

international construction

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P22

**Impact
of COVID-19
on global
construction**



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COMMENT

A changed world

There's obviously only one place to start with this letter but, despite being a man of words (that's what I tell myself anyway – go easy on me) it is hard, if not impossible, to do justice to just what is happening in the world at the moment.

The Coronavirus, more specifically COVID-19, is now making its influence felt over large parts of the world and different industries, with construction being no exception. Life for many has been drastically altered and for most of those affected the end date is unknown. Construction is still taking place in some of the countries affected but not in others, with arguments over whether it is 'essential' or not occurring as I write this. Businesses and economies are facing up to one of the most difficult periods in living memory.

However, in amongst the dark there are some shards of light beginning to creep out, for those who care to look for them. China, which saw the first outbreaks of the virus, imposed strict measures but is now beginning to see some aspects of life and business return to normal. The country is even accelerating some construction projects to make up for lost time and provide a boost to its economy.

Here at KHL, and *International Construction*, we are carrying on as best as we can. It means that my office is now a shed in the front garden (it is a nice shed though, with wood panelling that makes it look like a Swedish sauna) and I'm tapping away at a laptop rather than my normal computer.

The whole KHL editorial team is producing more stories online than ever before; we have a dedicated newsletter on the impact of the Coronavirus on the construction industry and a rolling news story on the home page of www.khl.com that is frequently updated. Please visit the website if you would like to receive a digital copy of the magazine – you can also change the address to which you receive a hard copy from your office to your home. If you have issues with any of the above then you can e-mail me at: andy.brown@khl.com

Finally, for what it is worth, I would like to extend my best wishes to you all in what is undoubtedly a dark time for many firms in the construction industry. It may not come with the strength of a blazing sunrise, but the light will return and with it a degree of normality in the future. Stay healthy.

Andy Brown
Editor



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

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



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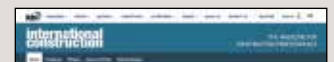
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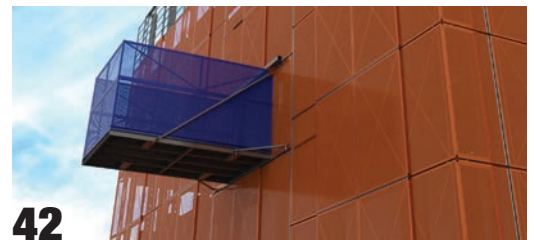
As the population grows in many of the world's largest cities, buildings need to go higher than ever, sparking innovations, writes *Jenny Lescohier*.

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Productivity and a varied product line-up is the name of the game in this sector, and OEMs are offering machines to meet that demand, writes *Andy Brown*.

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The team from Off-Highway Research look at construction equipment sales in Europe in 2019 and how COVID-19 may influence these in the future.



HIGHLIGHTS

UAE The construction industry in the United Arab Emirates (UAE) is continuing as 'usual' despite the impact of Coronavirus, according to data and analytics company GlobalData. The UAE's central bank has introduced an AED100 billion (US\$13.5 billion) Targeted Economic Support Scheme, that aims to contain the repercussions of the pandemic COVID-19.

Colin Foreman, deputy editor at GlobalData, said, "So far, UAE authorities have managed to implement social activity suspensions without severely affecting economic output... for now it is construction as usual in the UAE."

GLOBAL 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 email: circulation@khl.com

KHL staff are producing a rolling news story on Coronavirus online as well as high-frequency newsletter, Construction & Coronavirus, focusing on the impact of COVID-19 on construction.

FRANCE Vinci group, the parent company of Vinci Construction, has revealed that a large number of projects in France have been halted since 16 March as a result of virus containment measures.

The company said; "Industry organisations have held talks with the public authorities to define conditions under which works can resume gradually while ensuring the health of those involved." Despite the challenging economic situation, the group reiterated that its order book at the end of February stood at an all-time high of €37.9 billion (US\$41.7 billion).

COLOMBIA The Colombian Chamber of Infrastructure (CCI) called on the government to be prepared for disruptions to construction projects resulting from COVID-19. In a statement the CCI said, "The current situation could lead to the declaration of force majeure in contracts, with consequent impacts on the dynamics of project execution."

Construction struggles with COVID-19 pandemic

The world's construction industry was scrambling to adjust to the COVID-19 pandemic as International Construction went to press at the end of March

The impact on construction in Europe has been dramatic, with contractors in France and Italy calling for temporary halts to all activity. In the UK, Netherlands and Germany efforts were focusing on keeping construction going while complying with restrictions on social contact – with inevitable questions about whether that was possible.

In the US there was a mixed picture, with construction severely impacted in cities such as New York and Boston, and contractors facing sudden drops in workload. A survey by Associated General Contractors of America (AGC) found that almost 30% of contractors were facing delayed or halted projects.

The pandemic had a major impact on construction in China during February and early March, but by the end of the month there were claims that activity had resumed on 90% of the country's 'key projects'.

In the rest of Australasia construction activity was impacted to varying degrees. A spokesperson for the Australian Construction Industry Forum (ACIF), told iC; "many sites remain open and contractors are continuing to press ahead with delivering projects. Although this will depend upon emerging case numbers... and further workplace restrictions aimed to help limiting the spread of COVID-19."

A major focus for contractors is various government schemes to provide financial support. There are particular fears among contractors that they will be liable for cost and penalties relating to project delays.

As a result, FIEC, the European Construction Industry Federation, called for urgent action from the European Union, requesting financial support and EU recognition of COVID-19 as a force majeure event, to eliminate penalties for companies that suspended work.

In Germany, the three main trade bodies for contractors said they had reached agreements with Federal ministries to discuss the "fair distribution" of additional costs incurred by construction projects.

If there is any positive aspect of the crisis, it is that governments – and wider society – are seeing the importance of construction, not just in keeping things going but as an important element of economies.

Maxime Verhagen of Bouwend Nederland, the main construction association in the Netherlands, said the industry and government were doing everything they could to keep work going; "The sector is vital for the Dutch economy and must therefore be kept afloat as much as possible."

However, the pandemic is likely to spark a debate about the treatment of construction workers. Major contractors including Strabag, Royal BAM and Sir Robert McAlpine took decisions in mid-March to close sites, even while activity was still being permitted.

Paul Hamer, CEO of McAlpine, said the government measures made it unfeasible to continue on all sites, except where critical work was being done; "While this will have a detrimental impact on progress and impact heavily on our people, we recognise that this action is in the best interests of wider society. It is quite simply the right thing to do."

As in society in general, the pandemic will have lasting implications for construction.



GLOBAL Cat: supply chain affected

Caterpillar said on 26 March that COVID-19 was starting to impact its supply chain, although it continued to run the majority of its US operations and in other parts of the world, where permitted.

Production at some facilities is being suspended, said Cat, "Due to uncertain economic conditions resulting in weaker demand, potential supply constraints and the spread of the COVID-19 pandemic and related government actions, Caterpillar is temporarily suspending operations at certain facilities. The company will continue to monitor the situation and may suspend operations at additional facilities as the situation warrants."

Cat said it was executing business continuity plans, including the use of alternative sources for parts, redirecting orders to other distribution centres.



HIGHLIGHTS

The CCI added that, as long as the appropriate conditions for the normal execution of contracts by the authorities and contracting entities are maintained, and the production and supply chain is not affected, civil infrastructure works should continue.

UK JCB is suspending UK production until at least the end of April as a result of the Coronavirus and will continue to pay employees unable to work. Senior JCB directors will not be taking a salary until further notice, said the company.

The firm's nine manufacturing plants in the UK closed on 18 March as a result of "an unprecedented reduction in global demand." The extended shutdown will mean that the vast majority of its 6,500 workforce will be asked to stop working until at least the end of April. During this period, all affected employees will be paid 80% of their basic pay.

JAPAN Komatsu is temporarily closing its manufacturing facilities in Europe, Brazil and India. Its factories in Japan continue to function, as do its Chinese facilities which were fully functional by 17 February.

In a statement, the Japanese manufacturer said; "In response to the policies of different governments, we...are working to prevent Coronavirus from spreading as it places top priority on the health and safety of customers, local communities, and employees." Komatsu's Italian plant closed on 26 March and will remain so until 3 April. Komatsu Germany's plant will close from 4 to 13 April, and the UK factory from 30 March to 17 April. Its Indian facility will close from 24 to 31 March, and the plant in Brazil from 6 April to 21 April.

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. KHL is also producing a newsletter dedicated to the global impact of the virus on construction – sign up for this at: <https://tinyurl.com/sptfmg>



EUROPE

Call for EU Stage V delay

Construction equipment associations in Europe have sent a joint letter to the European Commission, requesting a delay in the implementation of emissions regulations, due to the Coronavirus.

In the letter, sent by CECE, CEMA, EGMF, EUnited Municipal Equipment & Cleaning, Europgen and FEM, the industry bodies asked for a moratorium on the application of 2020 and 2021 deadlines for exhaust emissions from NRMM (non-road mobile machinery).

The group said, "Complying with the regulation's deadlines, manufacturing and procurement of transition engines have been completed. Machine manufacturers have now until 30th June 2020 to produce the <56kW and ≥130kW machines fitted with these transition engines, and then until 31st December 2020 to place these machines on the EU market. Identical deadlines apply in 2021 for machines 56kW to 130kW.

"The cosignatories point out that the COVID-19 outbreak is causing complete interruptions of supply of parts and components..." preventing them from completing production by the deadlines.

Riccardo Viaggi from CECE said, "A temporary moratorium must be granted, with deadlines postponed until the situation can be reassessed."

CHINA

China 'speeding up' construction

China has resumed construction on just under 90% of 'key projects' according to an official with the National Development and Reform Commission (NDRC) and as reported on China.org.

Construction of 89.1% of 11,000 key projects is ongoing – although this figure does not include the Hubei Province which suffered large numbers of people being infected with Coronavirus.

The NDRC is reported to have pledged efforts to speed up the resumption of key projects by solving the problems of labour shortage, transportation and supply of raw materials.

All major railway projects have resumed operation, with 97% of major highway and waterway projects and 87% of airport projects also resuming construction.

The construction of 'new infrastructure' projects such as 5G networks and data centers will be expedited.

China is 'further along' in its response to the Coronavirus than other countries due to the country suffering with people being infected first and the government's hard-line policy on ensuring people self-isolated.

Due to these factors work and life is beginning to slowly return to some level of normality.

UK

Safety guidelines

With – at the time of writing – construction continuing in the UK, Build UK has issued a list of guidelines on how construction workers can work safely on site.

As well as the normal advice on hand washing and keeping two metres apart, the guideline recommends that workers should travel separately to sites alone using their own transport.

Staggered start and finish times should be introduced to reduce congestion. Changing the number of access points – either increasing them to reduce congestion or decreasing them to enable monitoring – should be considered.

Sites should also remove or disable entry systems that require skin contact, such as fingerprint scanners, and drivers should remain in their vehicles if the load will allow it and must wash or clean their hands before unloading materials.

Regarding eating, Build UK say that, "Whilst there is a requirement for construction sites to provide a means of heating food and making hot drinks, these are exceptional circumstances and where it is not possible to introduce a means of keeping equipment clean between use, kettles, microwaves etc. must be removed from use."

The full list of guidelines is available at: www.builduk.org

UK
Defeat for Heathrow

Climate campaigners in the UK have won a Court of Appeal ruling against the planned third runway at Heathrow Airport.

The UK Government's decision to expand the international airport was deemed unlawful as it conflicts with the UK's climate policy, which includes the Paris climate agreement. The judges deemed that the government had not followed UK policy when it gave its support to the expansion.

The case was brought to the Court of Appeal by several environmental groups, a number of local councils and the Mayor of London.

While MP Grant Shapps, the UK Transport Secretary, said in a Twitter post that the British Government would not appeal the court's decision, Heathrow Airport plans to pursue the matter.

MALAYSIA
PM's shock resignation

Malaysian Prime Minister Mahathir Mohamad has resigned in a surprise move that threatens the ruling coalition, as well as major construction projects and the country's 2020 GDP (Gross Domestic Product) growth.

According to Fitch Solutions, investor confidence could drop and project risk will increase with the political turmoil that began just two years after Mahathir won the 2018 general election.

Fitch revised down its 2020 real GDP growth forecast for Malaysia to 3.7%, from 4.5% previously.

Major construction projects, "hang in the balance, with fresh political uncertainty injected into the mix just as more clarity on the these projects had begun to emerge," according to Fitch Solutions.

One of Mahathir's first actions upon taking office was to halt the US\$27.6 billion high-speed railway. Later, he suspended the controversial US\$20 billion, 688km East Coast Rail Link to be built and financed by China as part of One Belt, One Road. That project was reinstated, at a lower cost, last spring.



HCE expect hydrogen-based construction equipment to be popular

SOUTH KOREA
Hyundai Construction to develop hydrogen fuel excavators

Hydrogen fuel excavator development to start with a target date for mass distribution of 2023

Hundai Construction Equipment (HCE) has announced it will work with Hyundai Motor Group to develop what it says would be the world's first hydrogen-powered construction equipment.

The construction manufacturer has signed a Memorandum of Understanding (MOU) regarding the joint development of hydrogen fuel cell construction equipment with Hyundai Motors and Hyundai Mobis at its Mabuk Research Center in Yongin-si, Gyeonggi-do, South Korea.

The three companies will look to develop hydrogen-powered forklifts and medium/large hydrogen-powered excavators.

According to the MOU, Hyundai Motors and Hyundai Mobis will design and manufacture hydrogen fuel cell systems, including power packs, while HCE will design, manufacture, and evaluate the performance of excavators and forklifts. The target date for mass production and distribution has been set to 2023.

Hydrogen-based electric construction equipment uses electricity produced through the chemical reactions between hydrogen and oxygen as its power source, meaning no emissions of toxic gases are released into the air.

Given the rising demand for environmentally friendly equipment around the world, HCE expect hydrogen-based construction equipment to prove popular in the global construction market.

ANTARCTIC
Cranes working at remote Antarctic site

The Australian Government has deployed a Grove RT540E rough-terrain crane to work at Davis research station in its Antarctic Program. The RT540E is used to load and unload cargo for resupply at the stations, as well as construct and maintain the station's infrastructure.

Davis station is the most southern station in the Australian Antarctic Program; temperatures at the station can drop down to -60 °C.

"The RT540E is a very resilient crane and we equipped it with the

optional arctic weather package to enable it to work in temperatures down to a maximum of -40 °C. On station, operators use the crane at temperatures no lower than -20 °C," said Federico Lovera, Manitowoc's regional product manager for rough terrains.

