinger	AT	1,966	1.0%				✓		✓
26	29 ↑3	Tadano	JP	1,959	1.0%				✓		✓
27	27 →	Manitowoc	US	1,834	0.9%						✓
28	24 ↓4	Lonking**	CN	1,812	0.9%		✓	✓			
29	26 ↓3	Fayat Group	FR	1,726	0.9%						
30	30 →	Hiab	FIN	1,513	0.7%						✓
31	32 ↑1	Astec Industries	US	1,170	0.6%						
32	33 ↑1	Ammann**	CH	1,073	0.5%						
33	36 ↑3	Takeuchi	JP	1,020	0.5%		✓	✓			
34	31 ↓3	Shantui	CN	927	0.5%		✓				
35	34 ↓1	Sunward	CN	905	0.4%		✓	✓			
36	37 ↑1	Skyjack**	CA	834	0.4%				✓	✓	
37	39 ↑2	Bauer**	DE	796	0.4%						
38	35 ↓3	Kato Works**	JP	792	0.4%		✓	✓			✓
39	38 ↓1	Furukawa**	JP	714	0.4%						✓
40	40 →	Haulotte Group	FR	685	0.3%				✓	✓	
41	41 →	Foton Lovol**	CN	678	0.3%						
42	44 ↑2	Sennebogen**	DE	608	0.3%						✓
43	42 ↓1	Bell Equipment**	ZA	596	0.3%						
44	43 ↓1	Aichi	JP	573	0.3%				✓		
45	45 →	Yanmar**	JP	496	0.2%		✓				
46	47 ↑1	Merlo**	IT	397	0.2%				✓	✓	
47	50 ↑3	BEML*	IN	316	0.2%						
48	46 ↓2	XGMA	CN	288	0.1%		✓				
49	49 →	Boart Longyear	AUS	285	0.1%						
50	NEW	Hidromek**	TR	247	0.1%	✓					

* - fiscal year, ended March 31st 2018 ** - estimate

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

Note-worthy

One of the most note-worthy aspects of the Yellow Table has to be China. The country now has two companies in the top five of the list and three in the top ten; no country has a higher representation in the top ten.

Construction equipment sales in China increased in 2019 – although not at the same break-neck speed of previous years – and major OEMs from China have further intensified efforts to increase sales overseas. China-based companies on the list provided sales figures of just under US$36 billion, which equates to 17.7% of the total. Last year Chinese companies contributed to 16% of the total.

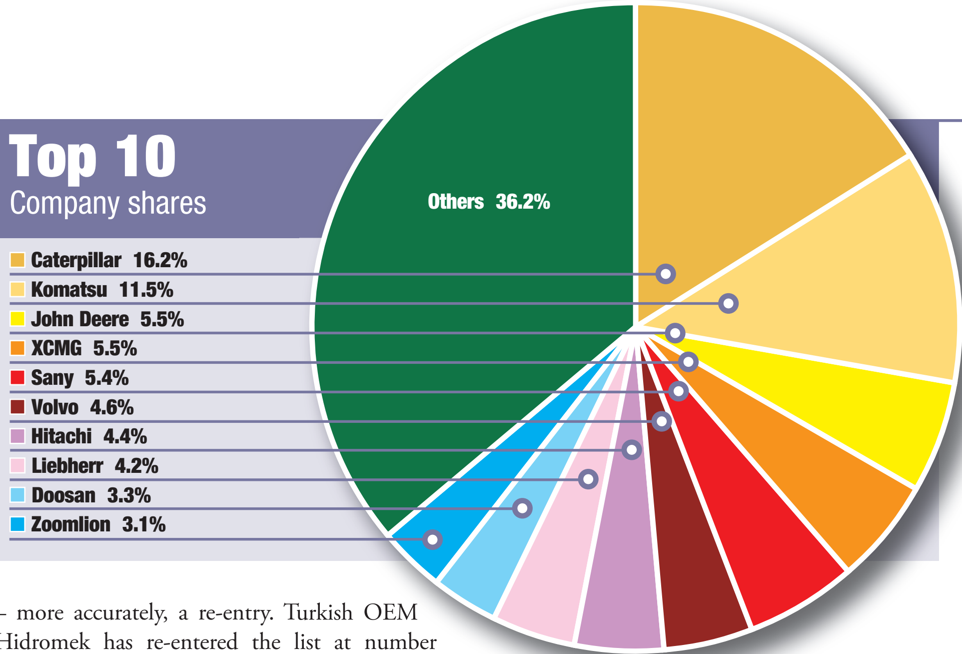
It is worth noting, of course, that China is still behind the two traditional heavyweights when it comes to construction equipment sales: the US and Japan. It will be interesting to see how this develops over the next few years and decades.

Looking at individual companies, and the biggest movement on the table was four places. Japan-based Kubota jumped from number 22 on last year's list to number 18, and German-based compact equipment specialist Wacker Neuson from 28 to 24. The biggest faller was China-based Lonking, manufacturers of roadbuilding and earthmoving equipment. The company fell from 24 to 28, effectively swapping places with Wacker.

There was only one new entry onto the Table – more accurately, a re-entry. Turkish OEM Hidromek has re-entered the list at number 50 after dropping out last year following the economic turmoil that the country experienced and the plummeting value of the Turkish lira. The country has still not fully recovered economically, but the company has re-entered the Yellow Table.

Top 10

Company shares



Future outlook

Last year, when looking to the future, this section of analysis mentioned political uncertainties like Brexit and Donald Trump. How – relatively – trivial they now seem in the wake of Covid-19.

Even before Covid-19 it had been predicted that the peak of construction equipment sales had been reached and that 2020 would see a 'softening' of sales. The question now is, by how much are sales going to plummet? Covid-19 is a rapidly developing situation, and countries are at different stages in their battle with the pandemic.

In the last two quarters of 2020 it is hoped that life can return to some degree of normality. Whether there will be 'pent up' demand for construction equipment is up for debate and it could be that sales remain static even when life and businesses begin again. Much depends on government investment, as private financing is likely to be flat.

While the big infrastructure projects already approved or underway are unlikely to be cancelled, will governments around the world announce bold new infrastructure spending plans to boost their economies? The answer to that could well determine how large the decline is in the sales figures of next year's Yellow Table. iC

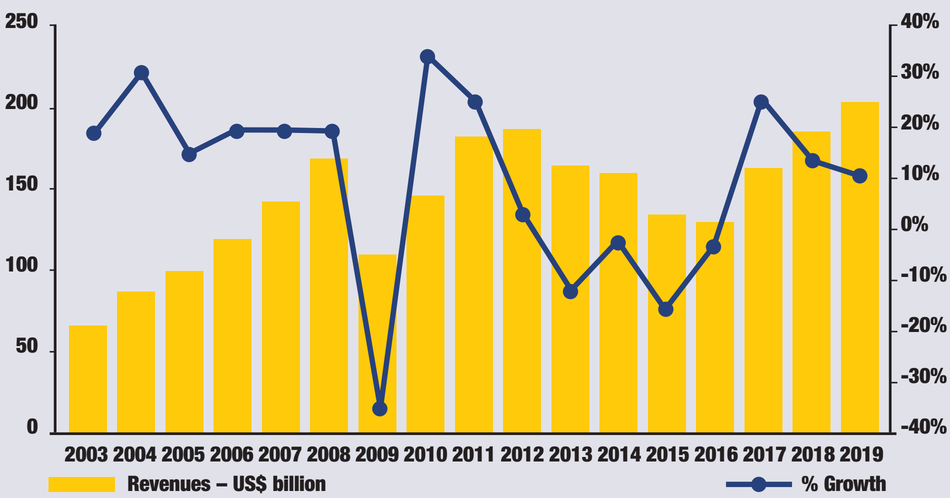
Steady growth

Rise in sales continues, but sharp fall expected next year

The peak of the current cycle of construction equipment sales was believed to have been in 2019 – this was before Covid-19. Sales of construction equipment among the world's top 50 OEMs have seen a remarkable rise over the last few years; partly the reason that 2019 was seen as the peak.

In 2016 sales were US$130 billion – 2019 saw sales of US$203 billion. Even for a famously cyclical industry, to see sales increase by over US$70 billion in the space of three years is staggering. This rise is due to a number of factors: large-scale government infrastructure projects, the continued growth of the Chinese market and Chinese OEMs, equipment coming to the end of its natural life and needing replacing, the development of emerging markets and OEMs providing good equipment, service and aftercare.

As has already been mentioned, next year will see a sharp decline in construction equipment sales. The more interesting question is: what happens the year after that? And, if the market rebounds, by how much will it come back?



