

CONSTRUCTION europe

THE MAGAZINE FOR EUROPE'S CONSTRUCTION INDUSTRY

www.construction-europe.com

Volume 32 | Number 8 | October 2021

A KHL Group publication

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More than a supply chain issue...

It may not surprise you to hear that the phrase “supply chain issues” appears on more than one occasion in the following pages.

The delays in delivery – as well as the rising costs – of construction materials, equipment and components threatens not only to slow down the recovery of construction in Europe, but to derail it completely, according to some industry insiders.

But the problem stems as much from a lack of workers as a lack of materials.

Domenico Campogrande, director general of the European Construction Industry Federation (FIEC) recently told CE that “Material and labour shortages are at an all-time high and combined with the significant increases in prices they constitute a heavy sword of Damocles over the sector and the overall recovery.”

He was spurred to make the comment after seeing another story in CE, from the banking and financial services group, ING, which forecast “modest growth” for the European industry, in spite of the shortages. It did, in fact, predict average growth in construction output for the EU member states, of 5.0% this year, followed by 2.5% in 2022.

In Germany, the head of the Federal Employment Agency, Detlef Scheele, told Süddeutsche Zeitung that Germany generally needs 400,000 new workers per year to fill the labour market.

He said, “Germany can only solve the problem by qualifying unskilled workers and people whose jobs have been lost due to technical change – and above all by bringing immigrants into the country.”

In the UK, the government is promising billions in funding for large infrastructure projects. At the same time, however, Brexit has led to the end of free movement in the UK for EU citizens, meaning a large percentage of the labour force could now be forced to seek work elsewhere.

We must hope that both the materials and labour shortages are short term, because a productive and efficient construction sector will be an essential element of our drive towards carbon neutrality in Europe.

Mike Hayes, Editor



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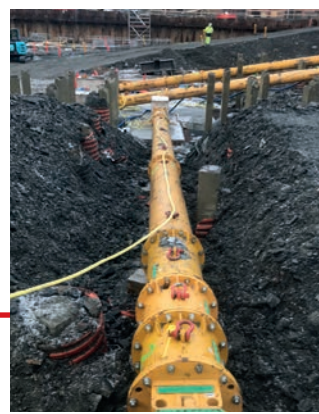
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Deconstruct UK undertaking the challenging demolition of a six-storey office building in one of the busiest parts of London, on a wedge-shaped site measuring approximately 18m x 25m.

EVENTS DIARY

2021

Smopyc

Nov 17-20, 2021

Zaragoza

Spain

www.feriazaragoza.com

/smopyc-2021

2022

UK Construction Week

May 3-5, 2022

London

UK

ukconstructionweek.com

GIC-Concrete Days

April 28-30, 2022

Piacenza

Italy

www.gic-expo.it

Hillhead

June 21-23, 2022

Buxton

UK

www.hillhead.com

UK

UK announces €760bn infrastructure plan

'Construction Pipeline' document outlines huge public and private investment to be rolled out over the next 10 years

The UK Government has published its National Infrastructure and Construction Pipeline document for 2021, setting out a plan for £650 billion (€762 billion) of investment in infrastructure projects, over the next 10 years.

The document offers the construction industry – as well as potential investors – to 'gear up', in terms of equipment, personnel and financing, in an effort to secure and deliver projects.

The largest share of the investment has been earmarked for the transport sector, which will receive some €82 billion between now and 2025, with energy projects potentially accounting for more than €60 billion over the same period.

Some of the UK's largest current projects fall within these categories, including the High Speed 2 rail network, the Hinkley Point C nuclear power plant, the Lower Thames Crossing road tunnel in London.

The document states that more than €35 billion will be allocated to social and economic projects, to be launched this year; part of the government's Build Back Better programme, which will account for a total

investment of approximately €235 million.

For the first time, the Pipeline document has highlighted the need for more projects to proceed with modern methods of construction (MMC) – understood to be inherently more sustainable than traditional construction methods.