The optional arctic weather package includes low viscosity synthetic oils and 240-volt heaters on the engine, batteries and hydraulic tanks to ensure smooth operation in the freezing climate.

ITALY
CNH Industrial CEO resigns

CNH Industrial has announced its CEO, Hubertus Mühlhäuser, has left the group with immediate effect, following the board's decision to accept his resignation.

Suzanne Heywood has been appointed acting CEO, while a new long-term replacement is sought.

The board said its decision to select Heywood for the interim role was unanimous. She is also currently managing director of Exor, CNH Industrial's largest shareholder and has been chair of the group since July 2018.

CNH Industrial's businesses include Case Construction, New Holland Construction, Iveco, FPT, New Holland Agriculture and Magirus.

Previously, Heywood was a senior partner with the global management consultancy McKinsey, as well as holding a senior position at the UK Treasury.

EUROPE
Standards body for hyperloops

Following significant growth in investment and interest in hyperloop transportation systems for Europe, two European committees have joined forces to assist in the development of standards.

As first proposed by the entrepreneur Elon Musk, the hyperloop system uses moving electromagnetic fields to levitate and propel vehicles within a low-pressure tube. Extremely high speeds could be achieved, due to ultra-low aerodynamic drag on the vehicle.

CEN (the European Committee for Standardisation) and CENELEC (the European Committee for Electrotechnical Standardisation) have announced the formation of a Joint Technical Committee dedicated to the standardisation of such future hyperloop systems.

The process was started in 2018, when four of the six private hyperloop enterprises with plans to operate in Europe met in Brussels and together signed an agreement to cooperate in defining standards and regulations for the technology.

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HIGHLIGHTS

SAUDI ARABIA The world's largest oil producer, Saudi Aramco, has received regulatory approval to develop the Al-Jafoura gas field, located in the eastern region of Saudi Arabia. It is reported that the development of the gas field will cost US\$110 billion.

Al-Jafoura gas field is 170km in length and 100km in width, making it the largest non-associated and non-conventional gas field in Saudi Arabia. According to the state-run Saudi Press Agency, the field will be able to produce approximately 425 million standard cubic feet of ethane per day.

CANADA The government agencies responsible for Canada's public infrastructure and public transport, have awarded construction services company HDR and its partners the technical advisor contract for a new CAD\$10.9 billion (US\$8.2 billion) subway line in Toronto, Canada.

The 16km Ontario Line will carry up to around 400,000 passengers daily. A multi-national team comprising engineers Mott MacDonald from the United Kingdom, Canadian consultants Stantec and French engineering firm Systra, will be headed up by US-based HDR.

NETHERLANDS Equipment manufacturer Tobroco-Giant has revealed its new G2700 range of wheeled loaders. Models were described as modern powerhouses with compact dimensions.

All the models feature a Stage V-compliant 3-cylinder Kubota engine and are powered by a hydrostatic all-wheel drive with automotive steering.

GLOBAL

New research examines why megaprojects fail

Six main factors identified behind failure of megaprojects around the world

Academics have studied the causes of mega projects that come in significantly over time and budget and have found that, while it is not possible to identify one factor leading to failure, there are six key factors for projects coming in over budget and over time.

The study, published in *Project Management Journal*, listed the six key factors as: decision-making behaviour; strategy, governance and procurement; risk and uncertainty; leadership and capable teams; stakeholder engagement and management; supply chain integration and coordination.

For the purpose of the study mega projects were defined as those at a cost of over US\$1 billion.

Lead researcher Dr. Juliano Denicol, UCL School of Construction & Project Management, said, "Considering the importance of megaprojects to the global economy, we aimed to deepen and extend our understanding of the causes and cures of poor megaproject performance.

"We have emphasised the solutions rather than problems, in an attempt to shape the academic conversation to a more positive discourse and connect with the needs of senior managers delivering megaprojects."

Academics analysed over 6,000 academic summaries and filtered these down to 86 papers which were fully analysed.



Hinkley Point is a mega project taking place in the UK

US

Bullet train cost rises again

The California High-Speed Rail Authority (CHSRA) has released its Draft 2020 Business Plan, increasing its overall cost estimate for the rail line between Los Angeles and San Francisco by US\$1.3 billion, bringing the total cost of the project to US\$80.3 billion.

Although it is making progress and putting Californians to work on the bullet train construction, future funding remains uncertain, according to industry reports.

The bullet train has seen costs rise since it was first approved in 2008 and the length of the network has been scaled back.

The low end of the authority's estimate has the Northern California to Southern California route coming in at US\$63.2 billion. At the high end of the CHSRA's range, the project could cost as much as US\$98.1 billion.

The cost increases on the project are related to another schedule delay for service between Silicon Valley and the 119 mile (191km) Central Valley portion of the project between the cities of Merced and Bakersfield, according to CHSRA. The new draft assumes completion of the full line sometime in 2033.

UK

Teams shortlisted for Stonehenge

Highways England – the UK Government-owned company charged with maintaining England's roads – has shortlisted three teams to undertake its €1.8 billion (US\$1.95 billion) Stonehenge tunnel project.

The work will include a new 13km bypass and a 3.2km tunnel to run directly beneath the World Heritage Site in the county of Wiltshire.

The three groups invited to bid for the contract are: BMJV, comprising Bouygues Travaux Publics and J Murphy & Sons; HDJV, consisting of Hochtief Infrastructure and Dragados; MORE JV, comprising FCC Construction (42.5%), Salini Impregilo (42.5%) and BeMo Tunnelling UK (15%).

Exchange rates: April 2020

VALUE OF 1:	AUS	BRL	UK£	CNY	€	INR	YEN	MXN	RUB	SAR	ZAR	KRW	CHF	US\$
Australian Dollar	AUS\$	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	6.889	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 = AUS 1.68



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ALWAYS ON



HIGHLIGHTS

Smart technology company, **EAVE** has developed a hearing conservation system to protect against hazardous noise. The solution is spreading rapidly across the construction industry, with recent subscribers including Galliford Try, Ferrovial and Costain Skanska.

Eave is a digital headset that monitors and maps noise exposure, displaying it via a cloud-based software platform. The data is analysed to produce accurate information about each worker's noise exposure across a workplace or site. Eave headsets also use 'hear through' technology, allowing wearers to continue to hear environmental sound, helping to improve the safety of workers.

Greek consulting and software firm **INVISION** has partnered with New York and Tel Aviv-based tech company Dynamic Infrastructure to offer toll operators in Greece a predictive maintenance solution grounded in artificial intelligence.

Developed by Dynamic Infrastructure, the system creates what the company calls 'medical files' for bridges, tunnels and elevated highways.

The system uses photography taken during annual planned inspections to 'learn' every structural aspect of a particular asset, then compares the historic photographs with new images, to detect maintenance issues or defects that could lead to major failures.

CASE CONSTRUCTION

EQUIPMENT introduced 'Project Zeus,' the 580 EV (Electric Vehicle), said to be the construction industry's first fully electric backhoe loader at ConExpo in Las Vegas, US.

According to a company press release, the power and performance of the 580 EV is equivalent to other diesel-powered backhoes in the Case product line and provides considerably lower daily operating costs while also producing zero emissions.

City governments and municipalities will also benefit from the elimination of emissions for working in urban environments and close to other buildings/people, as well as the reduced noise generated by the equipment.



Danfoss to deliver 'digital displacement' pumps

Danish components specialist introduces next generation of digital displacement technology

Danish components manufacturer Danfoss has released a new generation of digital displacement pumps for construction vehicles which it says can dramatically reduce overall energy consumption.

The pump can replace a standard hydraulic pump on diesel hybrid or fully electric machines which, according to Danfoss, is hugely inefficient – wasting as much as 70% of the engine's power.

At the heart of the digital displacement technology is a radial piston machine that enables cylinders, in real time, using valves which combine electronic and mechanical systems.

Danfoss says the new pumps can harness 100% of engine torque in maximum power mode. It also claims that reduced losses introduce the potential to downsize engine size, without loss of either power or control.

This being the case, the company claims the new pump has the potential to increase productivity by up to 28% and reduce fuel usage by up to 40%.

Hitachi teams up with Topcon for grade control

At ConExpo in Las Vegas, US, Hitachi showcased the new grade control technology it has developed with Topcon Positioning Systems.

The Hitachi Solution Linkage Integrated Grade Control technology allows excavator operators to focus on controlling the machine's arm, while the machine itself controls the boom and bucket.

Hitachi said the system can reduce the number of passes required to achieve the correct grade, as well as allowing less experienced operators to grade without the need for intensive supervision.

The company said the need for grade stakes is also reduced, as are the incidences of over-excavation, as the technology prevents the excavator digging below a pre-set elevation.

The system will be offered, factory-fitted and calibrated, on future models of Hitachi's Dash-6 construction excavators.

Hitachi says it will offer two options – 2D or 3D Grade Control. The 2D version controls the elevation of the cutting edge in relation to a benchmark, while the 3D includes Global Navigation Satellite System (GNSS), which controls position and elevation with respect to a global reference.

JLG's Augmented Reality App

JLG Industries has introduced its new Augmented Reality (AR) App, the latest introduction in the company's expanding portfolio of connected solutions that provide customers with mobile phone and/or tablet-based productivity and safety advantages on the job site.

The JLG Augmented Reality (AR) App uses next-generation augmented reality visualisation to enable faster and more accurate project planning and onsite equipment management.

"One of the JLG core values is to deliver solutions that drive meaningful results to a customer's bottom line. We've looked at their businesses holistically from sales to service to operations, identified pain points and are developing a series of digital tools that make both their jobs and workday run smoother," said Korry Kobel, JLG director of engineering.

"We're very excited to have leveraged the latest in augmented reality technology to develop this app. It represents our company's first step in utilising this powerful, rapidly evolving technology."



The electric excavator has significant advantages of **zero emission**, environmental protection and high efficiency.



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Troubles ahead

With many economies in Latin America already set for only modest recoveries in 2020, the Coronavirus will likely lead to a significant decline in construction activity and spending, reports **Scott Hazelton**

This is the first construction outlook in a COVID-19 world, and a great deal of uncertainty exists, virtually all of it on the downside. The prevalence of the virus in Latin America is unknown at the time of writing, but significant economic impacts will be transmitted from the rest of the world, even if parts of the region can avoid the pandemic. IHS Markit is still refining its Global Construction Outlook, so the outlook outlined here will evolve.

Demand destruction will take a toll on Brazil's economy with an expected recession beginning in the second quarter, with recovery possible in the first quarter of 2021. China is Brazil's major trading partner and the electronics, automobile and energy industries are impacted by a lack of input goods sourced in China.

Brazil relies heavily on the automotive industry which will suffer from lower demand. Public finances in Brazil may suffer lost revenue of US\$9.5 billion, assuming oil price averages US\$25/barrel. This is 2.6% of total central government revenue and 0.6% of GDP (Gross Domestic Product), and has profound implications for investment.

The central bank has cut interest rates, with further cuts expected. The government is likely to mount a fiscal stimulus plan of 1.5%-2.0% of GDP. Our forecast calls for Brazil's GDP to contract 1.0% in 2020 before inching up 0.2% in 2021. A stronger recovery will begin in 2022 with growth of 2.2%.

Difficulties ahead for Argentina

Argentina was in recession before the Coronavirus, and the one-year outlook is dark. Financial

instability in Argentina is mostly the result of deep fiscal and external deficits, but the situation is exacerbated by contagion from international financial conditions, where sentiment is turning wary of risks in emerging markets.

Adding to the perils is the arrival of COVID-19, which will deliver a blow to the already ailing economy, especially on private-sector consumption. The risk of further limitations of non-essential services and production is high as the government seeks to reduce the spread of the disease before the start of winter (in June), and the expected decrease in foreign direct investment (FDI) due to the global crisis will increase the downward pressure on economic activity.

The Fernández's administration has pledged to buffer the economic impact via a fiscal stimulus (approximately 2% of GDP) and continuing expansionary monetary policy. Avoidance of a default will depend on Fernández giving clear indications of his economic policies beyond the emergency period. Investment is expected to remain depressed as investors delay projects and curtail spending plans.

Colombia outperformed its neighbors in 2019, but new downside risks will sideline growth in 2020. Private consumption will barely grow as policies to slow the spread of Coronavirus not only drive up unemployment and lower income, but also limit the ability to buy services, such as entertainment or restaurants.

The oil sector outlook darkened when Saudi Arabia began to drive down global oil prices – demand will also be stilted by the global growth slowdown. Preliminary analysis suggests that

the decline in global oil prices could result in between US\$2 billion and US\$4 billion in lost government revenue from oil taxes and duties. In 2019, industrial production and construction underperformed; the new outlook only adds downward pressure. Lack of oil-related activity will dampen industrial production and construction will falter owing to lower investment. Attracting foreign investment will be difficult.

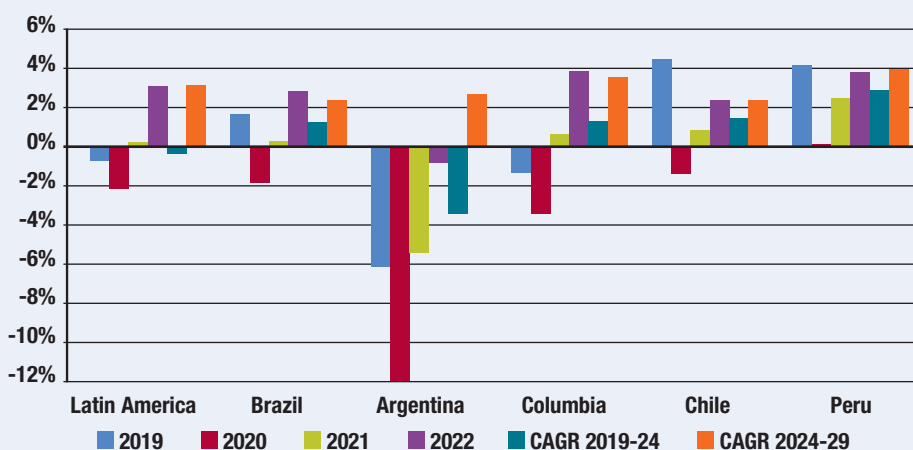
We have sharply downgraded our Chilean outlook to a recession of at least -1.0%. In 2019, the central bank cut rates 50 basis points in May and September, and 25 basis points in November 2019, bringing interest rates from 3.00% to 1.75%.

Global copper prices have fallen 17% between 1 January 2020 and 19 March 2020; not only has this driven down copper production and exports, it has weakened the Chilean peso, which has depreciated 14% during the same period. The spread of the virus will exacerbate economic concerns about weak private consumption and investment. The only support to the economy comes from monetary and fiscal policy.