Methodology

Positions in the Yellow Table are based on sales in the 2019 calendar year in US Dollars. Currencies have been converted to Dollars based on the average exchange rate over the course of 2019 to try and ensure fairness. 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 International Construction has made an estimate of revenues based on historical data and industry trends. Where this has occurred, it has been clearly marked with two asterixs'.

While every effort has been taken to ensure information in this report is accurate, International Construction 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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Construction and Covid-19

We look at how different countries, regions and companies around the world have been impacted by the global pandemic

The world has been forever altered by the effects of the Covid-19 pandemic. Words and phrases such as self-isolation and personal protective equipment (PPE) have become part of everyday use.

Different parts of the world have been affected in different ways, and even though countries have adopted a different approach to construction, it has generally been viewed as 'essential' and some degree of work has continued.

The country that has been the worst affected in the world by the pandemic in terms of number of cases and deaths – at the time of writing – is the US.

According to figures posted during the first week of May, the US reported 1.2 million confirmed cases of Covid-19, some 69,000 deaths and 153,000 recoveries. Pockets of the country are seeing a 'flattening of the curve,' while others are showing an increase of cases, although it is worth noting this coincides with an increase in diagnostic testing.

In an interview with *International Construction* editor Andy Brown, Scott Hazelton from IHS Markit, commented that the current downturn in the US is not expected to match the Great Recession in 2008-2009 but that the country will suffer a steep decline. Projections from the company show total construction in the US declining by -15.7% in 2020 followed by -2.2% in 2021, finally rebounding in 2022 by 8.7%, according to IHS Markit.

Construction in the US was deemed 'essential' business by the federal government early in the crisis, however, that designation has been subject to different interpretations by states and municipalities. Despite areas of ongoing activity, the majority of construction firms have seen a reduction in work.

According to an April survey conducted by Associated General Contractors of America (AGC), 67% of respondents said they had encountered project delays or disruptions. Moreover, 49% said suppliers had notified them or their subcontractors that deliveries would be late or cancelled.

Equipment rental is an indicator for construction activity, and the American Rental Association (ARA) forecasted a 16.6% decline in industry revenue for 2020, amounting to a reduction of some US$9.3 billion.

“Construction in the US was deemed 'essential' business by the federal government early in the crisis, however, that designation has been subject to different interpretations”

Listen to an exclusive interview where **Ken Simonson**, chief economist for Associated General Contractors of America (AGC), tells *Jenny Lescohier* of International Construction about the AGC survey results and more.

To listen to the full interview go to:
www.khl.com/home/podcasts

Komatsu has been providing regular updates on the production status of its factories worldwide

Canada and Mexico

For its part, Canada had reported approximately 60,000 cases, 4,000 deaths and 25,000 recoveries at this writing. Mexico claimed only 23,500 cases with 2,200 deaths and 13,500 recoveries, however, the economic toll has been more dire there. Canadian rental revenue is projected to drop 11.3% in 2020.

Despite increasing cases of Covid-19, Canada was loosening its social distancing policies in early May, allowing some construction projects to resume or begin.

In the province of Ontario, for example, those include shipping and logistics; broadband, telecommunications, and digital infrastructure; any other projects that supports the improved delivery of goods and services; municipal projects; colleges and universities; child care centres; schools; and site preparation, excavation, and servicing for institutional, commercial, industrial and residential development.

According to a poll conducted by Forum Research and reported in the *Financial Post*, around half of Canadians have had their working life disrupted in some way because of the pandemic, either because they lost their job temporarily or permanently.

Meanwhile, the Mexican Construction Chamber of Commerce (CMIC) reports about a fifth its 12,000 members are at risk of closing permanently due to the halting of construction and building work. They are mainly small and medium-sized companies located in the states of Nuevo León, Quintana Roo, Baja California Sur, Yucatan and Mexico City.

Between 13 March and 6 April, almost 19,500 construction workers lost their jobs, and CMIC President Enríque Leal said this figure was expected to be 25 times larger by the end of April. According to Leal, 80% of the businesses in the sector are very small, with between two and ten employees, and will not have cash reserves to face the crisis.

The impact of Covid-19 has been felt around the world in all aspects of life, with construction no exception

South American focus

Cristian Peters, editor of Construction Latin America, shares insight

Until 26 February, when the first case of Covid-19 was registered in Latin America (in Brazil), the region watched from afar, only as an interested spectator, the news of cases of deaths and contagions in Asia and Europe.

At the beginning, the reaction was rather slow, however, the first Latin American death (occurred on 7 March, in Argentina), sent a warning. The fact is that no country was prepared for what was coming, and within a few days some of the governments faced the collapse of the health systems, without intensive care units and artificial respirators available.

The two countries with the most deaths in the region are, at the time of writing, Brazil with 5,628 deaths, followed by Mexico, with 1,732 deaths.

Latin American figures are still very far from those observed in the US, Italy, Spain, France and the United Kingdom.

The big difference is that the regional health situation is more complex than in the mentioned countries, given the lower resources on the public health systems. According to the World Health Organization, health spending in Latin America in 2017 was US$1,076 per capita; three times less than the countries of the European Union, which on average spent US$3,364 per head.

Downward correction

It's still too early to risk an analysis of the economic effects of the Covid-19, especially with the changing situation. What is true is that there will be a tremendous impact, especially considering that the region has probably not seen the worst of the pandemic: many of the countries project their contagion peaks in May.

Goldman Sachs expects the Latin American economy to shrink 1.2% this year, compared to its previous forecast of 1.1% growth. The largest economies in the region, Brazil and Mexico, would witness declines of 0.9% and 1.6%, respectively.

The Getulio Vargas Foundation foresees a bleaker scenario for Brazil, and in March said the country's economy could contract 4.4% this year.

Fitch Ratings said that the region (excluding Venezuela) will contract 2.6% this year while S&P Global forecasts a 1.3% contraction in 2020 for the region, and a 2.7% recovery in 2021. The full impact on construction has not been felt yet, but as in other countries around the world, it looks likely that a lot of construction activity will be deemed 'essential'.

JCB has resumed operations at its factory in Brazil

Europe

The countries in Europe have experienced Covid-19 in different ways to a large extent; the UK and Italy have been particularly badly affected while other countries have seen lower rates of infections and deaths. There is no 'standard' across Europe, with various countries having different lockdown, and thus factory production, policies.

However, while there may be no standard, the latest survey by CECE (Committee for European Construction Equipment) paints a bleak picture of the region's construction equipment market, with 61% of OEMs reporting significant reductions in production and a further 15% at zero production.

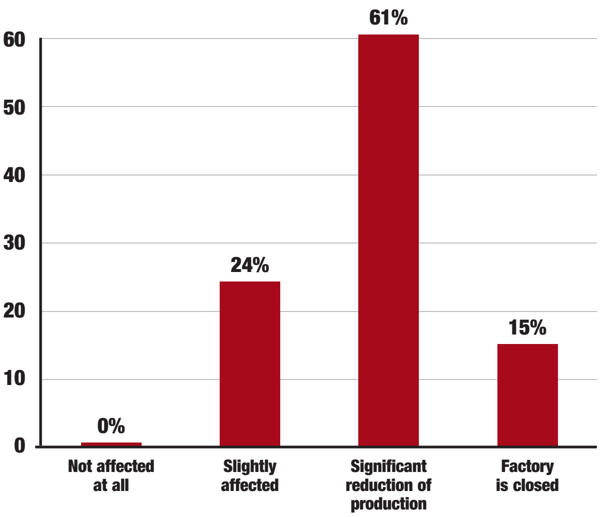
The survey – conducted between 23 and 27 April – shows that OEMs are facing a customer base severely impacted by the crisis, with OEMs reporting only 5% of contractors working fully, and just 20% of dealers and 11% of rental companies operating at full capacity. The proportion of customers not working at all remains low – less than 5% in the case of both contractors and dealers – but it was 15% of rental companies.

CECE said in a statement, "In all categories of the CECE flash survey on Covid-19, there is an evident deterioration of the situation compared to last month's and the current focus on market demands is a powerful warning sign that the worst is yet to come for the industry."

In terms of sales expectations for the year, 60% of OEM respondents expect a decrease of between 10% and 30%, with a further 25% forecasting a fall of more than 30%. Some 12% are expecting falls of up to 10%.

Manufacturers also reported on the levels of employment in their businesses, with almost half reporting that less than 50% of their normal workforces were in place. Just short of a third said that 70-100% of their workers were active, and 22% reported between 50% and 70% of employees working.