The document also includes a forecast of the workforce demand that could be generated by the investment plan, estimating that 425,000 new jobs could be created.

IMAGE COURTESY EDF



SWEDEN

Carbon negative timber skyscraper completed

A new 20-storey high timber skyscraper, said to be one of the world's tallest timber buildings, has now been opened in the north east of Sweden.

Made entirely of locally sourced timber from nearby sustainable forests, the Sara Cultural Centre in Skellefteå is described as "an international showcase for sustainable design and construction."

The structure removes

more than twice the carbon emissions produced by the operational energy it uses and the embodied carbon from the production and transport of the materials used to construct it.

The Sara Cultral Centre, which comprises both a low-rise building and a tower that is 75m tall, was designed by architecture company White Arkitekter.

Robert Schmitz and Oskar Norelius, lead

architects at White Arkitekter, said, "One of the biggest challenges of the project was

convincing people to build something that hadn't been built before.

"What we see now

is the result of a great collaboration both with the municipality, partners, and our interdisciplinary team at White, where we all have worked diligently towards the same goal."

According to White Arkitekter the building has been designed to have a lifespan of at least 100 years and will be carbon negative within around 50 years.



The Sara Cultural Centre in Skellefteå, Sweden

ITALY

Italvolt to build southern Europe's largest gigafactory

Construction of one of Europe's largest gigafactories – and the first in Italy – is a step closer, following the purchase of approximately 1 million m² of land in Scarmagno, Piedmont, in northwest Italy.

The startup Italvolt intends to build a 300,000m² factory, as well as a 20,000m² research and development centre. Once fully operational, the facility is expected to produce batteries with a total output of some 45 gigawatt hours per year.

Skanska has announced a significant ramping up of its carbon emissions target, with its sights now set on a 70% reduction by 2030.

The Swedish construction giant previously set a goal of a 50% reduction, measured against its own 2015 levels.

Skanska said the ambitious update was in part a response to a recent report from the Intergovernmental Panel on Climate Change (IPCC) which said an increase in the pace of carbon emissions reduction was urgently needed.

The company added that it was also in a

IMAGE COURTESY SKANSKA





Berlin's central railway station

EUROPE

€7 billion transport investment by EU

EU to make funds available for new transport infrastructure projects

Approximately €7 is to be made available for European transport infrastructure projects by the European Union (EU).

Launched under the Connecting Europe Facility (CEF), the majority of projects funded under this will help to increase the sustainability of the overall transport network in the EU. This will help the EU to meet the European Green Deal objective of cutting transport emissions by 90% by 2050.

Transport Commissioner, Adina Vălean, said, "We are massively increasing funds available for deployment of alternative fuels infrastructure, to €1.5 billion. For the first time, we are also supporting projects so that our trans-European transport networks are suitable for civilian-defence dual-use and improve military mobility across the EU."

Of the funding, €5.1 billion will be for infrastructure projects on the Trans-European Transport Network (TEN-T), including railways, inland waterways, maritime and inland ports, roads, rail-road terminals and multimodal logistics platforms and passenger hubs.

ce

GERMANY

Construction's 'golden decade'

German construction is on the verge of significant growth amid a growing infrastructure backlog and climate change demands, according to Zeppelin CEO Peter Gerstmann.

Despite recent claims from the Ifo Institute for Economic Research

that optimism about the industry's future is on the wane, Gerstmann believes that the need for rapid industrial change means that opportunities are on the rise.

He said, "[Ifo Institute's claims] indicate a deterioration in economic development rather than a golden decade. Against this background, it seems risky to speak of another

decade of growth. And yet I am not afraid to make this bold forecast for the future.

"The reasons for such a forecast are obvious and result primarily from a politically determined backlog of necessary investments in the existing infrastructure and the challenges of the ecological redesign of our industrial landscape." ce

position to move forward with the new target, having already successfully achieved a reduction of 40% within its own operations, while simultaneously seeing revenues increase across the group.