In the short term, Peruvian economic activity is anticipated to shrink as Coronavirus causes demand shocks and supply disruptions. Public investment is expected to recover as newly elected regional government officials start to implement projects and as the national government continues to implement measures to support growth. We expect overall GDP growth to be nearly 1.7% by year-end 2020 and 2.6% in 2021.

Meanwhile, Venezuela is in a full-blown economic crisis, with plunging GDP, widespread scarcity of basic goods, and hyperinflation. Furthermore, energy prices will be lower in 2020, further damaging economic conditions.

Total construction spending for key markets (percent change, real US\$2010)



Impact of Coronavirus

The contrast in the construction outlook from just several months ago is striking. The expectation was for a modest recovery in regional construction after significant contractions in 2015 and 2016 followed by a couple of years of languid growth. We now project continued weakness for at least one more year, and possibly two. We do not currently project declines as extensive as those in recent history, but the potential exists for the outlook to move lower.

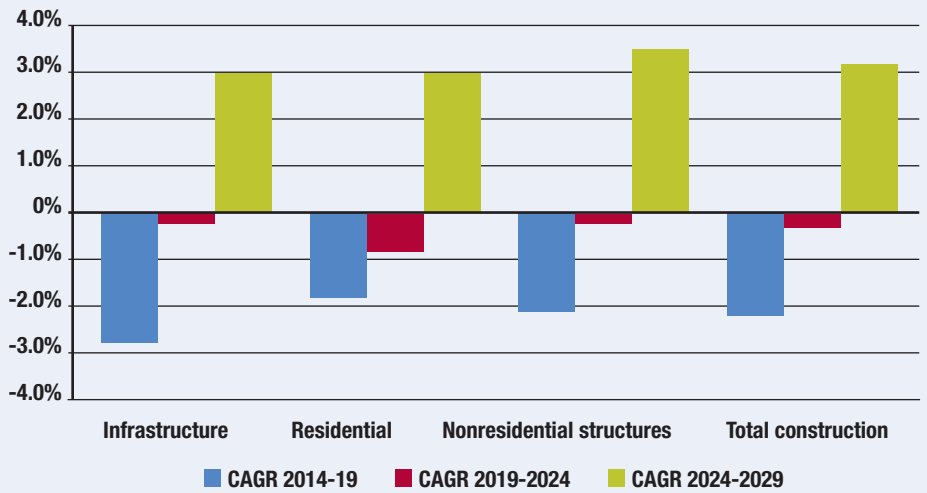
Infrastructure spending bore the brunt of the last downturn, and it will not escape the current one unscathed. Economic stimulus packages typically involve an infrastructure component, but globally, fiscal policy is now prioritised to

About IHS

Established in 1959, IHS is the leading source of information, insight and analytics in critical areas that shape today's business landscape. Businesses and governments in more than 150 countries around the globe rely on the comprehensive content, expert independent analysis and flexible delivery methods of IHS to make high-impact decisions and develop strategies with speed and confidence. Headquartered in Englewood, Colorado, US, IHS is committed to sustainable, profitable growth and employs about 8,800 people in 32 countries around the world.



Real construction spending Growth slows across all structure types



preserving employee incomes and even firm viability via payments and subsidies.

Government investment will still have some role, and infrastructure will suffer the least of the major building types. Infrastructure construction is the largest construction component in Latin America; accounting for almost half of regional construction spending. Brazil and Argentina have the largest markets for infrastructure, and are among the most exposed to economic slowdown and fiscal challenges. Thus, infrastructure

spending for the region will be nearly flat over the next five years, roughly 250 basis points weaker than we expected a year ago.

Residential construction fares worse. Social distancing weighs particularly heavy on retail and services industries, cutting a broad swath through employment and incomes. The collapse in consumer confidence deters long-term investment, such as housing.

At almost 400 basis points, non-residential construction has the largest decline compared to

the outlook a year ago. Yet, it comes from a higher base, and the growth rate will be close to that for infrastructure. Weak commodity prices lower revenues and a global recession restrains trade. Business confidence will be weak and risk-averse investors will pull back on construction plans, particularly in developing markets.

Latin America continues to face challenges, compounded by Coronavirus. The risk is that the global economy contracts even further than we expect, deepening the short-term prospects. **IC**

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Unprecedented times

As a result of the COVID-19 strain of Coronavirus, Europe is in a position that has never been seen before. A global effort is ongoing to contain the virus with almost all governments in Europe choosing to follow the advice of the World Health Organisation (WHO).

The governments of Europe have generally shown strong leadership, but there has been some confusion from construction companies about whether construction is considered 'essential' and whether work should continue, or if firms should temporarily cease to operate. By its very nature this is an ever-changing situation and every effort has been made to ensure that all information provided in this article is as up to date as possible by its print date.

On 24 March the European Construction Industry Federation (FIEC) called for immediate action from the European Union (EU) Commission to support the construction industry through the COVID-19 crisis.

The Federation – whose members are 32 construction associations in 28 countries – said the EU needed to ensure that COVID-19 is considered a force majeure (unforeseeable circumstances that prevent someone from fulfilling a contract), to eliminate penalties for companies that have to suspend work; and to increase European funds to cover the increased costs of the work.

FIEC also called for EU member states to allow the possibility of suspending or reducing ongoing construction, without penalties and/or damages, if a contractor is unable to comply with required health and safety measures or if it can't work because of supply chain issues or illness in its workforce.

FIEC said in a statement, "The Covid-19 pandemic is a

The COVID-19 Coronavirus pandemic is sweeping the world and the short-term effects on the construction industry, in Europe and beyond, are dramatic, **Joe Sargent** writes



Gabriele Buia, ANCE President, requested a halt to all ongoing Italian construction sites



public health emergency, which is severely impacting economic activity in all the member states. The construction industry in Europe is essential for major infrastructure works and projects that promote community well being. It accounts for 9% of EU27 GDP and employs 16 million workers.

"The negative effects of Covid-19 on the construction industry in Europe are considerable," FIEC stated. "In these conditions the already complicated management of construction sites is becoming even more complex, if not impossible, when companies try to comply with the new and drastic health and safety measures."

On 17 March in Italy the contractor association ANCE called for the shutdown of all construction sites. The President of ANCE, Gabriele Buia, wrote that construction companies were unable to provide their workers with the required health and safety measures.

According to Buia, it is impossible to find sufficient personal protective equipment – that he said should go first to healthcare workers – and he said the supply chain was in crisis.

Also on 17 March, the UK's two main contractors organisations said construction was likely to be, "dramatically and severely affected" and that sites may have to close.

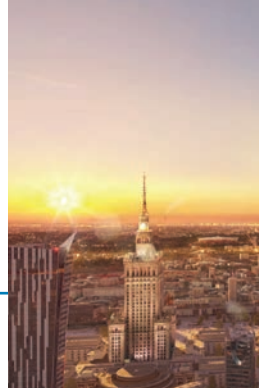
The subject of whether or not construction sites should be open is a hot debate in the UK at present with many construction workers disgruntled by the perceived disregard for their and their family's welfare.

On 25 March, the UK contractors' association CECA issued a statement about working on sites. It informed the UK industry that the Cabinet Office had confirmed that construction in England could continue if it can be done safely and in accordance with Public Health England guidance.



Vinci sites in France have been closing since 16 March

The Varso Tower in Warsaw, Poland is set to become the tallest building on EU soil





Projects on hold

In France, Europe's largest contractor, Vinci group, shared the news from 16 March that a number of large national construction projects were being halted as a part of containment measures. On 23 March, in a bid to get the industry back to work, Vinci Construction stated that, "Industry organisations held talks with public authorities to define conditions under which works can resume gradually while ensuring the health of those involved."

Outside France, Vinci said that the situation is more varied and despite "significant logistical difficulties", it has maintained activity in many countries, whilst complying with health measures.

Of course, it is important to remember that whilst these are unprecedented times, this period is temporary and there will be opportunities to be seized by those who make the right decisions and weather the storm. Vinci said it intends to position itself to recover quickly, in both its construction and concessions divisions, as soon as the health crisis is under control.

On 20 March, Dutch contractor Royal BAM group took the step to shut down all its construction sites in Belgium. Within the country, BAM had over 100 projects underway and registered the majority of the near 1,200 strong number of employees for temporary unemployment. This move, BAM said, will ensure that they will be entitled to unemployment benefits from the Belgian National Employment Office.

In Germany, the decision has been taken, at the time of writing, to continue construction work across the country. Federal Minister

Many construction sites have said that finding sufficient personal protective equipment has been challenging

Italian flag light show put on by Salini Impregilo can be seen across the Genoa Bridge in Italy

Andreas Scheuer said construction industry associations within the country agreed that a continuation of the construction sites is necessary even in times of the crisis in order to further increase the efficiency of the infrastructure in Germany.

The president of the Central Association of the German Building Industry, Reinhard Quast, responded on 25 March, saying, "We very much welcome the decree issued by the Federal Ministry of the Interior, Construction and Home Affairs (BMI) and the Federal Ministry of Transport and Digital Infrastructure (BMVI) on the continuation of construction work in building construction, road construction and hydraulic engineering."

"The continuation and new tendering of infrastructure construction sites is an essential pillar of the domestic economy, which must be maintained."

Infrastructure projects

There are many great projects planned or underway in Europe at present. Of course, many of these projects may be affected by the Coronavirus, through ballooning costs and delays or potential cancellations, but Europe has much to shout about in terms of feats of infrastructure.

After a disaster it's necessary to re-build. That is exactly what happened in Italy with the ongoing construction of the New Genoa Bridge in Liguria, following the collapse of the old Morandi bridge which killed 43 people in 2018.

Salini Impregilo, lead contractor on the bridge, launched an initiative to beam lights the colour of the Italian flag across the under-construction Genoa bridge. Salini said the move was intended to be a message of hope and a symbol of solidarity for the many Italian people affected by the Coronavirus outbreak. ➤



UK apprenticeships safeguarded

Preserving skills in the face of the Coronavirus outbreak

The Construction Industry Trading Board for the UK construction industry (CITB) is paying, in advance, apprenticeship attendance grants for second and third year apprentices to help keep skills in the construction industry amid the Coronavirus outbreak. The payments will be made from 6 April for apprentices.

The payments are expected to be able to support 7,500 apprentices, and will advance up to £2,500 (US\$2,969) in attendance grants at a time when retaining apprentices is critical.

The CITB has also worked with the Education and Skills Funding Agency (ESFA) to discuss funding rules on breaks in learning for apprentices.

Apprenticeship schemes such as those offered by Aggregates industries could be affected



Approximately 300m of the new bridge has now been constructed. Once completed, the bridge will be equipped with solar panels to generate the electricity needed to power its lights and other systems. There will also be robots to inspect it and conduct regular maintenance.

With the UK's exit from the EU on 31 January 2020, the Shard building in London is now no longer considered an EU building. From the ashes of the UK's copy of the Lisbon treaty, a phoenix rises in the shape of the Varso tower in Warsaw, Poland. The tower, which is currently under construction, is set to take the crown as the tallest building on EU soil at a height of 310m.

In terms of high-speed rail, one of the most expensive and controversial projects, is the UK's HS2. The rail project is set to link the country's capital, London, to Birmingham and reduce travel times from one hour and 21 minutes to just 41 minutes.

HS2 first broke ground in 2017, with an anticipated budget of £56 billion (US\$69 billion), which was already a significant hike from the original pricing estimate of £33 billion (US\$41 billion). These estimates exploded recently in a report by former HS2 chairman and civil engineer Douglas Oakervee which found that the project would likely cost in the neighbourhood of £106 billion (US\$130 billion).

Despite this eye-watering price difference, UK Prime Minister Boris Johnson's cabinet have given the project the go-ahead.

Sweden is another country looking to speed up its connection times between cities with the Swedish Transport Administration planning to develop new main lines between Stockholm-Malmö and Stockholm-Gothenburg – starting with the East Link for Järna-Linköping (approximately 150km), Göteborg-Borås (approximately 60km) and Hålsjöholm-Lund (approximately 70km).

At an estimated cost of US\$23.8 billion, these initial projects can potentially form part of a 660km high-speed rail network that will connect the southern parts of Sweden; increasing capacity and reducing inter-city journey times.

In France too, there are many interesting projects to consider, the most notable being the Grand Paris Project, in the



Aerial view of HS2's Old Oak Common London station plan

EDF Energy's Flamanville 3 nuclear facility in France is approximately €1.6 billion (US\$1.75 billion) over budget



An aerial view of a station under development in the Grand Paris project and the surrounding area



country's capital. At a cost of €26 billion (US\$28.6 billion), the focus of the project is to create a new public transport network to act as the framework to link the region's main economic centres.

As the largest energy exporter in the world, a big emphasis in France is also being placed on renewable power. The government announced that, between 2024 and 2028, it would double its annual tendering capacity for windfarms, from 500MW to 1GW.

A large portion of France's energy exports is generated through nuclear power. France generates the most nuclear power in Europe, with a total installed nuclear power capacity of 63.1GW at the beginning of 2019.

However, French Energy firm Électricité de France (EDF) has been suffering from delays and unexpected costs at one of the country's latest nuclear power generation projects, Flamanville 3. The plant, situated in Northern France is said to be seven years behind schedule and over budget.

One big project which was recently completed was the 14.4km Ryfylke Tunnel near Stavanger, Norway. Opened in January of this year, the tunnel is also the deepest subsea tunnel anywhere in the world, reaching a maximum depth of 292m below sea level.

However, the tunnel is not set to hold the title for long as in Boknafjorden, Norway, construction is taking place on a tunnel that will delve as much as 392m below sea level.

The US\$39 billion (€34.5 billion) Rogfast Tunnel is being constructed to halve travel times on the existing E39 coastal highway; currently 21-hour journey between Kristiansand in the south and Trondheim in the north. As is the case with so many other projects in Europe, whether the tunnel will face lengthy delays due to the Coronavirus remains to be seen. **IC**



Part of the Rogfast tunnel project in Norway, the suspension bridge at Romdals Fjord will be 2km long

Downgraded forecasts

Europe's economy is "the biggest problem," according to IHS

Global GDP growth could soften to 1.7% this year as a result of the Coronavirus outbreak, according to specialist consultant IHS Markit. This represents a significant fall from the company's earlier forecast of 2.5%.

Scott Hazelton, managing director at IHS Markit, speaking at the Off-Highway Research breakfast briefing on 11 March during ConExpo, said the outbreak would impact all regions, with US GDP growth falling from 2.1% to 1.8%, and Europe from an already modest 0.9% to close to zero growth.