CECE SURVEY: **IMPACT ON PRODUCTION LEVELS**



Riccardo Viaggi, secretary general, CECE

Construction Europe's own survey, the CE Barometer for the months of February and March make for predictable reading. In the first two months of the year, sentiment was clearly influenced by the Covid-19 outbreak in China, with its impact on supply chains and the potential for a broader unsettling of the economy.

By March these concerns had moved much closer to home, and by the time readers in Europe were completing the CE Barometer survey – between 9 and 23 March – the impact was becoming clear.

That means the results for March paint a downbeat picture, with sentiment on the various measures all lower than they had been for years: since 2014 for current conditions; since 2011 on prospects for a year ahead; and since early 2010 for conditions compared with a year ago.

>

"In terms of sales expectations for the year, 60% of OEM respondents expect a decrease of between 10% and 30%, with a further 25% forecasting a fall of more than 30%"

Riccardo Viaggi, secretary general of the Committee for European Construction Equipment (CECE), talks to Construction Europe's Mike Hayes about the impact the coronavirus has had on construction equipment manufacturers throughout the continent.

To listen to the full interview go to: www.khl.com/home/podcasts

Light at the end of the tunnel

Chris Sleight, Off-Highway Research, looks ahead

With the world in the midst of a global pandemic good news is hard to come by. Chris Sleight, managing director of Off-Highway Research, makes the point though that construction is better placed for recovery than a host of other industries.

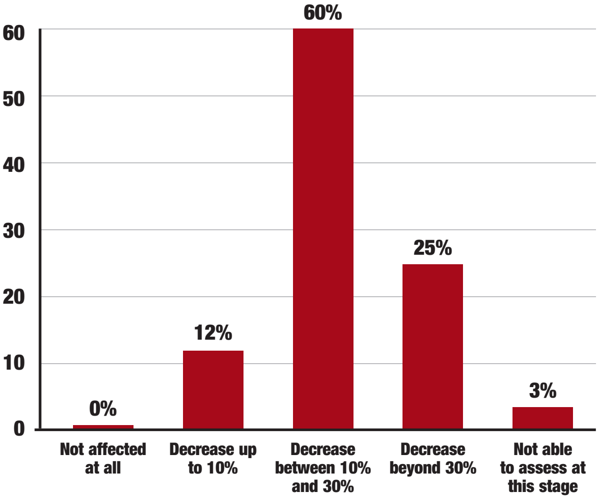
In a podcast interview with International Construction editor Andy Brown, Sleight commented that it is extremely rare for large-scale construction projects to be abandoned once work on them has started. He said, "We would expect construction to bounce back in terms of activity levels, albeit there may be different ways of doing things if there is still a need for social distancing and personal protective equipment. But construction will come back and it is certainly not going to see the kind of impact that travel and tourism, entertainment, hospitality and retail are seeing, that are really suffering."

He added that, "For construction, and construction equipment, we would expect it to be a short, sharp shock, what you would call a 'V shaped' recession; quickly down and quickly bouncing back up. I think it is natural that people look back to 2008-2009 and what the experience was them, but we believe that it will be very different.

"The downturn for our industry in 2008-2009 was 12-15 months, depending on where in the world you were. We really don't expect the period of reduced output to be that long, it is more likely to be one or two quarters and then some level of normality will return, and there may even be an uptick after that."

To listen to the full interview go to: www.khl.com/home/podcasts

CECE SURVEY: **EQUIPMENT SALES EXPECTATIONS IN 2020**



Production in some Asian countries is back up to speed

That all wraps up into an 'overall climate' balance of -16.9%, the worse since July 2009, which is saying something.

Glimmer of hope

Some countries in the world, such as South Korea and Australia have been relatively unaffected by Covid-19 – possibly due to geographical reasons or by early government intervention. Other countries look like they are now on a downward curve. Key for construction is production resuming at factories.

Major OEM Komatsu has been offering regular updates of its manufacturing facilities around the world. In the most recent update the company announced that its UK factory will now be closed until 31 May, as opposed to opening on 17 April as previously planned. However, it also announced that production has resumed at the company's factories in Germany (on 14 April) and Russia (13 April). Komatsu's factories in China and the Middle East and Africa have been operational for some time.

> "For construction, and construction equipment, we would expect it to be a short, sharp shock, what you would call a 'V shaped' recession; quickly down and quickly bouncing back up"

The largest economy in South America is Brazil and OEM JCB recently revealed that production at the company's plant in Sorocaba, is starting to return to normal following three weeks of suspended operations, according to José Luis Gonçalves, JCB president for Latin America.

In addition to the temporary shutdown of the factory, the company moved towards home working.

"For example, in Panama, Argentina, Chile and Mexico, where we have people on JCB operations or JCB people working, they no longer needed to go to the offices and they stay at home working," said Gonçalves, speaking to KHL magazine *Construction Latin America*. "Today more than half, almost 60% of all administrative staff, work from home."

In Brazil, there was no forced national quarantine, unlike in other countries in the region. Of the 26 states some were more flexible in relation to isolation and social distancing.

In the state of Sao Paulo, where the JCB plant is located, there was a quarantine. However, as a manufacturer of construction and agricultural machines, JCB was considered an essential industry. Although the company decided to stop for three weeks, Gonçalves said, "we never stopped after-sales support. Here in Brazil, many of the dealers, the after-sales area, technical support, as well as the shipment of spare parts, continued to operate."

The factory stoppage, as well as the current operating procedures to prevent contagion, will undoubtedly affect the delivery and sale of machines. "But we stopped at the same time as many of the countries stopped, so that caused demand to drop significantly," he added.

Business in the region is clearly slower today, and there is uncertainty when it will return to normal. "We are very clear that despite the pause we are going through, construction, and especially infrastructure, will return. And they must do it with great speed because governments understand that construction is among the sectors that can have the quickest impact on GDP," said Gonçalves.

Construction can indeed have a very positive impact on a country's GDP, but conditions must be safe and workers not put in danger. Construction restarting properly relies on declining numbers of Covid-19 infections and on that, the whole world holds its breath. **iC**

Government intervention

Scott Hazelton, IHS Markit, on 'preservation packages'

More than ever, the fiscal policies of governments are absolutely key to the survival of not just construction but the health of whole economies. Many governments around the word have implemented policies where they pay a proportion (the amount, and the upper limit they pay varies around the world) of the wages of workers so that businesses do not make them redundant. There is also the question of governments 'propping up' big businesses (or not), such as airlines.

Scott Hazelton, managing director from IHS Markit, provides an overview on what some of these countries are doing. He comments that, "China and the US, the two biggest economies, have engaged in similar behaviour which is to prop up their economies with fiscal intervention to secure certain industries that are disproportionately affected and preserve earnings of workers.

"They have also had central banks reduce interest rates – in the case of the US to 0% and the US is also engaged in quantitative easing... other countries in Europe have engaged in similar activities. What's important to note is that these are not what I would call stimulation packages, they are preservation packages; they are putting a floor under the downturn, not to really reverse the downturn."

To listen to the full interview go to: www.khl.com/home/podcasts

Diesel is only part

Deutz chairman **Dr. Frank Hiller** talks to **Mike Osenga** about parallel paths of engine and electrification technology

Dr. Frank Hiller, chairman of the board of management of Deutz AG

If you needed more evidence that the world of power systems is changing (and you shouldn't), the Deutz exhibit at the recent ConExpo-Con/Agg exhibition in Las Vegas, US, underscores that point rather strongly.

One of world's oldest manufacturers of diesel engines, Deutz had eight displays in its booth at the show, only two of which were new diesel engines. The diesels were the company's TCD 2.2 and the newly introduced model TCD 13.5. There was also a remanufactured Deutz Xchange diesel.

The biggest part of the Deutz display was an all-electric model G5-18A telescopic handler concept, developed in collaboration with JLG. The G5-18A has a 360V drive system that uses a split drive comprising two, 40kW electric motors – one for driving and one for the hydraulics in the telescopic arm. The battery is from the EDeutz modular toolbox and offers 42 kWh of capacity. The 6.6kW charging system can restore the battery charge to 80% within four hours.

Hybrids and batteries

Deutz also presented an electric hybrid drive system designed specifically for use with aerial work platforms in low-load applications. The new Deutz D 1.2 hybrid combines a 1.2L, three-cylinder diesel engine and a 48V electric motor.

A battery drive system, developed in collaboration with Futavis, now ready for pilot production, was also shown. Deutz acquired Futavis, a German battery specialist, in 2019 to strengthen its inhouse expertise in battery technology. Also on display was a hydrogen-fuelled Deutz TCG 7.8 engine, as well as an LNG or gasoline-fuelled G 2.9 model.