Anders Danielsson, CEO of Skanska AB, "Goal-oriented initiatives in all markets now show that we are highly successful in our efforts toward achieving carbon neutrality by 2045 throughout the value chain. We are now increasing the pace by tightening the interim target."

Skanska's headquarters in Stockholm, Sweden



NEWS IN BRIEF

GLOBAL HYDROGEN INITIATIVE FROM VINCI AND PARTNERS

Construction and concessions giant Vinci, along with two other Paris-headquartered companies – gas technology firm

Air Liquide and energy firm TotalEnergies – has launched a huge investment fund, dedicated to the development of clean hydrogen infrastructure solutions. With major businesses in Europe, the Americas and Asia participating, the alliance says it plans to build a fund totalling €1.5 billion, which will be invested across the value chain of renewable and low carbon hydrogen.



RUSSIA CONSTRUCTION STARTS ON €1BN PORT IN MURMANSK

Construction work has started on a large commercial seaport in the Murmansk region in the far northwest of Russia. The primary purpose of the port will be to handle shipments of coal, although the Murmansk regional governor, Andrei Chibis, said the master plan being developed anticipates its development as a "universal port", handling materials including anthracite, mineral fertilizers and containers. Within the current plan, a deep-water berth of 660m in length will be constructed – large enough to accommodate two bulk carriers with deadweight of up to 150,000 tonnes.



UK ISG STARTS CONSTRUCTION OF 'UK'S FIRST GIGAPLANT'

ISG has started enabling works for the construction of the UK's first low-carbon battery cell manufacturing gigaplant in Northumberland. Believed to be only the second such plant in Europe, the 30GWh gigaplant – known as Britishvolt – is now being built on the site of the former Blyth Power Station coal stocking yard in Cambois. The plant is due to be completed in 2027, at which time it will produce enough power cells for 300,000 electric vehicles, helping the UK to reach its low-carbon targets.

GERMANY RAIL TUNNEL COMPLETED AT MUNICH AIRPORT

The shell of a 1.8km extension to the rail tunnel at Munich Airport has been completed by the Porr subsidiary Stump Spezialtiefbau. Deutsche Bahn subsidiary DB Netz will now fit the tunnel shell with the equipment necessary to allow rail services to operate. When completed, the tunnel will facilitate the running of regional trains between Freising and Erding and S-Bahn light rail services, via the airport's Terminal 2. Munich Airport has so far invested €115 million in the construction work.

EUROPE

Views differ on prospects for construction recovery

Industry insiders air their opposing views on materials and labour shortages

There is dispute in the industry over whether or not the current materials and labour shortages could stall economic recovery.

Dutch financial services specialist ING recently published research which concluded that the construction market in Europe is set for 'modest growth', in spite of the shortages.

The European Construction Industry Federation (FIEC) responded with a warning that the shortages were delaying delivery times, leading to higher bills for clients and major delays to projects.

ING maintains that both residential and non-residential construction is recovering and businesses are now increasingly prepared to invest.

The group said that, following the average drop of -5.1% in construction output across the EU in 2020, its report forecasts a 5.0% gain in 2021, followed by a further 2.5% gain in 2022.

However, FIEC director general EU, Domenico Campogrande, stressed that these outcomes must "be seen in a different framework", despite recent initiatives to overturn the problem.

ce



Demand is strong in the European construction market

MALTA

Controversial Malta-Gozo tunnel a step closer

Infrastructure Malta (IM) says it has recommended a consortium to move to the next phase of the tender process for the construction and management of a €300 million 14km-long undersea road tunnel between the Mediterranean islands of Malta and Gozo.

While the agency insists no decision has yet been made on whether the tunnel's construction will proceed, it did announce

that its pre-qualification questionnaire had resulted in just one bidder of the original four moving forward to the second stage of a three-stage selection process.

The consortium comprises the UK-based investment firm Equitix, Japanese commodities trader Itochu, the Turkish construction companies Yapi Merkezi and Makyol, and Egis, the construction and engineering subsidiary of the French

finance company Caisse des Dépôts.