"The biggest problem is Europe", said Hazelton, "which we now think will go into recession." He emphasised that the rapidly changing picture on the outbreak made forecasting very difficult.

Scott Hazelton talking at the Off-Highway Research event



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Earthmoving

Earthmoving equipment includes a wide variety of different types of machinery and accounts for the largest segment of construction equipment sales. Over the next 13 pages we shine a light on: large excavators, large wheeled loaders, dozers and articulated as well as rigid dump trucks.

Productivity is key

Extractors are the most popular form of construction equipment in the world, with the global market for crawler excavators in excess of 300,000 units per year (for all sizes). In short, crawler excavators are popular in all corners of the world. This feature is focused specifically at large excavators for earthmoving – although of course some of these impressive machines can also be used for other applications related to construction.

With machines so sizeable, and expensive, it is even more vital than ever that large excavators achieve a high level of production performance paired with an adequate total cost of ownership (TCO). A vital criteria for this segment of excavators are therefore fast cycle times, high productivity rates and excellent serviceability – machine uptime is crucial in these applications.

Another major factor – and potential headache for contractors and owners – is transportation. Moving such large machines

With large excavators being a substantial expense for contractors it is vital that they are as productive as possible. **Andy Brown** looks at some of the ways this is happening

**Doosan's
DX530LC-7**

between sites may not be regular occurrence, but can still need to happen. Hyundai CE says its 90-ton (81 tonne) HX900L has pre-installed features which help to facilitate transport. The easy-to-lift-off counterweight comes with integrated lifting eyes and the track frames can be slid in or fully dismounted.

Some of the technological highlights on the large excavator are said by the manufacturer to be an IPC mode (Intelligent Power Control) that optimises pump flow by analysing operators' joystick control pattern. A pump summation for breaker operation (high flow at low engine speed to reduce fuel consumption) and an Input Signal means a constant exact pump control through improvement of variable engine.

Peter Sebold, product manager at Hyundai Construction Equipment Europe, said, "Following changes in infrastructure and building construction, there are new challenges along the way, such as in building height or reach for demolition sites and construction waste handling.

"We can see a trend towards bigger size of special machinery. Hyundai CE, amongst other manufacturers, firmly believes that the market will continue to ask for large construction machinery."

In March this year Doosan launched the new DX490LC-7 and DX530LC-7 Stage V 50 tonne crawler excavators. According to Doosan these new 50 tonne excavators offer the strength and productivity needed for heavy-duty work such as large-scale earthmoving, moving rock, pulling down buildings, secondary breaking, loading haulers and pipeline projects found on quarrying and



equipment

All of these equipment segments are being progressively loaded with new technology to make them more productive than ever before while, as we will also see, operator comfort is an increasingly important consideration for all equipment manufacturers

The Komatsu PC1250SP-11 is said to offer increased operator visibility

mining, highway, aggregate, demolition, utility and general construction projects.

To meet Stage V engine emission regulations, the excavators are powered by a new Scania DC13 Stage V compliant diesel engine, providing a higher power output of 294 kW (394 HP).

Due to new technology, maintenance of the diesel particulate filter (DPF) has been greatly reduced, with a six times longer automatic regeneration interval (60hours) and an ash cleaning interval that is twice as long compared with the previous DPF in the DX-3 generation.

There are now four power modes available on both machines. This has been done to simplify the operation of the new excavators compared to the more complex choice of eight power modes and SPC combinations in the previous generation machines.

Next generation

Liebherr unveiled its new Generation 8 crawler excavators at Bauma Munich, with the US launch for several models occurring



Hyundai's HX900L has pre-installed features which help to facilitate transport

at ConExpo. While some of this range does not fit into the category of large excavators, the bigger models in the range do.

Thomas Haas, head of product management for earthmoving, Liebherr, comments that the demands of operators have changed and that this is something the company was aware of when designing the next generation crawler excavators.

"The operators become younger and younger. This is the PlayStation generation now, and this is why we make these machines to be much more comfortable," said Haas. "The operator can, via the touchscreen, influence the behaviour settings of the machine. He can, in a certain range, set the priority between boom and swing movement.

"According to what he prefers and needs he can make his own adjustment on the machine, on the touch screen for the stick movement, for the swing brake. This is really an evolution of the operators; the demand is much more complex than it has been in the past."

An interesting new feature on the Generation 8 excavators is what Haas refers to as 'rental mode' due to an analogy with a rental car; the first time you get behind the wheel of a rental car that you have never driven before the controls looks familiar but different at the same time. You have the option of driving off without properly knowing what all the controls do, or stopping and reading the manual before setting off.

With excavators having what could be described as complex controls for someone not familiar with them – and with each >

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brand having a slightly different set up – step forward ‘rental mode’.

Haas explains, “We paid attention to feedback, especially from the US, that our machine settings can be a bit complex because there’s so many. So we give the possibility to the customer to select on the machine regular software, a human machine interface with all of the possibilities, or to select another mode where many of these functions are hidden.

“The operator does not see these functions; he can operate an excavator as he did for the last 20 or 30 years. This is our response to the two categories of operators. However, when a customer gets familiar with the machine or a long-term rental, then they can just choose to go and open the full application.”

Liebherr showed off some of its excavators at ConExpo; also at the Las Vegas show was Komatsu with the largest excavator on the Komatsu indoor booth, the PC1250SP-11.

High volume earthmoving

Kurt Moncini, senior product manager, Komatsu America, says the machine has a broad range of applications, commenting, “We go from high volume earthmoving and mining to very specialised applications. It’s a very big construction excavator but, at the same time, it’s also a somewhat small mining excavator.”

Moncini comments that there is a “global appetite” for the machine and, when asked about which of the machine’s many new features he thinks is most important, highlights the improved visibility – absolutely essential for excavators of this size.

“One of our focuses as a company is helping increase situational awareness. If I’m going to back up, I want to make sure I have the ability to see what’s around me. I can pick any one of the four cameras and I can have an individual camera view on the right. If I want to go full screen, I can go full screen on any one of the individual four cameras. So we’re working on situational

“ One of our focuses as a company is helping increase situational awareness. If I’m going to back up, I want to make sure I have the ability to see what’s around me ”

Kurt Moncini, senior product manager, Komatsu America



Thomas Haas, head of product management for earthmoving, Liebherr

Liebherr has a range of different size excavators in its generation 8 line up

awareness.”

Across the construction industry the lack of skilled operators has been making them more important than ever, with many reporting that their influence over the decision-making process regarding buying equipment is only increasing. This is something that Moncini acknowledges has been taken into consideration with

the PC1250SP-11.

“You’ll probably find a lot of customers will take input from operators. That’s their office; they sit in that office eight to ten hours a day. Our focus is on cab mounts, vibration, operator comfort, climate control, sound visibility and controls.

“It is absolutely correct to say that if I sit in that cab I want to be in a machine that is comfortable and I want to be able to go home feeling more or less the same way I came to work.” Regardless of the size of the equipment, operator visibility and comfort are still key.

ic >

Excavator is hot stuff

Case CX750D tackles tough lava extraction project in Germany

A 75-ton (68 tonne) Case CX750D from the company’s latest D-Series range of excavators is being put to work by AG für Steinindustrie in a lava trench in Germany. The machine has been serving the company at the Ochtendung lava plant, located southeast of Krufft in the Fresserhöfe mining region. AG für Steinindustrie has conducted mining, processing and shipping operations there since the 1970s. The company’s specific operation is to mine lava from the Tönchesberg, one of the volcanic cinder cones that gives the volcanic area of eastern Eifel its distinctive landscape.

The CX750D is used for the direct extraction of raw materials in the lower part of the mines. Volcanic clinker and lava sands are present naturally as loose rock and are separated directly from the mine wall using the machine. After this, the material is loaded onto dump trucks or broken down on site with a mobile crusher to a size that allows for easy processing.

The extreme abrasiveness of the lava material demands high performance from the bucket and arm. In addition, the mining area is crisscrossed with numerous basalt deposits, which, for safety reasons, must be washed away repeatedly in the course of the excavation process.

For this reason, AG für Steinindustrie opted to purchase the Mass Excavator (ME) version of the CASE CX750D, which – with a maximum breakaway force of some 366 kN, a larger bucket cylinder and optimised kinematics – is said to be suited for tough extraction jobs. The fixtures are also designed for extreme loads, with a reinforced HD boom, a shortened 3.02 m HD arm and an armoured 4.00 m³ rock bucket.



Loads more efficient

New technologies are being used in the large wheeled loader segment to make them easier to operate and more efficient than ever before, writes **Andy Brown**

A key design factor in wheeled loaders is in making them as easy to operate as possible – a side effect of this being that, the easier they are to operate, the more productive and efficient they will be.

John Deere's 664L hybrid wheeled loader has, as the name rather suggests, a hybrid-electric transmission system. Grant Van Tine, wheeled loader product marketing manager, John Deere, says that it was designed, "for increased efficiency and ease of operation." He also comments that it is powered by a John Deere 6.8L FT4 engine, for which the operator can select a constant engine speed, again making it as easy to operate as possible.

"Noise is less noticeable to bystanders, making the 644L Hybrid a good neighbour in residential areas," adds Van Tine. "The hybrid-electric transmission includes a three-speed power shift transmission with four speed ranges. Energy is recycled when the operator lets off the accelerator, changes direction, or drives downhill, reducing load on the engine and lowering fuel consumption."

Hitachi says that the company's ZW370-6 large wheeled loader was designed following extensive research to answer the needs of challenging working environments. Customer demands for reliable performance without compromising on fuel efficiency, increased productivity, and optimum comfort and safety, have all been considered.

The large wheeled loader is powered by a new Stage IV compliant engine for increased productivity and efficiency. It incorporates robust components, and the traction force of the ZW370-6 wheeled loader is said to ensure an efficient loading operation. The quick power switch increases engine output when more power is instantly required, or when driving uphill.

Customers can choose between two types of lift arm depending on the required application. The standard lift arm delivers a high breakout force, whereas the high lift arm is applicable when a greater dumping height is needed. Both can be controlled using the auto leveller.



The ZW370-6 has a quick power switch to increase engine output

Simultaneous movement of the lift arm and bucket helps to ensure a smooth digging operation. The bucket is prioritised after unloading so that the wheeled loader quickly returns to digging, helping to increase productivity.

Another example of the technology incorporated within the ZW370-6 is the selective catalytic reduction (SCR) system – designed to comply with the latest emission regulations and lessen the wheeled loader's impact on the environment. The SCR system injects urea into exhaust gas to reduce nitrogen oxide from emissions. No diesel particulate filter is required, which also reduces maintenance costs.

Electric drive

Another company innovating in the area of wheeled loaders is Caterpillar, with the company producing models equipped with an electric drive system. One example of this is Caterpillar's 988K XE, which saw the first units come off the production line at the beginning of 2018.

Sector analysis

The team from Off-Highway research shine a light on this market

The competitive landscape in the global wheeled loader market has changed significantly since the mid-2000s and the emergence of several large Chinese OEMs onto the world stage. The wheeled loader was historically the most widely available machine in China and, as demand exploded, the country's OEMs (Original Equipment Manufacturers) saw their volumes soar.

China is still the main market for its domestic OEMs, but the likes of LiuGong and XCMG are certainly international forces now, as are the Western owned or controlled Chinese brands such as SDLG and SEM.

Global demand is currently around 160,000 wheeled loaders per year (of all sizes) and China remains by far the largest market. It is two to three times the size of the next largest, the US.

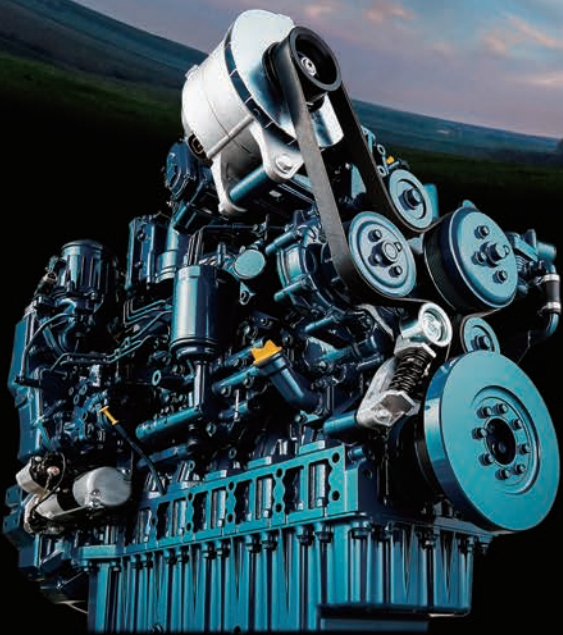
Popular size classes vary from country to country but tend to be around 120-250HP (90-185kW). Smaller classes are popular in some markets – particularly Germany – but there is also competition from other equipment types such as skid steer, compact tracked and backhoe loaders, as well as telehandlers.

In emerging markets, much more cheaply built local agricultural equipment may also pose a challenge to highly engineered construction products. At the other end of the spectrum, the market tails off somewhat above 350 HP (260 kW) as products can morph into high value/low volume mining machines.



John Deere's 664L hybrid wheeled loader

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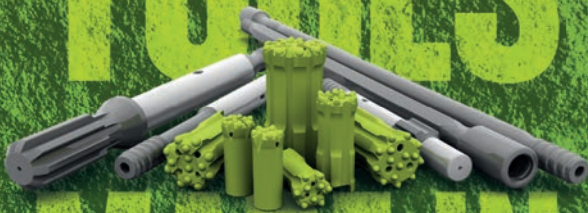


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The wheeled loader is selling strongly in North America and Europe, with Germany in particular reported to be firmly onboard with electric drive. This technology is not new – Bjorn Westlund, Cat wheeled loader product expert, says the company have been working on this for a while, commenting, “At Caterpillar we started our electric drive journey more than 15 years ago, first dipping our foot in with the D70 electric drive dozer platform.”

Westlund says the electric drive isn't about producing more power, but rather increasing efficiency, and the biggest measure of efficiency that the company use with loaders is tons per gallon.

“On average we have shown in face loading applications that an 988 XE can achieve upwards of 25% fuel savings without lowering the production,” he comments. “The idea is that you may get more efficiency and maybe a little bit faster because, as with most electric drives, you have that immediate torque available.”

The wheeled loader also has a new feature called virtual gears. With this the operator essentially has a speed limit setting; as long as they don't exceed the upper level they don't have to worry about changing gears because they will automatically get the maximum amount of torque allowed.

When it comes to the operator, Westlund says that with the 988XE compared to the 998K without electric drive, the only difference is the virtual gears and these actually make life easier for them. “It's a very smooth transition between the power shift to the XE, the only difference is those virtual gears, which actually take work away from the operator, it makes it easier.