"When tackling the challenge of making drive solutions sustainable for the future, we always keep our minds open to all technologies," said Dr. Frank Hiller, chairman of the board of management of Deutz AG. "Our approach builds on combinations of electric drives and internal combustion engines that offer the potential to be operated in a carbon neutral manner in the future using sustainable fuels."

Hiller said the diversification of Deutz' portfolio was part of a strategy that the company began about two years ago called 'Innovative Drive Systems.' Deutz, he said, would continue pursuing internal combustion engine technologies, but also other technologies that were important not only for the company, "but also must present a strong business case for our customers."

Electrification investment

A big part of the new strategy was a major investment in electrification, both acquisitions and technology development.

"We created two paths," Hiller said. "On one side is electrification and on the other side is combustion technology, which will continue to be a technology for the future. There are things we see for further optimising combustion technology." He

> "We have spent around US$100 million on developments and acquisitions in electrification"

of the future

added that all Deutz diesel engines are Stage 5 certified.

Hiller detailed Deutz' two path strategy further, saying the combustion technology side does, or will, include diesel, gasoline, biodiesel, LPG, CNG, leading to multi-fuel engines, as well as hydrogen-fueled engines. Beyond that, Deutz continues to research synthetic fuels.

On the other path, Deutz started on the road to electrification with its 2017 acquisition of Torqeedo. According to Hiller, this gave Deutz not only an electrification development center for the company but also experience.

"The thing with Torqeedo was that they were not only talking about electrification, they had several thousand units in the field. They brought experience with electrification. The learning curve they had already gone through, we could use on our side."

From there Deutz also developed a 48V 'mild' hybrid system, followed by a 360V full hybrid drive system.

Then came the acquisition of Futavis GmbH, a development service provider for battery management hardware and software. This acquisition, Hiller said, allows Deutz to incorporate batteries into its electrification strategy. Futavis brings technical expertise in electronics, software, battery technology, and battery testing and in ensuring functional safet.

Hiller added that the systems knowledge of Torqeedo in electric drives will now be complemented with Futavis' with high-voltage battery technology.

This led to the developments of concept battery electric vehicle systems such as shown at ConExpo-Con/Agg and last year at Bauma in Germany. Further down the line, Hiller said, Deutz continues to research the use of renewable electricity sources for its product range.

A serious investment

"We have spent around US$100 million on developments and acquisitions in electrification. These are products and technologies we can use throughout our entire product portfolio, so it is a good investment for us."

All of which means there are a lot of propulsion technology pieces for Deutz to juggle in the coming years.

"On the diesel side," Hiller added, "the activities of Stage 5 are done. This gives us new capacity; it frees up engineering capacity. So, we are changing the focus in engineering more in the direction of electrification. We have hired a lot of new electrical engineers."

Interestingly, on the engine side, Hiller sees the developments of different forms of propulsion as also changing the internal combustion landscape.

"I think we also start to look more at co-operations for bio-methane and hydrogen engines. But also on the diesel side, our new sub-two-liter diesels were done in cooperation with Kukje, above nine liters it was done with Liebherr," he said.

"Then if you look at fuel cells, fuel cells are not a core business for Deutz," Hiller said. "To design and produce fuel cells requires skills and technologies far away from the technology we have today. But to buy fuels cells and to integrate them into our electrified systems, that is feasible."

> "When tackling the challenge of making drive solutions sustainable for the future, we always keep our minds open to all technologies"

Illustrating the evolution of Deutz from strictly a diesel engine manufacturer was its recent showing of an all-electric powertrain telescopic handler concept, developed in collaboration with JLG

Deutz said a battery drive system, developed in collaboration with Futavis, is now ready for pilot production. Deutz acquired Futavis in 2019

Timeline

Finally, the timeline for production of electrified propulsion systems and all the other alternatives is literally the multi-million-dollar question. Here, Hiller had some surprising news.

"By the end of this year or early next year we will introduce our first completely electrified serial production products." He added that applications would include telehandlers, mini-excavators, and possibly aviation ground support equipment uses and that 2020 marks the beginning of marketable hybrid and fully electric products. In 2021, Hiller predicted the start of relevant revenue from these technologies, and by 2022 he estimated that 5 to 10% of Deutz revenue would be generated by electrified drive systems. iC

This article is used courtesy of **Diesel Progress** magazine, a sister title of International Construction magazine. Its author, Mike Osenga, is editor-at-large for Diesel Progress. For more information visit: **www.dieselprogress.com**

China and access equipment: sustainable growth?

Global access manufacturers share their thoughts on the fast-growing Chinese market and speculate what the access market might look like post-pandemic.

Jenny Lescohier investigates

Prior to the recent onset of the Covid-19 pandemic, the consensus among industry observers was that the Chinese market for access equipment was booming, showing at last count a compound annual growth rate of 60% since 2014.

But where have things left off, now that the world stands in crisis due to a virus that started in the Wuhan province of China, caused widespread economic shutdown and left in its wake a questionable demand for construction equipment?

Off-Highway Research stated in its 2019 report, *The Powered Access Industry in China* that sales of mobile elevating work platforms (MEWPs) in China exceeded 40,000 units in 2018, reflecting an exponential increase over just a few years.

"The market for powered access platforms in China has seen very strong growth in the last five years, increasing from about 8,600 units in 2014 to 43,570 units in 2018," the report says. "During 2014-2016 growth was strong, but in the last two years the market has seen annual expansion of over 70%. Such extraordinary growth has been the result of a number of major equipment manufacturers entering the market for the first time, as well as the emergence of a soundly based rental sector."

Off-Highway Research believes there are now more than 50 OEMs active in China, both indigenous and international, in access. The segment has become an important manufacturing hub, producing in excess of 100,000 machines in 2018.

Demand for access platforms in China was expected to continue its robust growth, although at slightly slower rates than recent years, with predictions to reach 125,000 platforms per year by 2023. However, given what is going on in the world, what now? Will the Chinese market for MEWPs pick up where it left off post pandemic?

Sinoboom has plans to open more subsidiaries around the world to serve growing demand

Production back up and running

Few can argue the world faces unprecedented circumstances right now, and no one can predict what they will mean to the construction equipment market over the next several months. On a bright note though, major American manufacturers of access equipment are reporting that their Chinese operations are back up to full or near-full capacity.

Matthew Elvin, CEO of Snorkel, says that like most companies, Snorkel was initially affected by a shutdown and then by reduced output once restrictions eased. "Today, our China facility is open and working to full capacity," he says. "We have seen customer demand begin to return and businesses nationwide are returning to normal operation."

Matt Fearon, president, Genie Industries, offers a similar scenario. "Our team in China faced the pandemic first, and in many ways, paved the way for how to deal with such large-scale health risk and resulting business disruption," he says. "As the virus spread around the world, we used the processes developed by our China team to help manage the crisis in the US and Europe from the onset through the start-up phases.

"All Genie manufacturing sites were closed 23 March through to 13 April, with the exception of our factory in China and our global parts and services operations.

"We have started limited production in our Redmond and Oklahoma City factories [in the US] using the start-up protocol developed by our team in China who have safely resumed production. We will continue to prioritise team member safety, stay committed to stewardship in our communities and meet customer demands as our economies rebound."

Booming demand?

While the situation is constantly changing, the Chinese market is well into its recovery process and the reopening of business. Meanwhile, demand for equipment is continuing the previous course of its evolution.

While the market still features an overwhelming domination of scissor lifts, which accounted for 88% of annual sales in 2018

Chinese OEMs, like Sinoboom, are branching out into producing booms

> "The market for powered access platforms in China has seen very strong growth in the last five years, increasing from about 8,600 units in 2014 to 43,570 units in 2018"

and a similar percentage of the total machine population, demand in other areas is growing. The preference for scissor lifts is the result of the prevailing indoor applications, but growth in demand for boom lifts is growing.

"Electric scissor lifts are extremely popular in the Chinese market, and demand for these units continues to grow," agrees Elvin from Snorkel. "However, demand is also growing for boom lifts. Initially, we saw most demand for electric articulated boom lifts, to which we responded with local assembly of our A38E and A46JE models. Both of these models are proving popular with our customer base, predominantly in the rental sector. However, as aerial lifts are being used in a wider range of applications, our customers are also adding diesel-powered boom lifts to their fleets, and we recently started assembling our 14m articulated booms and our 18m telescopic booms for the market."

He adds that Snorkel expect that demand for booms will continue to grow in this market, and the company will assemble additional boom models locally as that demand increases.

Genie's Fearon says demand for aerial work platforms has continued to accelerate in China, and while the Covid-19 virus created eight-ten weeks of disruption in the Chinese market, it has steadily rebounded as the country returns to work.