The group will now move to the Invitation to



Nadur in Gozo, where it is proposed one entrance of the undersea Malta-Gozo road tunnel will be located

KHL.COM



Speakers named for technology webinar

Event will examine impact of data on today's construction industry

The first two speakers for the upcoming webinar from KHL's Construction Technology brand, Defining Construction 4.0, have been announced.

The two panellists are Koti Vadlamudi, Senior Vice President Advanced Facilities (AF), at engineering group Jacobs and Roz Buick, Senior Vice President in Oracle's Construction & Engineering business.

Jacobs' AF unit comprises over 4,800 staff around the globe serving end markets in Life Sciences, Electronics and Specialised Manufacturing.

Roz Buick is currently Senior Vice President in Oracle's Construction & Engineering business and Board Director on construction & technology companies including Propeller Aero Inc, Uitecture and Grupo Protexa.

She has 25 years' experience building and leading teams that digitally transform industries by automating and re-engineering customer workflow and information management.

The webinar will seek to define construction 4.0 and what it actually means to construction businesses and examine how drones, AI, VR and robotics – as well as more traditional construction tools – can be brought together, through the use of data, to provide much-needed productivity and efficiency boosts. A third speaker will be announced soon. The webinar will be moderated by Mike Hayes, editor of Construction Europe.

Registration for this webinar is free and available at www.khl.com

Participate in Dialogue (ITPD) stage of the process, during which it must submit plans for the

tunnel's structure, as well as a detailed proposal for the construction process, plus operation and maintenance information for the concession.

If the consortium makes it to the final stage of the tender, it will have to demonstrate how it intends to fund the project, as the Maltese government has made it clear that all construction and maintenance costs will be borne by the winning bidder.

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WORLD IN BRIEF



CHINA

China's pledge to stop building coal-fired power plants overseas could cull US\$50 billion of investment in countries including Bangladesh, Indonesia, Vietnam and South Africa, as it slashes future carbon emissions, according to reporting by Reuters. Chinese President Xi Jinping said in a pre-recorded address at the UN General Assembly that China would instead help developing countries build green energy production.

GLOBAL

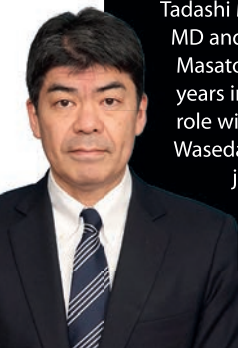
Global sales platform eBay has announced a strategic partnership with the heavy equipment auction company bidadoo. The strategy is to combine the estimated 159 million buyers worldwide, currently using eBay, with the experience of bidadoo in auctioning and remarketing construction and agriculture equipment and vehicles. It is reported that some 25% of those who buy heavy equipment through eBay, also use the platform to purchase parts and attachments for their machines.

EUROPE

Weir Group has revealed that it was hit by a "sophisticated attempted ransomware attack" in the second half of September. As part of its Q3 update, the supplier to the mining, construction and oil and gas industries said there had been no negative impact on orders in the period as a result of the attack. It said it expected to deliver full year order growth in line with expectations and had a strong order book heading into 2022. The attack has caused the rescheduling of some shipments, and the group experienced revenue deferrals of around £50 million in September, alongside under-recovery of overheads in manufacturing and engineering. UK-based Weir said its cybersecurity systems and controls responded quickly to the threat, isolating and shutting down IT systems.

JAPAN/EUROPE

Tadashi Maeda has been appointed as the new MD and CEO of Komatsu Europe, succeeding Masatoshi Morishita, who left the role after five years in order to take up a senior executive office role with Komatsu in Japan. A law graduate of Waseda University in Tokyo, Japan, Tadashi first joined Komatsu Ltd in 1994. He initially worked in sales for the manufacturer's Japan distributor, Komatsu Iwate, before joining the Komatsu's head office team as a logistics manager in 2000.