“Overall, we've gotten really good feedback. It's immediate, responsive, very smooth, it's easier on the operators and there's less jerking and gear shifting, especially in directional shifts. At the end of the day, they say that they feel better getting out of an XE than they do a power shift.”

However, with electric drive not the norm, parts may be harder to source and, in terms of price, it is more expensive than a conventional powershift. It also has increased machine weight and its run out speed is slightly lower but, says Westlund, the fuel efficiency and less wear on components make electric drive an increasingly popular option.

“We've already had many of our customers come back and ask when our next bigger machine is going to come out. In fact, some of our customers don't even want to buy the powershifts anymore. They want to go directly with the electric drive technology. So we continue to develop that and are always looking for improvements.”

Operator options

In order to make its wheeled loader and the operator as efficient as possible, JCB say they have two power modes on the JCB 457 wheeled loader. According to a JCB spokesperson, “The two power modes (Standard and Dynamic) allow the operator to choose whether they wish to achieve the best fuel efficiency per tonne of material moved (Standard mode), or maximum productivity (Dynamic mode) for increased output.

“Both of these modes cater to all industry sectors. Standard mode could be particularly effective in a level yard, bulk rehandling loose material, whereas Dynamic mode would be

ideal for extraction duties in the quarrying sector and especially when there is challenging undulated ground conditions to counter while carrying a load of material.”

JCB added that new features had been included to meet the increased demand for operator comfort, such as the rear view camera, climate control, heated or cooled leather seat, in-cab multi-media port, cool box for keeping drinks and food cold and 360 degree lighting. All have been added to produce a more comfortable and productive operator environment.

Looking ahead, it is interesting to consider what the future development of large wheeled loads may bring about. John Deere's Grant Van Tine comments that the technological developments are – and will be – rooted in what customers need.

“The shortage of skilled, experienced equipment operators has driven development of wheeled loaders that are easier to operate, more efficient and more productive. Additionally, we continue to look for ways to reduce owning and operating costs to help contractors facing declining margins.

“The 644L Hybrid was designed with these issues in mind and we can expect to see further development to address these challenges and more in the future.”

One thing is for certain – with the operator shortage and the importance of cost management not going away any time soon, this product will only continue to develop and evolve. **IC >**

Cat says that electric drive leads to increased efficiency

JCB's 457 wheeled loader has two power modes



A different application

LiuGong's wheeled loaders adapted to transport hot steel slags

China-based LiuGong uses graphite in the lubricating shaft sleeve to extend the usability of 877H wheeled loaders so that the machine can transport hot steel slags (450-500°C). The wheeled loader also uses reinforced glass and steel to prevent the machine from over-heating and from hard impacts.

Other features and benefits are a new-generation enhanced front axle with stronger bearing capacity which ensures the machine's reliability, even under heavy loading conditions. The exposed rubber parts such as boom oil cylinder pipeline, bucket oil cylinder pipeline and front frame line are covered with heat insulation protective covers, which effectively avoid the accelerated aging of rubber pipe by the thermal radiation of steel slag.

The wheeled loader features an innovative steel-based solid embedded self-lubricating shaft sleeve, which is different from normal wheeled loaders of lubricant oil films; this is to prevent the lubricant being dried under high-temperature. At the same time, the embedded graphite can absorb the dirt and extends the shaft's life. Protective plates or barriers are installed at the machine body where it's at risk of impact to prevent oil leakage and eliminate the fire risk.

This model is said to be particularly popular in the Middle East, Asia Pacific and Russia.





Standard Automatic Traction Control on Cat dozers means there is no need for operator interaction

Smarter, more

New technology offers operators greater productivity and accuracy in grading, as **Jenny Lescohier** discovers

“ Contractors want a dozer that will mass excavate while achieving finish grades



“The 950K will fit into so many different customer segments providing the production capability of a large dozer with the versatility of a small finish dozer.

“The large, PAT blade provides the ability to control and windrow material allowing the operator to balance out cuts and fills faster than ever.”

Levelling the playing field

Every facet of construction is struggling to attract and retain experienced operators. With that in mind, OEMs (Original Equipment Manufacturers) are working to provide features that simplify operation in order to retain skilled operators as well as enable less-skilled workers to be more productive.

To some degree or another, most OEMs are finding ways to automate key functions so that inexperience is taken out of the equation.

With that in mind, Komatsu introduced the second generation of its intelligent Machine Control (iMC), iMC 2.0, which is a suite of features that utilises advanced machine technology – some of it patent-pending – to increase dozer productivity.

Komatsu's largest intelligent hydrostatic transmission (HST) dozer, the D71PXi-24, made its global premier at ConExpo in Las Vegas, US. According to Derek Morris with Komatsu America Corp., the D71PXi-24 offers increased versatility and ease of operation.

“Customers say they want this size class dozer to be a ‘Swiss army knife.’ And with our patent-pending features that let you go from grass to grade, it delivers both high production and finesse,” he says.

Cat's new lower sloping hood line improves visibility to the peripheral view and blade's cutting edge

In as much as construction equipment can be personified, dozers are not glamorous machines. They're more like the draft horse in the stable – powerful, productive, straightforward in form and function.

However, with rapidly advancing technology, even these humble work horses are highly sophisticated and getting more so with every design iteration. Owners and operators are expecting more from every piece of equipment and dozers are no exception.

“This is especially true when looking at large site development and road building projects,” explains Cory Brant, product consultant, crawler dozers, John Deere Construction & Forestry. “Since contractors are looking for versatility, they want a dozer that will mass excavate while achieving finish grades.”

In response to this demand, John Deere developed the 950K Power-Angle-Tilt (PAT) Dozer a few years ago and has now redesigned the 850L machine.

“John Deere was the first manufacturer to offer a larger, PAT dozer like the 950K that has the capability to bridge the gap between mass excavation and finish work,” Brant states.



sophisticated dozers

John Deere's SmartGrade integrated mastless grade control system allows less experienced operators to be more productive while learning

The suite of productivity features that comprise Komatsu's intelligent Machine Control 2.0 include: patent-pending proactive dozing control, which automatically cuts/strips from existing terrain like an experienced operator by measuring the terrain it tracks and using that track-level data to plan the next pass.

Also offered is the patent-pending lift layer control which automatically spreads fill over existing terrain in consistent lifts, with the press of one button. The dozer measures the terrain it tracks over and uses that data to plan the next pass for consistent layers and quality compaction. According to company literature, this doubles production and achieves consistent layers for quality compaction.

Tilt steering control automatically tilts the blade to maintain straight travel during rough dozing and reduces the need for operator steering input by up to 80%, the company says.

Quick surface creation creates a temporary design surface with one press of the button. When combined with other iMC 2.0 functions, Komatsu says operators can begin stripping or spreading using automatic without waiting for or needing a complex 3D model.

"This is a building block to more dozer automation down the road," Morris says. "Intelligent Machine Control 2.0 can be used 100% of the time to greatly increase return on investment and reduce time on the job. It increases quality control and cuts down on rework."

John Deere's new 700L and 750L dozers are fitted with larger, more comfortable operator stations



Leica furthers dozer digitisation

Machine control solution simplifies grading process

Leica Geosystems, a Hexagon company, introduced its Leica Ready machine control kits will now be available for a new generation of Liebherr dozers, one of the world's largest manufacturers of construction machinery.

The Liebherr Dozer PR736 Generation 8 will now be supported with a new cable kit for the Leica iCON iGD4SP, iGD2 and iGD3 machine control solutions for dozer grading. Furthering the digitalisation of construction and connecting more machines onsite for seamless workflows, the new technology enables the dozer to interface within a 3D environment.

"This new integration of technologies results in improved efficiencies and productivity for the construction professional," said Kris Maas, Leica Geosystems Machine Control director of product management. "Working with Liebherr, we are honoured to bring solutions to these professionals around the world."

The Leica iCON dozer systems open new dimensions in earthmoving and fine grading. Bringing the design surfaces and alignments inside the cab, there is no longer a need for stringlines, stakes or hubs.

Leica iCON iGD4SP Dual GNSS improves accuracies when working in demanding environments, such as steep slopes and spreading base material in preparation for concrete or asphalt. Combining technology for speed and precision with the dual GNSS antenna solution allows for the machine to operate at high speed while the blade is angled to efficiently control material from pass to pass.

Leica's iCON dozer systems bring design surfaces and alignments inside the cab





Slope Assist helps the operator to more easily achieve the desired blade mainfall slope (fore/aft) and cross slope (left/right) by automatically maintaining the operator's established blade grade angles.

The dozers' Power Pitch option enables the operator to control blade pitch (fore/aft) remotely from the operator's compartment to optimize blade pitch for blade loading, optimising machine productivity by up to 6%.

Also leveling the playing field is Deere's SmartGrade integrated mastless grade control system that provides less experienced operators the ability to be more productive while learning to be a better operator.

"This system also provides more accuracy and increased efficiency than conventional hand grading to grade stakes," Brant says. "Now, customers facing tighter margins need entry level operators to be able to get on grade quickly and efficiently without moving

more material than necessary."

Brant says SmartGrade allows operators to reduce the number of finish passes and get the most out of each pass.

He adds, "This ultimately leads to better productivity and minimised undercarriage wear."

John Deere also offers the option for its Slope Control grade system that automatically positions the blade, constructing desired main falls and/or cross slopes. This system is upgradable to the John Deere SmartGrade grade control system, allowing customers to grow the technology with their business.

The John Deere 850L was engineered for productivity and durability. By increasing engine size, power, torque, and overall machine weight, Brant says it's able to push larger loads and grade even faster. Other enhancements to this machine include >

Dressta's TD-16N comes with a standard six-way angle blade and is compatible with 2D and 3D grade control systems

Staying on the theme of new technology, the new Cat D2 and D3 Next Generation small dozers (replacing the D4K2 and D5K2, respectively) feature standard Automatic Traction Control which no longer requires any interaction with the operator, as it did on previous models. It allows for greater productivity of each cycle by reducing track slip when the machine encounters maximum load.

Cat's Slope Indicate is said to improve operator confidence when working on slopes by providing slope of the chassis in the cross-slope direction without guessing. Stable Blade complements operator blade control input, allowing the operator to finish grade easier, quicker and with less effort, according to the company.

Available as part of the Cat attachment ready option (ARO) for easy scalability to Cat GRADE with 3D control systems,

“Customers say they want to go from grass to grade for high production as well as finesse”

The big picture

An overview of the dozers market from Off-Highway Research

Dozers are typically associated with greenfield construction of primary infrastructure, such as road, rail and airports. They therefore typically tend to be used in emerging economies where the emphasis is on new build infrastructure and completion of national networks, rather than mature economies where construction tends towards repairing and maintaining what is already there.

Paradoxically, the biggest market in the world for dozers (and graders) is also the most mature economy, the US. This reflects the fact that it is a sparse country, and that outside city centres construction tends to be low rise over a large area – sprawling would be an unkind way of putting it. This means there is on-going demand for construction equipment that can level and sculpt plots of land.

Putting the US aside, the other major markets are what might be expected – large emerging economies with major infrastructure investment programmes. China tops the list. India is next when it comes to graders, but dozers do not enjoy huge popularity.

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The Dressta TD-16N is built for versatility with an undercarriage design which utilizes a single-track gauge for all track shoe widths



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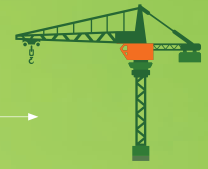


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an operator focused cab, additional technology features and improved hose and harness routings.

The newest products to the John Deere crawler line up are the 700L and 750L Dozers. Similar to the 850L, these dozers are fitted with larger, more comfortable operator stations that give operators an improved view of the blade and work site.

Visibility and versatility

Dressta's new TD-16N was designed to set a new benchmark for visibility, says Gary Major, executive director of industrial design with LiuGong/Dressta, "We set out to create the best visibility in class – I think we've achieved that."

The dozer features a mid-cab design over a mid-mounted automatic, dual path hydrostatic drive train. It comes with a standard six-way angle blade and is compatible with 2D and 3D grade control systems.

The TD-16N is built for versatility with an undercarriage design which utilises a single-track gauge for all track shoe widths. This allows the dozer to be reconfigured at any point in its life, from standard to LGP undercarriage, by simply changing the track shoes and the blade.

The hope is this will increase resale values by allowing future owners to reconfigure the machine to match their specific needs.

Operator safety was another priority during design. According to Major, "Every operator out there has a story about falling off the tracks... this is the first machine where you don't have to get onto the tracks."

The R&D team designed non-slip steps at the rear of the machine, totally negating the need to step onto the tracks. Complete with safety handrails, these steps allow easy access to



Komatsu's new D71PXi-24 dozer was just introduced at ConExpo in Las Vegas, US

“ Remote Display Access will make it easier and faster for support to view the operator's screen ”

and from the cab with three points of contact maintained at all times. Secondly, all access points for daily checks, maintenance and fueling are reachable from ground level.

Future focus

Like its other earthmoving brethren, the humble dozer is poised to see unprecedented technological advancements in the future, including remote control. For example, Caterpillar already offers Cat Command for Dozing in Construction, offering line of sight control with a console or operation from a remote station. As Caterpillar notes in its literature, it's a safer way to operate.

Brant at John Deere explains the benefits of Remote Display Access, commenting that it will, "make it easier and faster for support teams to view the operator's screen remotely to troubleshoot and diagnose the SmartGrade system. Changing site plans and revisions to surface models can cause headaches for customers that need to get updated files to each grade control machine on the project. The John Deere SmartGrade Wireless Data Transfer system will make this task easier by allowing files to be sent to specific machines without the need to physically be on site.

"Remote Display Access will provide a level of support for grade control units that customers haven't seen before."

Remote operation and display access are more technological progressions for a machine that is on its way to becoming as technologically advanced as other types of construction equipment. **ic >**

The Komatsu D71PXi-24 was designed for 'grass to grade' productivity



Easy riding

Today's articulated and rigid haulers are built to increase operator confidence, **Jenny Lescohier** writes

For the inexperienced equipment operator, a truck is entry-level because of its relative simplicity compared to machines like excavators. Because of this, OEMs are working to make truck operation as foolproof as possible through the use of automated systems.

ADT sees automation

Caterpillar, for example, recently introduced the 725 articulated truck built for improved performance with 50% less operator input. The new 24 tonne payload truck is designed for customers engaging in heavy and general construction, mining, quarry and aggregates, landfill, waste and industrial applications.

"It's challenging to find equipment operators today," says Scott Thomas, product application specialist, Caterpillar. "An articulated truck is really simple to operate, so that's where a lot of new operators get started.