"It's an encouraging sign for all of us," he says. "We're committed to the region for the long-term because we see the adoption of aerial work platforms continuing due to the safety and productivity that they provide. Scissor lifts were adopted first, but we are seeing encouraging trends in booms as well. We see the adoption of aerials as having reached the tipping point and are positioned to support the growth."

Ken McDougall, president at Skyjack (which currently does not manufacture in China) echoed the characterisation of growth potential for the Chinese market, but also struck a note of caution.

"Prior to the Covid-19 outbreak, we had witnessed particular growth in China, and given the nature of the Chinese economic model, we would see a government desire for that to continue," he >

JLG says production is now back up to speed in China after shutdown due to Covid-19

JLG manufactures scissor lifts at its plant in Tianjin, China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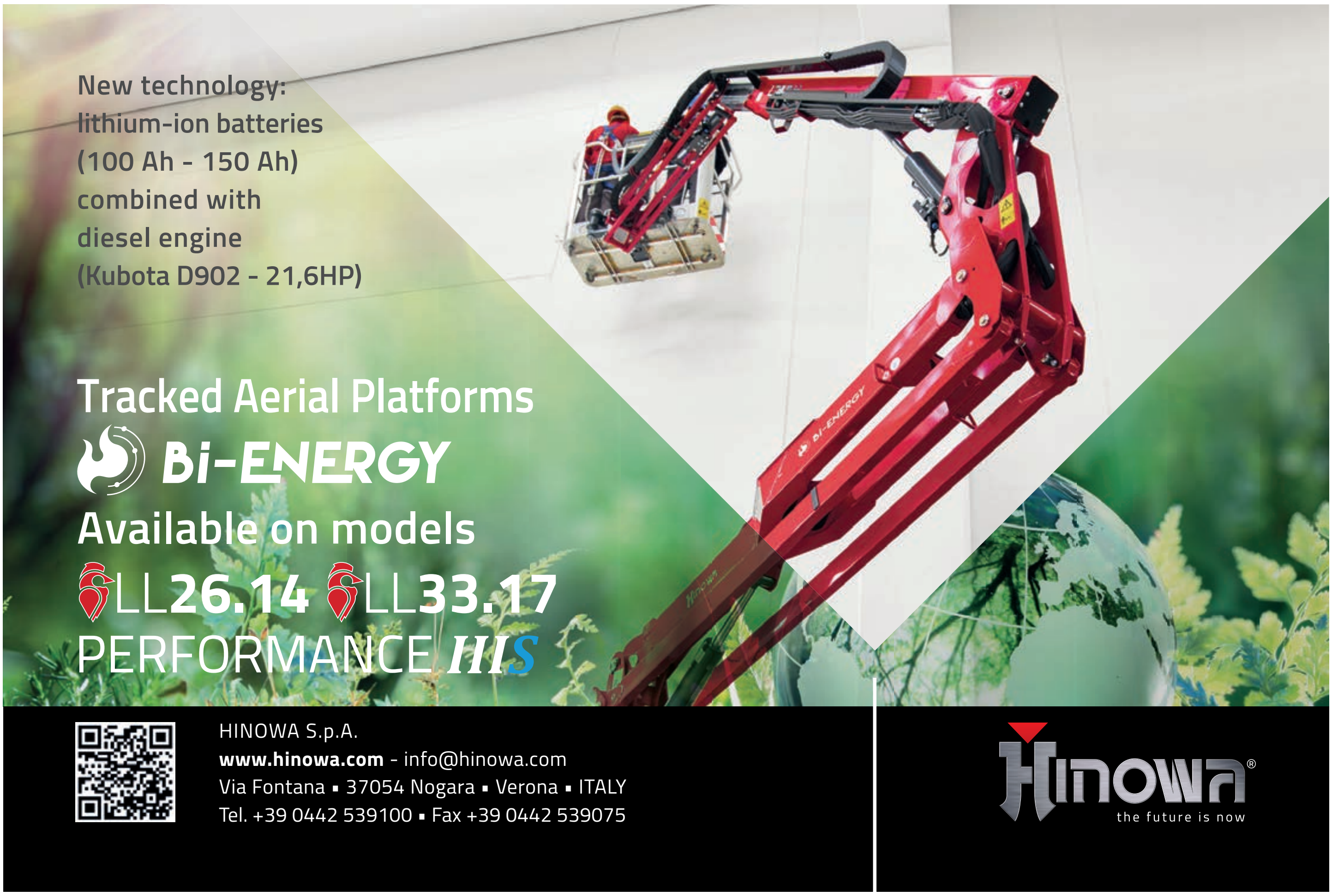
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As jobsite safety concerns grow in China, so too will the demand for access equipment

> "We're committed to providing customers with safe, economical and reliable products, using product quality to win market trust, while actively improving localized services"

Genie employees celebrate the 1000th micro scissor lift to come off the line at the plant in Changxhou, China

notes. "At the same time, it was noticeable that the rental market and the formation of rental companies was growing at a fairly rapid pace."

He continues, "As with many regions, a growth curve like this with new entrants and a still relatively immature market creates questions on the financial health of some of those companies. The recent issues might have stressed those organisations and there may be some rationalisation as a result.

"There could be a wave of consolidation as a result of the economic crisis resulting from the pandemic," he predicts, noting, "As the global impact of the Covid-19 pandemic continues to affect other countries and their economies, Chinese OEMs are faced with a fairly significant challenge. The Chinese OEM model has been heavily geared toward fulfilling overseas demand through exports. As much as 50% of the output was for export. Today those markets are sluggish to say the least. Seeing how the Chinese OEMs manage their way through this will be interesting, while the domestic OEMs face interesting times as well."

For their part, Chinese OEMs say they're focused on the same ideals as their western counterparts and have an understanding of different market demands in different markets.

A representative of Sinoboom comments that, "We have a profound understanding of the needs of customers in the North American market and the local culture, so as to enhance the overall response capacity of the company, enhance the ability to resist risks, and make the company more flexible."

According to the company, Sinoboom is accelerating its global localisation program; all functions of the Sinoboom European subsidiary based in the Netherlands are localised, and it is expected to formally commence operations in July this year.

A local team will be formed, with a large local stock of machines and accessories, distribution by the Dutch subsidiary, and provision of PDI, after-sales support/training, dealer support, marketing and other functions. "In the future, we will set up more subsidiaries in key markets," the company added.

At Zhejiang Dingli, the philosophy rests on surpassing the model they originated from. "The industry originated in the West and we stand on the shoulders of giants," a representative from the company states. "The equipment of Zhejiang Dingli has better performance, but the price is basically the same as our North American competitors, or even lower." >

Chinese manufacturers, such as Dingli, report an emphasis on environmentally friendly products

Distribution in China

Manufacturers and rental firms share mutual benefits and risks

Off-Highway RESEARCH

The growth in rental investment has played a pivotal role in developing demand for access platforms in China. With the evident saturation of demand in the traditional equipment market, many distributors have been encouraged to invest in new business sectors, and there is the general belief that access platform rental offers better returns and a clearer cost structure without the need to hire operators.

Over the last two years, the rental sector has attracted major investment that has provided substantial orders for manufacturers and has been an important part in the increase of the total machine population. The development of rental has been well received by customers, who need to reduce the cost of machine ownership at a time when they need to work at height in a wide variety of applications.

In view of the great potential seen in the access equipment market, a number of major Chinese manufacturers have entered the sector with new product lines, and their entry into the market has greatly contributed to the substantial growth in demand over the last two years. To stimulate their growth in sales, manufacturers have developed sales channels through cooperation with major rental companies, and very often involve easier-than-usual financial terms and conditions.

Demand has been brisk, and many manufacturers are now increasing their production capacities. The extraordinary growth in the market, which has seen the total machine population more than double to over 100,000 units in the last two years, has resulted in increased exposure to risk, both for the rental companies and the manufacturers. Too many machines are now competing for a limited volume of work.

The result is that rental rates have fallen sharply, especially for the popular scissor lifts, and here revenues may be not even be enough to cover operating costs. On the other hand, lower rental rates have generally resulted in strong levels of fleet utilisation. The competition to attract rental customers has also resulted in an improvement in technology, and machines are designed and manufactured with better quality to meet the demanding operating conditions found in rental.

Battery technology is evolving towards maintenance-free types that may reduce rental customers' operating costs. Lithium batteries have been introduced as an option to the traditional lead-acid type, although some concerns about the cost and dangers of lithium batteries have restricted their use to less than 20% of sales.