Construction growth is set to outpace manufacturing or service industries

GLOBAL

Construction to 'power global economy'

Growth to be driven by unprecedented levels of infrastructure spend, says report

Global construction output is expected to grow by 6.6% in 2021 and 42% by 2030, driven by government stimuli and the demand for residential construction, according to a new report by Marsh and Guy Carpenter, both businesses of Marsh McLennan.

The report, Future of Construction: A Global Forecast for Construction to 2030, written with Oxford Economics, looks at construction as the industry recovers from the effects of Covid-19 and the key drivers shaping its future over the next decade.

Predicted average annual growth in construction is 3.6% per annum – faster than either the services or manufacturing sectors. Global infrastructure construction is forecast to grow by an annual average of 5.1%.

Graham Robinson, global infrastructure and construction lead at Oxford Economics, said, "It's not surprising that construction is expected to power the global economy over this next decade, considering the unprecedented nature of the stimulus spending on infrastructure by governments and the unleashing of excess household savings in the wake of Covid."

As the sector grows, however, so too does the risk of greater pollution and waste, the report warns. Construction and the wider built environment currently accounts for around 40% of the world's greenhouse gas emissions.

Climate change and the race to net zero are arguably the greatest challenges that face the industry, according to the report.

The need to radically reduce the amount of carbon embedded in new construction will drive the growth of a deconstruction industry that reuses huge existing urban stockpiles of construction materials.

ce

DUBAI

World's first net zero carbon building

Plans for what will be the world's first Net Zero Carbon building when completed have been unveiled at a trade show in Dubai.

The building will be located in Dubai, part of the United Arab Emirates, and will be home to the SEE Institute, the sustainability research, development, and professional training arm of Diamond Developers.

The state-of-the-art building was unveiled at WETEX & Dubai Solar Show, the annual trade exhibition organised by



The building will be located in Dubai and will be home to the SEE Institute

Dubai Electricity and Water Authority at Expo 2020.

The new structure will be offsetting all its embodied carbon emissions from construction and interiors prior to operations, based on an offset scheme.

According to the information supplied, the building will produce more than 300% of its operational energy requirements through renewable sources including solar panels and a biogas plant handling organic waste.

ce

GLOBAL

Deere and Hitachi reveal latest plans

OEMs talk about future strategies when partnership ends early next year

Following the announcement that John Deere and Hitachi Construction Machinery are to end their longstanding joint venture (JV), both OEMs have revealed their plans going forwards and the future opportunities they see this creating.

Part of the multi-decade JV was for the manufacture and selling of Hitachi construction equipment in the Americas under the Deere brand. The manufacturers will enter new license and supply agreements which will be effective February 28, 2022 – pending regulatory approval.

International Construction contacted John Deere and Hitachi to get more information, and to find out what it means for both brands and the global construction market in the future.

A spokesperson for Hitachi Construction Machinery (HCM) commented that, "From next spring, in order to differentiate machinery for John Deere, HCM will introduce the newest models equipped with a new hydraulic system which realises high efficiency."

The OEM also added that the ending of the JV would provide opportunities in the mining sector.

John Deere confirmed that there would be no impact to the supply of Deere branded excavators to the US, Canadian, Latin America, and Brazil markets, and that the company sees the development of its excavator lineup as a real opportunity. **ce**



A Hitachi EX1200-7 excavator

US

Oshkosh reports 'significant' supply chain disruption

Oshkosh Corp, owner of JLG, said "significant" supply chain and logistics disruptions as well as rising costs were hindering the production and delivery of machines

and that revenues and profits for the fourth quarter of fiscal 2021 would be lower than previously forecast.

The company, which said the problems were

impacting its access business in particular, reported strong growth in demand but said the unavailability of parts was holding up production and leading to inefficiencies in labour.

Oshkosh said if cost increases persist it will have to further raise prices.