"What we've done with the 725 is take a lot of that technology – all of the things that make the truck safe, efficient and productive – and made it automatic, so the operator doesn't have to do anything to take advantage of those features."

For example, Automatic Retarder Control (which modulates the brakes of a truck) is now fully automated and manages retarding through a combination of hydraulic retarder, gear selection and supplemental application of the service brakes.

In addition, Advanced Automatic Traction Control removes all manual traction control decisions from the operator and automatically changes the differential lock engagement level on-the-go to continuously maintain traction. Cat says this results in



improved cycle times, productivity and reduced tire wear.

"You don't have to train as much," Thomas adds. "There's no operator intervention, no need to manipulate these systems. If you have an inexperienced operator, they don't have to worry about whether they have the right switch on."

Cat Detect with Stability Assist is another technological advancement that helps operators feel more confident.

“ There's no operator intervention, no need to manipulate these systems ”

"These trucks are designed to keep all six wheels on the ground, but if they do get into a precarious situation while driving, Stability Assist will sound an audible alarm, letting that operator know they shouldn't be driving on a slope, for example."

He continues, "If the operator is in an unsafe condition while dumping, they'll get an audible alarm and a visual pop up



The new Cat 725 powertrain includes the Cat CX31 six-speed transmission with features to deliver smoother shifting



Cat's Advanced Automatic Traction Control automatically changes the differential lock engagement level on-the-go to continuously maintain traction

Standard Cat Product Link technology connects the machine wirelessly to the office, allowing managers to monitor operating data such as location, hours, fuel use, productivity and idle time.

Comfort (and cost) are king

Doosan Infracore North America has a new version of its Doosan DA30-5 including numerous updates to performance, operator comfort, controllability of the machine, ease of maintenance and fuel efficiency.

The DA30-5 ADT, which is rated in the 30-metric-ton size class, features a new front suspension which has been updated to a hydro-gas, self-levelling system to provide improved performance and greater shock absorption. According to the company, when combined, these suspension system features allow for better driving comfort, especially when the truck is being driven while empty on a construction jobsite or at a mining operation.

From a technical standpoint, the truck's hydro-gas cylinders are >

on the display that warns of an unsafe angle and, if not corrected, will ultimately prevent the operator from raising the bed.

"Again, the operator doesn't have to do anything. This is on all our trucks. It's all behind the scenes, there's no turning it on or turning it off," Thomas says. "Operators are safer when they don't have to interact with a lot of systems, they can concentrate on what they are doing."

He adds that the 725 has 20% more visibility than the previous model.

"It's important to see better because operators are working in tight quarters around a lot of other pieces of equipment, and there are laborers on the ground," he says.

In addition to being safer, thanks to automated systems, Thomas says the 725 is also easier to operate.

"An articulated truck gets loaded by an excavator and goes from point A to point B," he explains.

"When they get to point B, most of the time the operator needs to back up after the dump, so their hand has to come off the steering wheel to get into reverse. In the past, we would have to go through many motions to achieve this function.

"Now we put it all on one control module. Everything that operator needs to interact with is in one spot. It's fingertip control, you don't have to move anywhere else," Thomas says.

When it comes to dumping, that can be automatic too.

"The stability assistant screen will pop up on the display and let you know if you're in the right position," Thomas explains. "There's a graphic with two green boxes. If you're outside the green, it's not going to raise the bed. It works if you're manually dumping too. Anytime you go to raise that bed, the stability screen will come on."

The new 725 powertrain includes the Cat CX31 six-speed transmission with features to deliver smoother shifting, up to 8% greater acceleration and increased speed on grade.

New features include updates to the DA30-5's vehicle control unit (VCU) to include more robust hardware

Updates to the Doosan DA30-5 include fewer service points with fewer oil types in the driveline and increased intervals for transmission oil changes



The suspension on the updated Doosan DA30-5 includes a self-levelling feature and the ability to change the characteristics by adjusting the pressure



“ These suspension system features allow for better driving comfort, especially when the truck is driven while empty ”

connected to pressure accumulators, and the accumulators and hydraulic system replace the previous shock absorbers and a rubber spring. The suspension of the updated DA30-5 includes a self-levelling feature and the ability to change the characteristics by adjusting the pressure.

Doosan also redesigned its DA30-5 cab interior to provide better ergonomics and more operator comfort. New features include updates to the truck's vehicle control unit (VCU) to include more robust hardware; better processors; more input channels for customised functions or further technology developments; and high-quality, automotive-style connectors.

The truck's new monitor in the cab has bigger indicators for



Drivetrain control and machine movement on the Volvo R100E are supplied by the Dynamic Shift Control

easier reading, Doosan says. User-friendly graphics and icons can be controlled by buttons on the display panel, and the panel now has capability to display multiple camera views for increased visibility around the ADT. Operators can toggle through the menu to access additional information such as machine status, service and settings.

Additional new features of the DA30-5 cab include new air vents for the floor to improve air flow and circulation, a USB charger, a new bracket on the right-hand side for a CB radio, electrically adjustable mirrors and a new brake pedal.

Updates to the DA30-5 also provide lower operating costs for owners as there are fewer service points with fewer oil types in the driveline and increased intervals for transmission oil changes, Doosan claims.

A new cab tilting system enables service technicians to lift and close the cab in just a few minutes. The truck is no longer built with rubber springs in the suspension, and there are only four rubber components in the entire front and rear suspension.

Doosan promotes its trucks as being among the most fuel efficient in the industry. The company says this is accomplished with the combination of features including the Scania diesel engine and a ZF transmission, improving the transfer of power from the engine to the wheels for outstanding traction. When this is coupled with the enhanced rear differential system, which reduces engine rpm and further increases machine durability, customers are promised an improved cost per ton carried.

Built for consistency

Komatsu America's two newest rigid off-highway trucks, the HD465-8 and HD605-8 combine increased horsepower and a host of automated features like the Komatsu Traction Control System (KTCS) to provide improved productivity and cycle times. These models have payload capacities of 55 metric tons/61 U.S. (short) and 63 metric tons/69.4 U.S. (short), respectively.

Volvo's new R100E features the On-Board Weighing (OBW) option to ensure safe payload

Volvo's 100 ton rigid hauler

R100E designed for lower operating costs and greater productivity

The new R100E rigid hauler from Volvo CE promises to drive down operating costs for customers by boosting productivity, uptime and operator comfort, the company says.

The R100E is powered by a 783 kW/1075 hp Tier 4 Final engine, with a combined drivetrain to provide high torque capabilities, maximum pulling performance and rimpull for optimum travel times.

Drivetrain control and machine movement are supplied by the new Volvo Dynamic Shift Control, which automatically tailors the transmission shift-points depending on the worksite and operational inputs.

According to Volvo, customers can expect to spend less per haul with the R100E, featuring a 60.4 m³ (79 yd³) capacity V-shaped body for optimum load retention and minimal material carry-back. The load profile is designed to allow the operator to meet a consistent average target payload, while the body-tipping system is engineered for fast cycle times. The Tier 4 Final R100E includes a manually activated ECO Mode for long distance hauls and high-speed applications.

Intelligent monitoring systems, such as the On-Board Weighing (OBW) option, ensures the machine moves the maximum safe payload to further optimize production and minimise operational costs. It does this by using exterior-mounted pressure sensors to monitor and relay machine statistics to the operator's on-board display.

Volvo has worked to make accessing daily service check and routine maintenance quick and easy with anti-slip anti-slip steps and secure walkways, while all service points are strategically grouped and located within reach from the ground and service platform. The direct rim-mounted wheel design promotes safe and quick installation and removal.



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Both feature a Komatsu SAA6D170E-7 engine that has increased to 540 kW/724 Net HP and reduced fuel consumption for the HD465-8 by up to 7%, and the HD605-8 by up to 12%, compared to their predecessors.

Komatsu's rigid truck line is designed for climbing power, coupled with optimum traction and controllability for high production cycles, say Sebastian Witkowski, Komatsu.

With McPherson Strut type independent suspension in the front and Hydro-pneumatic Suspension in the rear, Komatsu's rigid trucks are maneuverable and control over rough terrain and uneven road surfaces.

In addition to travel performance, the McPherson strut type suspension allows for good access between the truck wheel and the frame, for better access for daily checks and serviceability.

For HD465-8 and HD605-8 machines, Komatsu Traction Control System (KTCS) is standard. KTCS automatically applies independent brake assemblies to achieve optimum traction in soft or wet ground conditions. Because the system operates without the need for differential lock-up, steering performance is not compromised, Witkowski says.

Also standard for both truck models is the 7-inch, LCD colour monitor, dedicated rearview monitor, fast-fill fuel system, an engine compartment light, and a premium heated and ventilated operator's seat with air suspension.

"Because we have operators of all skill levels using these trucks, the most important thing is achieving consistent performance for productive cycle times," says Witkowski.

"We achieve this by automating critical systems such as our traction control system, which is fully automatic; there's no operator input needed. It brings consistent performance to every



Komatsu Advanced Transmission with Optimum Modulation Control System automatically adjusts shifting performance according to demand

job site."

Both trucks also come as standard with a seven-speed transmission with Komatsu Advanced Transmission with Optimum Modulation Control System (K-ATOMiCS) which automatically adjusts shifting performance according to demand for a more comfortable ride and reduced material spillage.

Witkowski notes that all Komatsu trucks feature remote telematics. With Komatsu's KOMTRAX and the monitor panel, operators receive critical information for easy monitoring and key data for production management.

It also provides machine metrics, including KDPF status, fuel consumption, plus performance information collected and sorted by operator ID.

"Similarly, it also gives us important usage metrics. Komtrax can provide a wealth of machine utilisation data, particularly payload data... which can give us critical insights into what conditions and applications our trucks are being used in," Witkowski adds. "We can learn a lot from this data, including where we need to go in the future."

ic

A changing market

The team from Off-Highway outline the evolution of this segment

The global market for dump trucks is undergoing some slow but fundamental changes. Demand has historically been split between off-road rigid and articulated framed trucks. The emergence of 50 and even 60 tonne capacity ADTs has had an impact on the market for rigid trucks of this size. Although more expensive, they can be used in more difficult ground conditions and can therefore effectively offer more uptime and lower running costs for the site if there is no need to maintain a haul road.

At the other end of the spectrum, rigid off-highway trucks are also under pressure from adapted on-highway vehicles, often referred to as wide body trucks. It has always been the case that if ground conditions allowed, on-highway trucks have been used off-road in construction and quarrying. However, a limiting factor was their size, which was usually dictated by the maximum on-road gross vehicle weight.

However, fitting larger bodies to on-highway trucks is now seeing vehicles of 60 tonne capacity or more coming onto the market, particularly in emerging country construction, mining and quarrying applications. Although these vehicles can't offer the same durability or off-road capabilities as genuine off-highway haulers, their low cost is often decisive.

As a result, the global market for rigid haulers is at a low ebb of 2,000-3,000 units per year worldwide, compared to 4,000-6,000 per year in the 2000s. The ADT market is also below the levels seen in the 2000s, but not by as much and with promise of growth to come in the future.



The Komatsu HD465-8 and HD605-8 both feature the Komatsu Traction Control System



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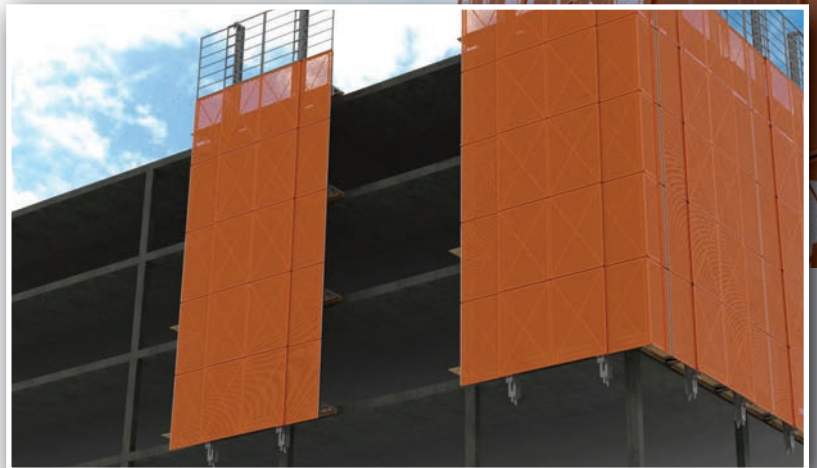
Higher, faster, safer, better

Unprecedented heights, intricate skylines and efficient use of space are all possible thanks to the latest building innovations, **Jenny Lescohier** writes

Last year saw a record number of skyscrapers completed around the world, a trend that comes with a unique set of challenges which are being met with innovation from suppliers at all different levels of the construction process.

According to the Council on Tall Buildings and Urban Habitat (CTBUH), 26 supertall buildings – categorized as those 300 metres or higher – were constructed in 2019, eight more than were built the year before. The tallest was the 530-metre Tianjin CTF Finance Centre in Tianjin, China.

“Increasing urbanisation has led to an upturn in high rise construction,” explains Ian Fryer, divisional product innovation manager at RMD Kwikform, a UK-based company that hires and sells temporary works and engineering design for building,



“ Increasing urbanisation has led to an upturn in high rise construction, particularly in emerging economies ”

RMD Kwikform launched its new safety screen solution, Ascent 200, to protect bystanders around high rise construction

construction and infrastructure projects. “This is particularly true in emerging economies. It goes without saying that the key economic driver for this trend is the lack of space in densely urbanised areas, with rising populations in cities also meaning mixed-use buildings are gaining greater importance. High rise

construction is certainly no longer limited to just the financial and business sectors.”

Indeed, high rise construction is an accepted global model for managing the increasing number of city dwellers, as more than one million people around the world move to cities every single week, Fryer said.

“China, the Middle East and North America have some of the biggest markets for high rise construction, and this trend looks set to continue in the coming years. Skybridge-linked projects have also come into fruition in the last year, demonstrating the growing interest in creating horizontal habitats at height in increasingly crowded, vertical cities,” added Fryer.

Digital assistance

According to Chris Emery, senior manager for vertical

The Liebherr 710 HC-L offers customers the option to use a fly-jib, allowing loads to be positioned exactly with two load hooks

Tallest building in Europe

Varso Tower in Warsaw utilises innovative climb lift

The 310m Varso Tower in Warsaw, Poland will soon be the tallest building in Europe when it is completed in 2021.

While the roof of the skyscraper will reach 230m, the inclusion of an 80m spire will see it pass the height of London's Shard, which stands at 309m.