Chinese access goes green

Electrification and hybridisation are key trends in the market

In recent years, a combination of factors has contributed to the exponential growth of the access equipment market in China, including robust general economic expansion leading to an influx of large-scale infrastructure projects and increasing demand.

"China's social demographic dividend has declined, labour costs have increased, and the market pursues more efficient and convenient working methods," according to a representative with Sinoboom, who adds, "People's awareness of safety is constantly improving and increasing, which is gradually changing the methods and habits of working at heights."

Likewise, China has recently paid more attention to environmental protection, and its control has become stricter, a representative from Zhejiang Dingli noted.

"On this basis, the zero-emission, pollution-free electrification of construction machinery and equipment must be the trend. At present, Zhejiang Dingli has fully initiated the electrification process reform of existing equipment, 14 electric arm types have been born, the maximum working height reaches 30.3m, the maximum load is 454kg, and the market responds well."

Sinoboom concurs, noting the electric and hybrid Mobile Elevated Work Platform (MEWP) sector will be the key market choice in the years to come.

"While humans are enjoying more and more abundant material life, they are also facing a deteriorating global environment," the company states. "Faced with various threats such as environmental pollution, resource shortages, and ecological imbalances, environmental protection has become a primary focus for all countries.

"The green economy has become the development trend of the world economy, and the demand for products will also tend towards the field of green and environmental protection. Therefore, pure electric and hybrid MEWPS are one of the important development trends in the future."

Dingli offers a wide range of both scissors and booms

Presently, Zhejiang Dingli has branches in the US, South Korea, the UK, Italy and more. The company's global sales is mainly in the form of dealers and agents but in the future the company revealed that they will be increasingly looking to online sales; something many companies are being forced to do at the moment.

Post-pandemic market

There's currently a great deal of uncertainty in global markets due to Covid-19; it has changed everyone's buisness projections.

"Prior to the Pandemic, we have said that we anticipate a slowing in market growth in 2020 and recovery into 2021," Skyjack's McDougall says. "The Covid-19 issue has both heightened and extended that time-line. We see a delay in that 2021 growth and it will come from a lower basis as the Covid-19 effect makes its mark."

If construction in China bounces back after the pandemic, the demand for scissors and booms should remain strong

He notes that there's a lot of talk about stimulus packages and incentives, but the question marks center on what will be the lag effect on the recovery curve as economies open up.

"We have seen a staged start up in China and would anticipate a similar event across the world," McDougall says. "What is not yet understood is what currently in process and approved projects will be delayed or otherwise impacted by the overall economic impacts."

JLG forecasted calendar year 2020 to be a year of slow growth with sales picking up in 2021. However, JLG President Frank Nerenhausen says the view now is a bit more conservative as a result of the pandemic.

"With many job sites being shut down, rental utilisation rates are lower than we'd typically see at this time of year," he comments. "Needless to say, we are watching closely to see what happens as construction sites reopen and the world resumes work. We remain hopeful for a quick recovery and strong demand late in the year."

Elsewhere, Fearon expresses a sentiment many commentators share when he says, "I'm looking for a refund on my crystal ball! So far, 2020 has taken a course that none of us would have imagined and we are not anticipating a quick bounce back.

"Outside of China, we believe that it will take several quarters for fleet utilisation, rental rates and used equipment values to get back to healthy levels. China has been rebounding nicely, but without robust export markets, there could easily be an oversupply in China in the next 18 months."

At Snorkel, Elvin says they anticipate demand will return as restrictions are removed, but it may take some time for businesses to recover.

"Banks and formal forecasts are showing a 'V' recovery from this pandemic," he notes, "and if they can be relied upon, it could result in a strong late Q3 and Q4 2020."

At this stage, a strong third and fourth quarter would be welcomed. However, even if growth takes longer to return in the access industry than all concerned would like, it is a sure bet that China will remain a key market. iC

> "Outside of China, we believe that it will take several quarters for fleet utilisation, rental rates and used equipment values to get back to healthy levels"

Extra power, extra uses

With generators and lighting towers providing more power than ever before, smart construction operators are making use of this excess energy. **Andy Brown** shines a light on this interesting development

In the world of portable power, lighting and on-site equipment, two big changes are occurring simultaneously which have real consequences for the equipment and how it is used. Firstly, construction equipment and sites are more efficient and so require less power than previously and, secondly, the generators and lighting towers being produced are increasingly powerful and efficient.

The coming together of these two factors means that the costs to the customers, such as contractors on infrastructure projects or the owners of a mine, are reducing. It is common – all too common – in construction for the focus to be on projects being over time and over budget but, in this sector at least, costs are frequently going down and productivity up.

Onsite Rental Group have 20 SMC TL55 Solar tower lights operating in Queensland, Australia

> The pace of technological development has increased over the last decade – it is mainly driven by emission reduction requirements, environmental protection and product flexibility, optimising cost of ownership


Matt Menzel, director of product and engineering, Briggs and Stratton

The fact that generators and lighting towers are becoming more powerful as the power needs of many sites declines means that there is excess power. According to Matt Menzel, director of product and engineering, Briggs and Stratton, this is certainly not being wasted.

"What we're actually seeing is that people are taking advantage in a very positive way of the excess power that we have on site. As an example, we still make some very large light tower plants that may have an extra 20KVA of power, even though we're only using 1200Watts of it to power the lights. They're finding that they can use that excess power to change the thinking around how they're running their sites."

This ties into one of the biggest trends in the construction industry – electric and hybrid construction equipment. With increasing numbers of OEMs either working on prototype electric and hybrid equipment, or already having them available for commercial sale, the excess power available from, for example, a lighting tower now has an additional, and very valuable use.

"We're seeing a lot of companies starting to prototype electric battery or cabled battery electric machines. While you have those on site, you still need to charge them. Our light plants have excess power and can also serve as feeders for the charging stations without having to bring on an incremental generator," explains Menzel.

"This offers up this tremendous new realm of flexibility in terms of what equipment you're bringing on site to be able to complete the project."

Emissions regulations

One of the big drivers regarding the development of generators have been emissions regulations, such as Stage V in Europe. There is no doubt that legislation has been a key factor in the development of generators, however this is not the only factor.

Jan Moravec, director, product management & engineering, Doosan Portable Power EMEA, comments that, "The pace

There are seven Doosan 750kVA prime power generators working on a site in Myanmar

Jan Moravec, director product management & engineering, Doosan Portable Power EMEA

of technological development has increased over the last decade – it is mainly driven by emission reduction requirements, environmental protection and product flexibility, optimising cost of ownership."

He also adds that, "Lower noise requirements will increase, especially for applications in cities and towns, special events, as part of environmental protection changes."

Sergio Salvador, product marketing manager, Small & Medium Power Generators, Atlas Copco Power and Flow, agrees that when it comes to generators, the need to meet Stage V requirements has been a main factor in this segments development. He also adds that the efficiency level of generators have increased rapidly in a short space of time.

"Over the last few years, it has been increasingly important for generators to be manufactured to comply with environmental and regulatory obligations such as the EU Stage V as well as meeting end-users' evolving needs for sustainable productivity and increased operational flexibility," says Salvado. "Generators have changed massively and are far more efficient than they were only a few years ago."

Sergio Salvador, product marketing manager, Power Generators, Atlas Copco Power and Flow

Award winner

Portable generator wins award at WOC

At the World of Concrete Show in Las Vegas, US, earlier on this year the Makinex 23kW 480V Portable Generator was named the 'Most Innovative Product of 2020' by Hanley Wood.

The 23kW Generator was chosen as the top product within the category of general construction tools & equipment.

Makinex's newest generator, the dual-phase 23kW, is said to bring the most power yet to the company's portable generator range.

The alternator configuration of the generator powers 120V and 480V simultaneously with no loss on either circuit. According to the company, it can take 23kW from the three phases and 3kW from the single-phase at the same time with no power or frequency dips.

The generator is only 36x25x36 inches in size, making it among the smallest dual-phase 23kw 480V generators on the market.

Some of the features that have enabled generators to become more efficient are VSD (variable speed drives), electric cooling fans and PMS (power management systems). Salvador describes VSD as being a 'game-changer', adding that, "This technology completely eliminates the inherent risks associated with low-load generator operation such as cylinder glazing, bore polishing, heavy carbon build-up, high oil consumption, low combustion temperatures and fuel waste."

Using the example of Atlas Copco's QAS 60/35 VSG, the generator is said to reduce fuel consumption levels by up to 40% against traditional fixed-speed generators and increase reliability in applications with an average load of less than 20%, such as construction projects. According to the company, the integrated energy storage system helps increase peak power capabilities by 70%, while reducing CO2 emission reductions by up to 40%.

Let there be light

Mobile lighting plays a key role on construction sites around the world, and manufacturer and distributor Morris Site Machinery recently announced that it has helped Australian equipment hire

specialist Onsite Rental Group to widen its offer of sustainable rental solutions with solar powered lighting towers.

Following a recent order to expand their existing fleet, Onsite Rental Group now has 20 SMC TL55 Solar tower lights operating in Queensland, Australia, on a specific project that not only requires light, but light in a clean way, in response to environmental concerns.

The SMC TL55 Solar meets industry demand for a sustainable and low maintenance tower light. With both battery and mains supply, it has zero noise and emissions and offers flexible options for all site applications with little need to attend or maintain onsite. It can run indefinitely in the right light with up to 500 hours run time from the battery using auto dim LEDs and PIR sensors.

Phil Winnington, international business director, Morris Site Machinery, said, "We are proud to have been doing business in Australia for more than 15 years and we understand the need for equipment that can deliver in demanding terrain and climates.

"We also appreciate that hirers are looking to be more sustainable and environmentally aware and that is becoming increasingly important in making their choices."

> "What we're actually seeing is that people are taking advantage in a very positive way of the excess power that we have on site"

Rental firm Speedy has invested millions into new environmentally friendly lighting

Power generation units are more efficient and environmentally friendly than ever before

As just illustrated, environmental concerns in this field don't just apply to generators. UK-based rental company Speedy recently announced that it has invested £2.8 million (US$3.5 million) in new zero and low-emission lighting towers to help contractors boost sustainability and cut fuel costs.

Using 25 zero-emission, solar-powered lights on site would see contractors cut their carbon output by 184 tonnes – approximately equivalent to 80 family cars – over a six-month period and save more than £50,000 (US$62,000) in fuel costs compared with diesel models.

Speedy has invested in 300 solar-powered products together with 800 VB9 LED+ units, which can reduce carbon emissions and fuel costs by 70%. The business now has a fleet of 3,500 lighting towers, which is supplemented by 16,500 general lights.

Julian Perrott from Speedy, said, "The hire industry has a vital role to play to ensure contractors can access the low-carbon equipment they need to reduce their footprints and support safe and compliant working. Solar lighting will become the norm on construction sites across the UK as more businesses pledge to meet the government's zero-carbon target. But it will also be key in helping customers position themselves to meet increasingly stringent sustainability requirements of public and private sector tenders."

Extreme climates

Ensuring optimal performance in extreme conditions

The harshness of the environment can seriously affect a generator's performance; adapting it to the environment and taking a series of extra measures allows for peak performance.

Therefore, before selecting the characteristics of the generator set, it is necessary to clearly identify the conditions of the environment in which it will be operating.

The team at Himoinsa says there are four main determining factors in a viability study of a generator set in the face of extreme climatic environments: Temperature; moisture; atmospheric pressure; air quality.

Climates with a -10°C or over 40°C ambient temperature, humidity above 70%, or a desert environment with a large amount of airborne dust are clear examples of extreme environmental conditions. All these factors can cause problems and shorten the service life of generator sets, both if they work on standby, since they have to remain stopped for long periods of time, or continuously, as the engine can easily heat up due to the long number of working hours.

There are a number of measures that can be taken to combat these environmental issues, such as in extreme cold an engine coolant heating resistance system or the use of a 'Snow-Hood' snow cover. In extreme heat special cooling of the fuel return circuit and moisture protections can make a big difference.

A correct configuration of a generator set and the carrying out of preliminary studies on the climatology of the equipment's location (temperature, humidity conditions, pressure and atmospheric pollutants) will help extend its useful life performance.

Allmand, part of Briggs and Stratton, are working on a concept battery-powered lighting tower

Ever evolving

As the manufacturers of wheeled loaders, excavators and bulldozers increasingly look to electric and hybrid power – and this subtly changes the use of some lighting towers and generators on sites – the companies producing mobile power, lighting and on-site equipment are also looking to the future and different innovations.

Doosan's Jan Moravec, comments that, "Emission reduction will lead to a higher utilisation of hybrid technology, according to the application, and an increased search for alternative power sources such as hydrogen cells."

Menzel from Briggs and Stratton, makes the point that battery technology is developing all the time, commenting that, "Battery is coming; it's a matter of how far it will reach and how fast it will get there." He also adds that, importantly, "Customers are getting a little bit more comfortable with the different performance parameters that come with battery operated equipment. It operates silently and emission free, which offers up a lot of different advantages."

> "Generators have changed massively and are far more efficient than they were only a few years ago"

What isn't in doubt is that the products in this sector are more efficient than ever before and are lasting longer. Menzel says that it is not atypical that most of their products run for a thousand hours between oil changes, whereas only a few years ago the standard was around 700 hours. He says that this efficiency will continue to increase, but that one of the biggest changes to this sector will be in telematics and the Internet of Things (IoT).

In the construction industry there are a host of different providers of data and IoT solutions which can lead to issues – for example, not all of this data provided by one company is compatible with their competitors.

Menzel speculates that there will be a form of consolidation in the future and that when that happens, "it will be very interesting to see in what direction it takes the industry and how that influences design choices on the part of equipment manufacturers. As an example, most of our upcoming products now utilise a fully digital control set that has communications capabilities that run over an area network."

With the portable power and light generation equipment being made increasingly digitally connected and providing more data to owners and rental companies than ever before, some form of IoT consolidation would open interesting doors for even more development in this sector. iC

The amount of telematics data produced by generators is ever-increasing

JCB targets North America

JCB Power Products launches towable generators for rental market

JCB Power Products has launched a range of RS Generators designed specifically for the North American rental market. The range includes five Tier 4 Final-compliant models, delivering prime power output of 56kW (70kVA) to 500 kW (625kVA).

The generators are designed to be towed, with operating weights from 3,283kg to 11,435kg and a simple Tier 4-Final aftertreatment requires selective catalytic reduction (SCR) and diesel exhaust fluid (DEF) only. No diesel particulate filter (DPF) or diesel oxidation catalyst (DOC) is required.

Each model in the range features 500-hour service intervals to ensure minimal downtime and maximum productivity. When maintenance or scheduled service is required, large service access doors, with integrated door stops, are said to make it easy to access the engine and alternator.

According to the company, all electrical and control connections, and the diesel and DEF fluid tanks, are easily accessed from ground level.

All JCB RS Generators are equipped with JCB LiveLink telematics, which provides real-time operating data – including fuel use and power provision – to equipment managers via a desktop or mobile device, to enable the easy remote monitoring and management of generators in the field.

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Vermeer's **Doug Hundt** talks to **Jenny Lescohier** about serving the needs of customers in the age of Covid-19

Growing digital infrastructure

The world today is a very different one from just a few months ago for all sectors of society and business, with construction no exception. However, despite the drastic changes that have occurred in the world due to the Covid-19 pandemic, Doug Hundt, president of industrial solutions at Vermeer, says the company has managed to adapt and maximise the positive.

"When we first realised this crisis was real and we needed to move really fast, we developed two goals right away," he said. "Number one, we wanted to make sure we're protecting our people as best we can. Number two is to continue to take care of and support our dealers and our customers.

Vermeer serves growing need for digital infrastructure

Listen to the full discussion between **Doug Hundt** and **Jenny Lescohier** at **www.khl.com/icon**

"We've really galvanised around those two goals, and all our actions since then have been focused on keeping those two objectives in mind. We are a company that is privately held, and we've been in business for over 70 years. We not only have operations throughout the US but also around the world," he says before adding with a nice touch of understatement that the situation has been, "Quite dynamic."

Doug Hundt is president of industrial solutions at Vermeer Corporation. He joined the company in 1994, holding numerous sales, product development and operational positions before taking his current role in 2014

Equipment maintains critical infrastructure

Vermeer is a well-known manufacturer of equipment for many industries, most of which have been deemed 'essential' by the US government.

"We primarily serve markets such as agriculture, underground utility, construction, tree care and recycling. And then we have a group called special excavation," Hundt explained. "We're fortunate most of what we do – our products and the markets we serve – has been deemed essential business by the government. Once we understood that, we knew we had to keep going."

He continued, "Where we see the biggest negative impact has been on products that are tied more to consumer spending. As people are locked down in their homes there's been a lot of pull back in spending, which is completely understandable. But on the flip side, both our agricultural business and our underground utility business have continued to be quite strong.

"Our underground construction products are in the hands of our customers every day, building out the 5G network and the electric grid, gas and associated distribution of energy. We're also doing solar and a lot of renewables. Those industries continue to do well."

Hundt notes that with so many people working and attending school from home, there's been a significant increase in the demand on digital infrastructure.