The Foster + Partners-designed 53-storey tower, set to dramatically change the skyline of Warsaw, will form part of Varso Place, a connected mixed-use scheme with two additional buildings of 19 and 21 storeys; these will host, among other things, a four-star NYX hotel, a fitness club and a health centre, and comprise a total leasable space of 144,000 square metres.

"We have to think about moving people and materials up and down, so we have external hoists, but we also have a solution that's quite new for Poland, quite innovative – a so-called climb lift – a lift that you can construct on the building during the structural works, and it can grow with the building," explained Maciej Olczyk, the owner of Slovakian firm HB Reavis, the main contractor of the project. "Every week, we rehang it so it can serve another level."

Doka was tasked with providing all the formwork for the building and introduced its Framax Xlife system. The self-climbing system rose around the building's core, while a table lifting system allowed the vertical construction without the need of a crane.

Olczyk said of the system, "The level below is poured, then, the day after, the whole system goes up one floor. The carpenters then construct another level, they close the shuttering, pour again, then unshutter and go up. And you can save crane time with this process."

The 310m Varso Tower in Warsaw, Poland will be the tallest building in Europe when it's completed in 2021



RMD Kwikform's Ascent 200 addresses concerns over debris containment during construction at height

construction at Topcon Positioning, a growing population continues to put pressure on buildings and infrastructure across the world.

"As our numbers grow, an increasing amount of us are moving to cities; with 70% of the world's population expected to live in cities by 2050," he said. "With so little space and so many people to accommodate, construction firms are looking up for the solution."

But the industry is notoriously behind the curve when it comes to modernisation, Emery said, meaning the delivery of vertical projects is often slow and difficult when using

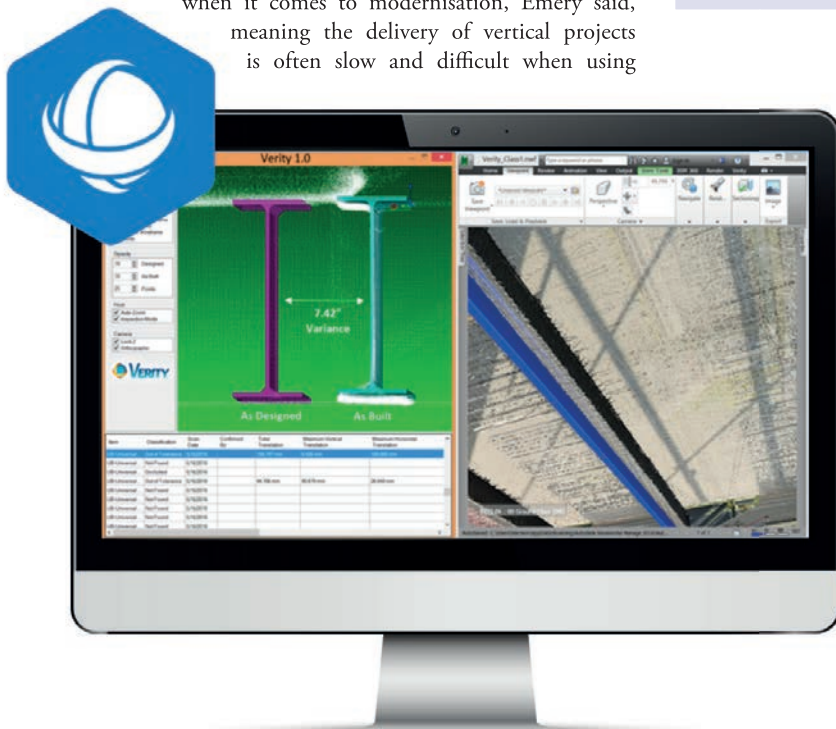
traditional construction workflows. Professionals alongside government bodies are urging more project delivery teams to adopt new digital methods to avoid any additional time and cost needed for reworks.

"We're facing the challenges of innovating new and better ways of building taller, and we still have to adhere to requirements set by timelines and budgets, with the ever-increasing need to reduce material waste, bring down carbon emissions and provide meaningful data," Emery said. "How can we overcome the complexities of vertical construction and deliver on-budget, on-time, sustainably built buildings that are fit for the future?"

Building upwards requires a significant investment of time in design and planning to ensure the structure, while being built and once complete, is stable and safe. To make sure project delivery teams are sticking to that meticulously crafted design, regular verification is critical. Without this, misplacements and deviations are easily missed and the scale and eventual cost of the issue escalates.

"Verification technology also allows us to account for and adapt to unanticipated design variations almost instantly," Emery >

Topcon's system can provide reports on items out of tolerance in near real time





Rainer Klotz,
Rainerbau GmbH
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Liebherr has developed safety-monitored climbing using crane control

tower cranes, such as the Liebherr 710 HC-L, customers have the option to use a so-called fly-jib. The loads can be positioned exactly with two load hooks. The 710 HC-L has a maximum capacity of 64 tons and a jib length of 65 metres.

“Tower cranes in high rise construction either climb inside or outside of the building to use as little space as possible and to grow with the building,” Frech said. “Liebherr has developed safety-monitored climbing for these climbing processes. The climbing process is monitored by the crane control.

“A high throughput rate is also important,” he added. “This is guaranteed by Liebherr’s own high-performance drives with high rope capacity of the hoisting drum.”

Debris protection is one area that needs urgent attention to ensure contractors and their employees, as well as the general

said. “Verification technology has been available for years, but it has been a lengthy and expensive process. Many construction firms have needed to outsource the equipment and expertise to third-party scanning teams, meaning there would often be months between scans due to budget constraints not permitting frequent data collection.

“The reality is that without constant validation and verification on the jobsite for every part of the build, mistakes or variations that are not tracked will inevitably lead to waste, delays and overspend.”

Topcon has introduced a new workflow specifically for vertical construction projects. A scanner combined with a robotic total station provides one device that feeds into software that can provide reports on items out of tolerance in near real time.

The GTL-1000, alongside Topcon’s MAGNET and ClearEdge Verity software, enables this verification at all stages while compiling a digital picture of the as-built structure. With this, reworks are reduced.

“If we look at reducing reworks through regular validation, we can instantly expect a reduction in material waste from issue areas being removed and reconstructed,” Emery said. “Couple this with reduced time using plant and equipment for reworks, and the project could also expect to see resource savings, not only in workforce time, but also in energy usage.”

Heavier handling

High-rise buildings are getting higher and higher, and by using more and heavier prefabricated components, efficient and faster construction methods are possible. That means tower cranes also must lift heavy loads to great heights and enable high handling rates.

“It is also necessary to turn components in order to precisely position the grease parts,” says Hans-Martin Frech, Liebherr-Werk Biberach GmbH. “By using large

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“ There’s a growing interest in creating horizontal habitats at height in increasingly crowded, vertical cities ”

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public, remain safe, particularly with cast concrete construction where concrete slabs extend, said Fryer at RMD Kwikform.

"Beyond a building's footprint, the opportunity for debris to fall over the edge is high unless there is protection in place," he said. To tackle the issue of debris protection for high rise construction, RMD Kwikform unveiled the latest evolution of its Ascent safety screen system, Ascent 200.

Building green

From safety to sustainability, and a new office building in Milan, Italy, is said to be setting new benchmarks in terms of sustainability. The 120m tall 30 storey GIOIA 22 will cover 65% of its annual energy requirements using renewable energy.

Formwork and scaffolding company Peri provided support during the construction process of this project using a combination of tailor-made formwork and climbing solutions.

A characteristic feature of the building is its folded shape which is of ecological significance in addition to being aesthetically pleasing. Technology and structural planning will allow the exterior and interior spaces to be used in an innovative manner. For example, the 225,000 integrated photovoltaic panels will generate enough electricity to supply the equivalent of approximately 300 households. Only two years after the foundation stone was laid in the summer of 2018, the building is due to open later this year.

A project-specific combination of different systems was required to create the unusual shape of the building and the construction work had tight deadlines to meet. For these reasons, the decision was made to combine the Skydeck Slab Formwork with an additional RCS P System Solution to realise the slabs from the second floor upwards. Systematic erection sequences and lightweight system components made it possible to complete an entire floor in a week.

With the CTBUH predicting that there will be between 115 and 145 projects that are 200m or taller completed in 2020, and 17 to 30 of these in the supertall category, it is clear that high rise construction is not slowing down. With this in mind, it's more important than ever that those in this industry are employing the latest technology that ensures the highest degree of safety for both construction workers and bystanders. **IC**

Complexity requires flexibility

MEVA formwork systems assist in construction of Australian high rise

The Crowne Plaza currently under construction in Adelaide, South Australia will be the Australian city's tallest building when it's completed later this year. The 138m high rise, which is being erected by the local Kyren Group, will house the Crowne Plaza Hotel with 329 guest rooms located from the third to the 20th floor.

The project is complex, as floor-to-floor heights in the building vary according to use. For example, the bottom levels, which accommodate retail and parking facilities, have somewhat higher ceilings than the hotel area. At the same time, the plan area of the building core narrows with increasing building height.

As a result, the Crowne Plaza scheme called for particularly flexible formwork solutions capable of adapting to the required geometries. The formwork experts at Mitcon opted for systems offered by MEVA. The local partner Novatec was able to provide these on site.

The building core was erected using the MAC automatic climbing system. Its high-performance hydraulics eliminate the need for a crane, which is consequently freed up for other site operations. The building's smaller floorplates from the 11th floor upwards entail a corresponding reduction in building core size. The formwork was adjusted accordingly through the removal, in stages, of several shafts. Additionally, Novatec supplied the GT50 SGF climbing safety screens.

The Crowne Plaza in Adelaide, South Australia



The sustainable residential complex GIOIA 22 is situated at the heart of the Porta Nuova district of Milan, Italy; upon completion it will cover 65% of its annual energy requirements using renewable energy sources

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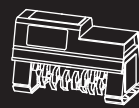
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A TOOL FOR EVERY JOB



Demolition and recycling manufacturers have embraced new technology and are increasing the product ranges they offer to ensure that all different needs are catered for, discovers **Andy Brown**



Caterpillar used the National Demolition Association convention to unveil its 352 UHD ultra high demolition excavator

New technology, new product lines

There are many different segments of the construction industry, from earthmoving, access equipment and gigantic cranes that tower over work sites around the world. While all these sectors are different, there are more things that bind them together than separate them and, for those working in demolition and recycling, new technology is also a key driver regarding new products.

One of the big news stories in this sector last year was the acquisition of Canada-based manufacturer McCloskey International by Metso. Toni Laaksonen, senior vice president for McCloskey, met with *International Construction* at ConExpo to discuss the purchase and comment on the broader trends in the industry.

Laaksonen has been in his role for approximately six months, joining the business last October from Metso following the acquisition – he is now leading the McCloskey brand. The youthful-looking and affable Laaksonen says that he is enjoying his new role and that a focus has been in expanding the product portfolio and making use of the skills and knowledge in the Metso group, for example in areas like power generation.

Electrification

According to Laaksonen, “Electrification is one thing which is appearing that many customers want to have now. So that’s coming more and more in certain countries. In Europe there are countries demanding this as more important; Norway and Austria, but also Germany, Sweden and Finland are showing certain trends towards electrification. It is potentially emerging in India as well.”

He also comments that electrification is still in relatively small demand in North America and that he believes the equipment serving the demolition and recycling sector is moving towards an



Toni Laaksonen, senior vice president, McCloskey

‘interim’ period. In this period companies need a wider product range than ever to accommodate those who want traditional products and those who want electric.

“There will be a need for a wider portfolio for a certain amount of years. It may be that eventually there is a shift towards fully electric units, but it remains to be seen.”

Michael Brookshaw, global distribution manager at Keestrack also revealed to *International Construction* at ConExpo that the company is heavily investing into its R&D, with a strong element of this being on alternative power sources.

“Our R and D is in full swing. We’re looking at another two new products that we will bring out in the next two years. One of them is a new type of crushing system on track that nobody does.”

He also commented that most of the industry is driven by government regulation, and that it was due to legislation that the company expanded into hybrid electric drive. Brookshaw also revealed that the company is looking at alternative energy.

“We’d love to go into hydrogen powered driven crushers, but the industry is very conservative. When you start to go into that you’ve also got to have the logistics of hydrogen and everything that goes with it prepared. We have what I call ‘full’ electric hybrids now, but it is quite a long way down the road before we start to be going to hydrogen.”

New launches

Of course, new technology is present in lots of products in this sector, not just related to power generation. At ConExpo

“There will be a need for a wider portfolio for a certain amount of years”



Allu showed off new products at ConExpo

DEMOLITION AND RECYCLING

Allu unveiled its new demolition and quarrying crusher. The new heavy-duty range of crushing attachments is said designed to meet the needs of the demolition, recycling and quarrying industries.

The global launch of the new crusher series will initially see three crusher models be introduced for excavators in the 10 to 33 ton range. All have features that are said to optimise performance such as reversible crushing, a feed plate design built into the jaw and a mechanical pin adjustment for output size regulation.

Jeroen Hinnen, vice president of sales, Allu, said, "By bringing this new product line to market we will be able to provide customers with what they have been looking for. The Allu Transformer range offers unique productivity and efficiency benefits on soft rock and other materials, whilst the Allu Crusher range enables hard



LiuGong is targeting the North American markets with its 950E high reach demolition excavator

Attachments roundup

Attachments are an essential part of demolition and recycling



OilQuick has a range of tiltrotator attachments

Quick coupler manufacturer OilQuick showed off its latest tiltrotator series at ConExpo. The OQTR-E range comprises five different models suitable for excavators from 6 to 33 tonnes.

A collaboration between tiltrotator and accessories manufacturer Engcon, OilQuick said the new series was, "the best of both worlds".

"The companies have had a close collaboration for some time, but we have now chosen to extend it further," said OilQuick CEO, Henrik Sonerud.

Attachments are used for demolition and recycling jobs all over the world, such as an MB Crusher drum attachment being used when renovation work was required at the Augustusbrücke bridge over the Elbe river in Dresden, Germany. The job was for the removal of the concrete which filled the arches.

The customer was seeking a solution that would be suitable for the machine already in use at the site (a Liebherr 918 excavator) and that would not cause any damage to the 18th century structure.

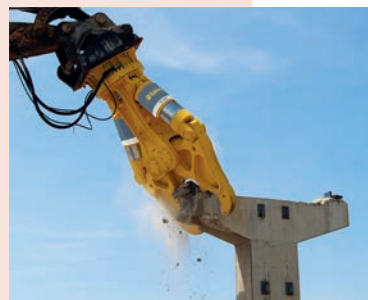
The MB-R800 drum cutter was used on the diagonal cement lines on the bridge to free up the expansion joints. This was the most challenging phase. Following this, it was used to remove some of the concrete that filled the arches of the bridge, grinding as far as 3m deep.