"Every day our directional drills and our utility trenchers and our utility plows will doing network build-outs, maintenance, creating new connections and adding on new capacity," he said.

"We're proud of our dealers – who are also deemed to be an

> "We're fortunate most of what we do has been deemed essential business"

The world is depending on its digital infrastructure more than ever in the face of the current pandemic crisis

Directional drilling rigs are one of the least invasive tools for installing conduit underground

essential business – because they are figuring out how to operate in this new normal to keep our customers going. More than ever, the uptime of the equipment is so critical to get this work done. Our dealers are focusing on that to make sure our customers have the parts, the service and the support they need to continue to run and maintain the critical infrastructure that we so depend on in our daily lives."

Protecting people

As essential businesses, all Vermeer dealers are up and running and focusing on giving maximum care with minimal contact.

"They have adapted to having the least person-to-person contact as possible," Hundt explains. "Customers may be picking up more parts from the parking lot of the dealership for example, or road service vehicles that are on the job sites. They will adapt new protocol to make sure they're doing appropriate social distancing. And then of course, there's a lot of preventive work going on, like cleaning and safety checks on our people."

> "Our underground construction products are in the hands of our customers every day, building out the distribution of energy"

At the outset of the crisis, Hundt said Vermeer put together a response team that developed a game plan and specific actions to prevent the virus from infecting Vermeer personnel on the job.

"We've been very successful with that so far. We have over 800 of our office people now working from home and they're adapting to a new normal. We're staggering our shifts so we don't have overlap of shifts coming in. And we've most recently adopted temperature checks every day for people coming onto our campuses."

Hundt points out that Vermeer is no stranger to crisis. "We have a history of surviving, everything from the dot-com bust in the early 2000s, to the Great Recession in 2008 and 2009. And then most recently, two years ago, we had a tornado at our campus," he recalled.

"Through those experiences, we've become quite accomplished at responding to crisis; trying to deal with reality, but getting to the heart of what needs to be decided and acted on very quickly. So we're fortunate to have, I guess in hindsight, some experience around that."

Adapting for the future

When asked if he sees customers' needs changing post pandemic, Hundt said he anticipates at least core needs staying the same.

"What our customers are looking for is maximum productivity and maximum uptime and the best service that we can provide to them," he said. "That certainly will stay the same, but there will be some creativity that needs to come into play to make that happen in this different environment. We're also offering new finance programs, for example. Our customers' business cycles may change or be delayed, so we want to make sure we're there to support them."

Like all manufacturing companies, Vermeer is battling the constantly shifting sands of a pandemic, but it's not the only challenge it's facing.

"Where we've actually seen the most impact has not been due to Covid-19, but to the steadily dropping price of oil," Hundt said. "For some of the products we manufacture, such as pipeline drills and bigger trenchers, there's been a lot of a change. That certainly is where we've seen the most degradation in a market."

Going back to the positives though, and he continues that, "Where we're most bullish on continued demand and continued work is both in our utility and our agricultural sectors. We've been in those markets for a long time and we think the essential work that both of those segments support will continue."

The question of whether business will go back to 'normal' is one being asked by many as the Covid-19 crisis continues, but the answer remains unclear.

"We're still early on in this pandemic, and we believe things will become much clearer to us perhaps in 30 days, maybe even longer than that," Hundt said. "Meanwhile, our theme is to focus on what we can control and impact and not fear what we can't control."

He continues, "Certainly we're having to take some short-term actions with pulling back a bit on some discretionary spending and making sure we're protecting our people, but that doesn't stop our mindset around continuing our longer-term investments, such as new product development and ways we can improve our business.

"The fact that we can have 800 or more people working off site very efficiently and very productively is a testament to the investments we've made in telepresence. Those are the things we think about and continue to act on while keeping the long-term view in mind." iC

Vermeer's underground utility equipment is on the front lines of building out and maintaining the world's digital infrastructure

GLOBAL COVID-19 UPDATE

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An upwards curve

It took time to become established, but powered access is now a booming industry in China

Aerial platforms were first introduced to China in the early 1990s, but their use was largely limited to shipbuilding, sports stadiums and hotels. The major state construction programmes in Beijing and Shanghai during 2005-2015 encouraged the development of rental and demonstrated the value of access platforms in construction and related businesses. It was during this time that Chinese factories were set up by a few international manufacturers, as well as a number of domestic pioneers.

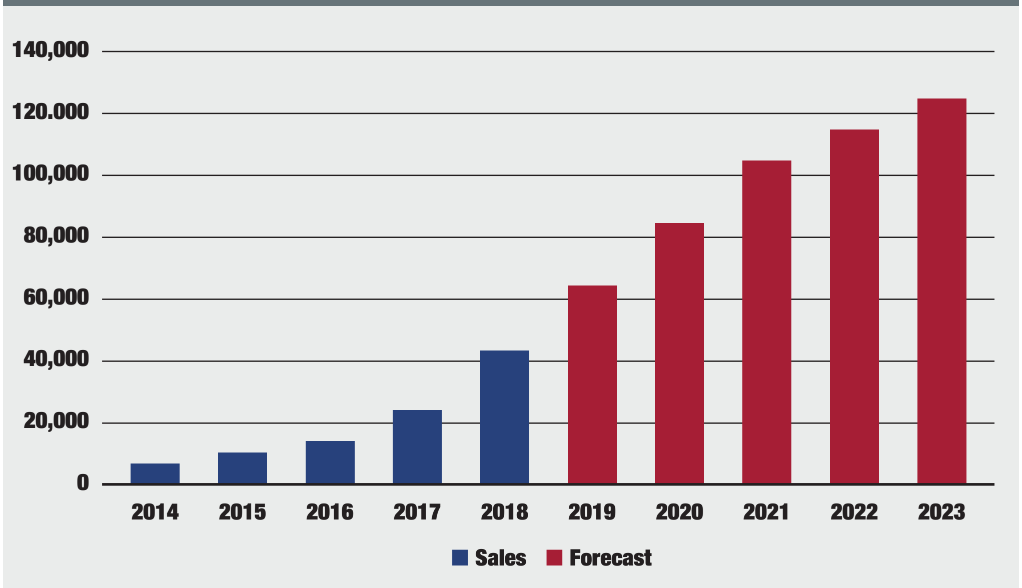
Demand for powered access platforms in China saw remarkable growth starting in the mid- to late 2010s with annual sales rising from about 8,600 units in 2014 to 43,570 units by 2018.

Several factors came together to help drive this growth, including stricter safety laws on working at height, the emergence of an equipment rental sector and the entry of both domestic and international manufacturers into the market to drive the concept.

Scissor lifts are king

Scissor lifts are by far the most popular type of access platform in the market, consistently accounting for almost 90% of sales.

Sales of powered access platforms in China (units)



“The range of OEMs active in the Chinese powered access sector is a diverse one”

This reflects the product offering of the large number of Chinese OEMs (Original Equipment Manufacturers) serving the market. It also points to a certain immaturity in the market, in that the range of applications is limited and many manufacturers are yet to develop more sophisticated products.

Scissor lifts are mostly offered to the market through rental companies, with their main applications being in factories and other work on paved surfaces.

Electric machines are the most popular, and by far the most common platform height is 10-12m.

However, the growth in demand for boom lifts cannot be ignored. This sector has experienced a similar growth rate as in the scissor sector and is more profitable for OEMs and rental companies alike. This segment has been historically dominated by the international OEMs with their broader product offerings.

The range of OEMs active in the Chinese powered access sector is a diverse one. It includes the major international OEMs, large Chinese powered access specialists and, more recently, the large general equipment producers in China. The leading suppliers comprise both the large international and domestic powered access specialists.

New players for access

The entry into the market by generalists such as LiuGong, XCMG and Zoomlion as well as the Sany-Palfinger joint venture is yet to be fully felt.

These are big and successful companies with extensive distribution networks in China. However, it remains to be seen how useful this strength and reach is in a market where the centre of gravity has traditionally been rental companies in a handful of major Eastern cities.

Exports have always been an important feature of the Chinese industry. International manufacturers, such as Genie, JLG, Haulotte and Aichi, all relied heavily in the early days on exports to give their Chinese operations the necessary scale.

Exports as a percentage of production are now falling for all producers, but this will likely remain an important aspect of the industry.

International OEMs see the benefit of Chinese factories as part of their global footprint, while the Chinese manufacturers are, of course, eagerly eying up the large mature markets in North America and Europe and the vast potentials that they offer for those companies that can get their offerings right.

Off-Highway Research's report, *The powered access industry in China*, is available now. Visit www.offfhighway-store.com to read the report. **iC**

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