New attachments are frequently being introduced for this sector, as happened recently with Epiroc adding two new models for heavier carriers to its CB Concrete Buster range. The CB 5500 and CB 7500 are designed for carriers in the 50 to 85 tons weight class.

Due to their comparatively light weights CB Concrete Busters are popular choices for use with high reach or long front carriers and for applications with highly abrasive material and low level of visibility of the product in operation. They are also suitable where noise is an issue.

Work on the Augustusbrücke bridge

(Below) Epiroc has launched the CB Concrete Buster range



rock, and often troublesome demolition materials, to be effectively reduced."

Arguably the world's biggest OEM, Caterpillar, used the National Demolition Association (NDA) convention and expo in Austin, Texas, US, to unveil its 352 UHD ultra high demolition excavator.

The machine – which spent more than two years in its design phase at Caterpillar in Japan – works in conjunction with a range of Cat attachments.

Part of Cat's next generation range of machines, its front can also be switched for a straight or bent boom position for lower level demolition or earthmoving applications; the company claims this can be done in around fifteen minutes with two people and no special tool required.

In the UHD configuration, the excavator provides 28m of vertical height to the work tool attachment pin, and 15.8m of horizontal reach, when working with 3,696kg tool. In retrofit straight boom configuration, the 352 UHD uses a 9.1m retrofit boom with a choice of 2.9m or 3.35m retrofit stick.

Sights set on North America

Another manufacturer that used the NDA as springboard for a new launch was China-based LiuGong. The company – which has one of the broadest product ranges in the industry – showed its 950E high reach demolition excavator as it targets an entry into the North American market.

Having previously shown the excavator at Bauma in Germany, the company now aims to make headway in the competitive North American market. LiuGong has collaborated with specialist machine modifier Kocurek to make products more applicable to the needs of North American customers, and partnered with Cummins to provide the engines for the products.

The 950E includes a high visibility cab that was demonstrated in the US for the first time.

LiuGong said it has designed the products for a low total cost of ownership, along with ease of switching implements that allows transition from static to high reach in 30 minutes.

"As an organisation, we have been making demolition products for years and years, in the United Kingdom, in China," said >

Keestrack is expanding operations in India and China



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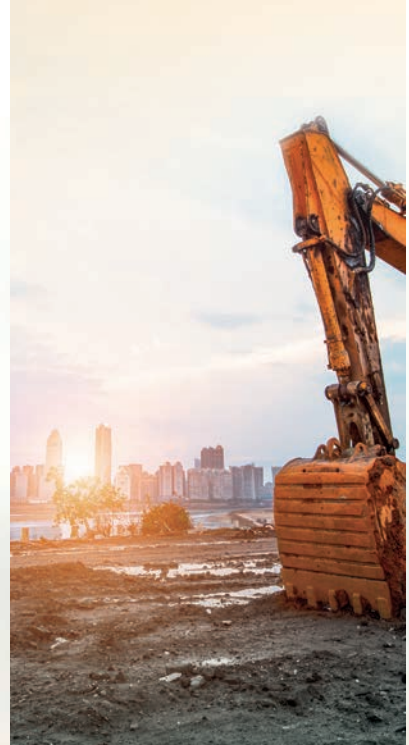
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A dirty job

Doosan excavator used to dismantle concrete tank at sewage factory

FW Bau, a German-based construction firm, has used a Doosan DX255LC excavator to dismantle a concrete tank at a sewage treatment plant at Malente in Schleswig-Holstein, Germany.

It was originally planned it would take three weeks to demolish the tank, which had a height of 4m and a diameter of 14m. This also included the processing of the roughly 200m³ of demolished concrete and around 800m³ of stone that was produced by the work.

In fact, the project was completed in just two weeks. One of the reasons was said to be the trouble-free operation of the construction machinery used. "I can fully rely on the Doosan machines, which is an important factor for me as a medium-sized contractor," said Felix Wessel, owner of FW Bau.



The Doosan DX255LC hard at work in Germany

industrial segment manager Tim Gerbus. "A lot of people were surprised to see us at Live Demo, but the first North American case study could be very soon."

Physically a lot smaller than excavators being used for demolition is the sector of hydrodemolition robot manufacturing. Aquajet Systems specialise in this area and have released the Ergo System.

The robot offers four times the power of a hand lance in a compact footprint that contractors can easily move around the jobsite. It is said to be ideal for work on floors, walls and ceilings.

The Ergo System incorporates: the controller unit, which powers and controls the hydraulics, the Ergo Power Head, which manipulates the high pressure lance, and either the spine or the climber, unique systems used to support and maneuver the power head, based on project needs.

"The Ergo System is the perfect package for a contractor looking to break into hydrodemolition or to expand their business," said Roger Simonsson, Aquajet Systems managing director.

Emerging markets

China and India are two of the world's biggest markets for construction equipment and, according to Brookshaw from Keestrack, they are both targets for the company. Keestrack already has manufacturing in place in China but will be extending its capability, while there are plans to open their first factory in India.

"The market in India is a very good market with great possibilities due to the government's infrastructure plans, such as building a hundred smart cities," he comments. "The product will be different than in Europe.

"We manufactured it to more of an Indian type of product, it's been manufactured to what the Indian market requires; it's a very

“ The market in India is a very good market with great possibilities due to the government's infrastructure plans ”



Michael Brookshaw, global distribution manager, Keestrack

McCloskey has dealers in around 100 countries in the world



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DEMOLITION AND RECYCLING

Hydrostatic concept the key

New recycling plant opts for Rockster due to hydrostatic concept



The main area of business for US construction company Titan Enterprises is commercial and residential concrete construction. However, the firm recently acquired a recycling site which gives the company an opportunity to make their own construction material. Concrete is mainly recycled on site and later re-used for their own projects.

The company purchased Rockster's impact crusher R900, with its hydrostatic concept for the new recycling plant.

Rockster CEO Wolfgang Kormann says, "The hydrostatic pressure adjusts to the power requirements of the crusher, resulting in a very constant crushing performance. Moreover, the diesel engine always stays within the optimum speed range, so the fuel consumption is lower than with Diesel-Electric Drive Systems."

price conscious market. One thing you can't do in India is make a machine that's lower price, lower quality, they won't accept it."

Laaksonen from McCloskey agrees that different markets around the world have different customer demands, and this is only partly due to the different materials that they have in their countries. "In certain parts in Canada the material that we are processing is hard



Aquajet Systems' Ergo System is said to increase safety

rock, hard stone. In certain areas in the US, you are processing much softer materials, which means that you need to have totally different equipment. The same differences apply in Europe."

These differences mean, of course, that different products are needed. There are also contrasts regarding customer demands and expectations. Laaksonen says that in every market there are customers that want high-end and lower-end products, but that in China and India the gap between the two is vast.

"There are several customer segments in China and India; some of those want to have highly specific products. They are willing to pay for that, but they want to have high quality machines which last a long time. Then there's a different segment, which is just looking for cheaper products and they are not expecting any support from their OEM manufacturer.

"To a certain extent that appears also in Europe but the gap between the two segments is not as big there – in India and China it is huge."

Some customers are more concerned with price; others with quality; others with buying products with the latest technology. It appears that the manufacturers of demolition and recycling equipment are catering to all different market needs. **IC**



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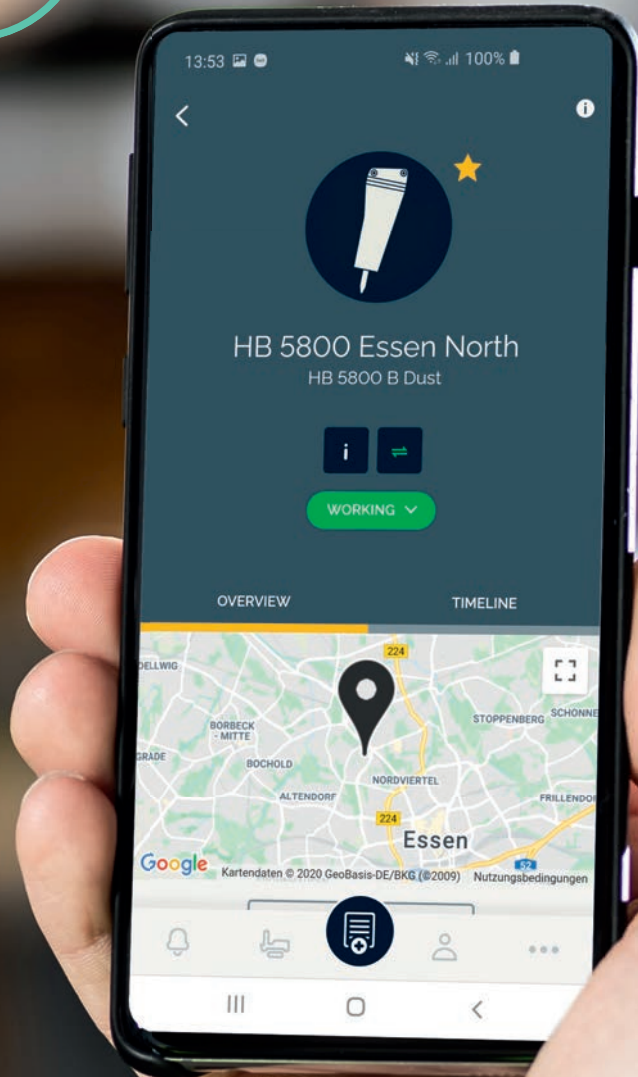
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European surge

A sixth consecutive year of growth saw construction equipment sales in Europe exceed 186,000 units last year

The construction equipment market in Western Europe grew 4.6% last year to more than 186,000 machines sold. Widespread growth – with the exception of the UK – made this the sixth consecutive year of rising sales and took the market to its highest since 2008.

Although most countries saw equipment sales increase in 2019, it was the high volume markets of France, Germany and Italy which particularly stood out and which made the biggest difference to the overall figures.

Germany, by far the largest equipment market in Europe last year, is worthy of particular mention. Equipment sales soared to more than 47,000 units, surpassing the previous record high set in 1992 at the height of the post-reunification building boom.

In percentage terms, the biggest growth last year was seen in Finland, Italy and Portugal. However, despite a near 20% increase in sales, Portugal remained the smallest market in Western Europe, with sales of just under 2,000 units.

Austria, Denmark and Sweden saw marginal downturns

in sales last year from the healthy volumes achieved in 2018. Most striking was the -11.4% decline in the usually stable Swiss market, but most significant in the overall European picture was the -6.5% downturn in UK sales.

The high volume equipment types in Europe are mini excavators, wheeled loaders and telehandlers. Sales of all three increased last year.

Sales of mini excavators broke the 70,000-unit mark for only the second time, the previous being the pre-crisis peak of 2007. Similarly, sales of crawler excavators and telehandlers had their second-best year on record, with the volumes sold only being bettered in 2007.

Meanwhile, a new high was achieved in the European wheeled loader market, with more than 29,500 machines sold, compared to the pre-crisis peak of 26,300 in 2007.

This was due to the extraordinary buoyancy of German demand driving sales of compact wheeled loaders (under 56 kW) to an unprecedented peak. Sales of larger wheeled loaders came in at just over 11,000 units, significantly below the mid-2000s peak of almost 134,000 machines sold.

An ever evolving forecast

At the time of writing this article, and the magazine going to press, the impacts of the COVID-19 (Coronavirus) outbreak on the economies of Europe were not yet clear.

However, the situation is becoming more serious and increasing numbers of countries are asking their population to go into 'self isolation'. Construction is halting in some European countries, which will undoubtedly have a further negative impact on the market regarding the sales of construction equipment.

Even not accounting for the COVID-19 virus Off-Highway Research expected that 2019 would be the peak year in the current cycle of equipment sales and that 2020 would see a moderate decline in sales.

It will be no shock to anyone reading this article that this decline will now be more than moderate, as the wider industry faces up to one of the biggest challenges it has ever seen. **ic**

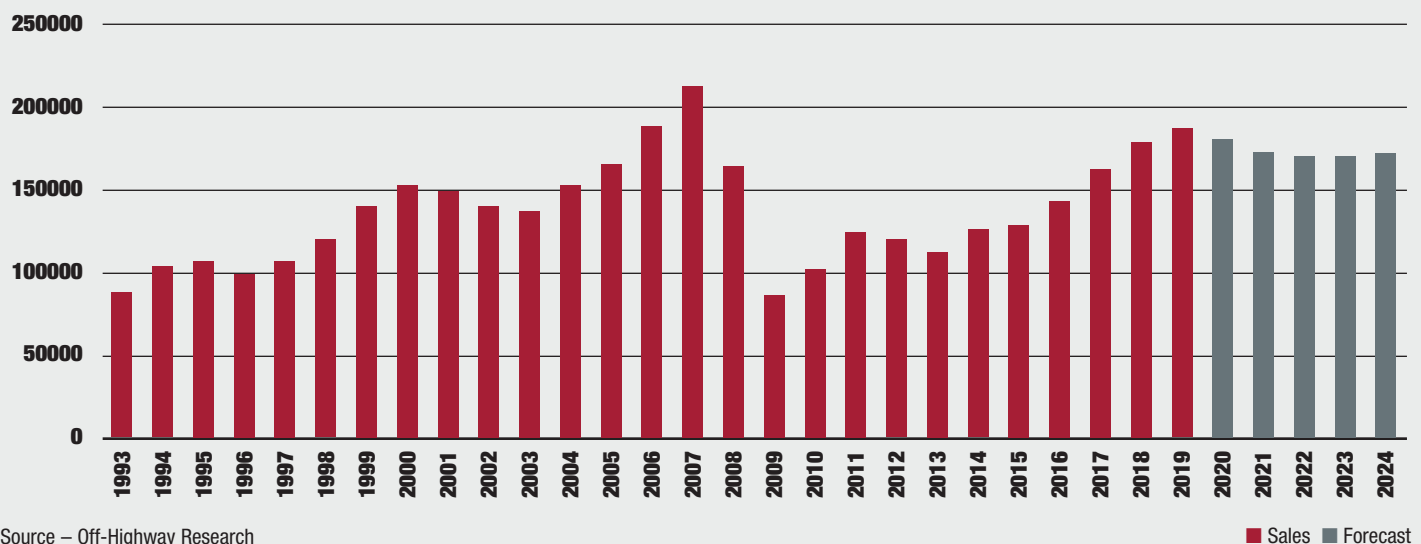
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Off-Highway Research is the world's leading provider of market intelligence and forecasts for the global construction equipment industry. With offices in the UK, China, India, the US and Japan, it offers unrivalled market insights, helping its clients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

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