It expects the

JLG 670SJ self-levelling boom



WORLD IN BRIEF



UK

JCB remained profitable in 2020 despite the severe impact of the Covid-19 pandemic on its global manufacturing operations, and the company is increasing production to levels not seen before to try and meet demand. JCB CEO Graeme Macdonald, said, "The turnaround in 2021 has been dramatic: we are sitting here now in September with four times the usual order bank we had in normal times two to three years ago. As a result, we are ramping up production to levels we have not had before. I have never seen anything like it in my career."

GLOBAL

Trade show giant Bauma is encouraging those in the construction industry to enter its 2022 innovation awards competition. The five categories for the awards are different from in previous years, with the categories now being: climate protection, digitisation, mechanical engineering, building, and research. The period for entries has already started and ends on 3 May 2022. Information on the conditions of participation can be found at www.bauma-innovationspreis.de

EUROPE

Volvo CE has launched three new electric compact machines, the L20 electric wheeled loader and the EC18 Electric and ECR18 Electric excavators. The OEM says it now has the broadest range of electric construction equipment in the industry – the company now has five electric machines. The new models will be available in the second quarter of 2022, but are available for pre-order now.

GLOBAL

Sales of construction equipment are expected to achieve record sales, in volume terms, in 2021 of 1.13 million, according to information from Off-Highway Research. Stimulus spending in China in 2020 as a result of the Covid-19 pandemic kept global construction equipment sales at an unexpectedly high-level last year and that buoyancy will continue in 2021 as other markets bounce back. Sales are expected to remain very strong in 2022, with many OEMs reporting full order books.

challenging conditions to remain through to the end of December.

"We implemented multiple price increases in our non-defense segments over the past

six to nine months to combat unprecedented raw material inflation and freight cost escalation," said John Pfeifer, Oshkosh President and Chief Executive Officer. **ce**

Volvo CE's autonomous asphalt compactor concept

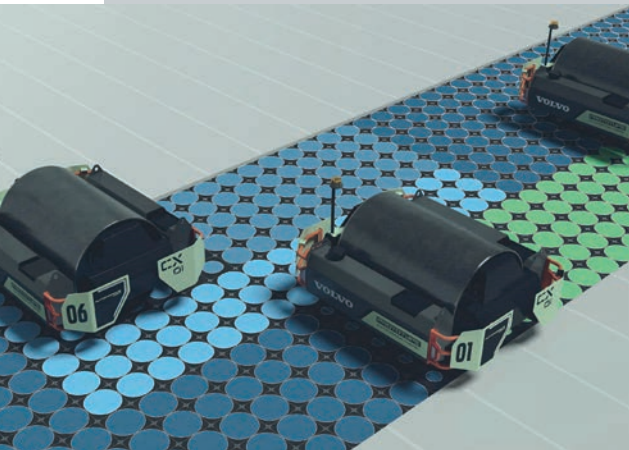
Volvo Construction Equipment (Volvo CE) has unveiled its new CX01 single-drum asphalt compactor concept at The Utility Expo in Louisville, Kentucky, US.

The CX01 concept utilises one vibratory asphalt compactor drum that's actually two independent halves (called a split-drum) kept upright by a self-balancing control system.

Capable of being operated either by remote-control or entirely autonomously, the machine is also fitted with both a diesel engine and an energy storage system, making it a flexible electric hybrid solution. It can be operated in diesel-only, hybrid or fully electric modes.

"While the CX01 is a conceptual product, the research and development that have gone into it will benefit customers in other ways," said Justin Zupanc, head of the asphalt compaction development team, Volvo CE.

Volvo CE says that by redesigning the compactors themselves, the operator is removed from the unit – reducing exposure to vibration, noise, dust and other associated environmental conditions – and freed up to autonomously control a fleet of CX units working together to compact asphalt surfaces.



Robots 'key' for achieving net-zero construction

Research highlights growth of robotics and autonomous systems in wind energy projects



Robots are set to represent a 'vital' tool within the onshore and offshore wind energy market by 2030, according to a new report from the Offshore Renewable Energy (ORE) Catapult.

With a global value within the sector of approximately €1.5 billion by 2030, rising to more than €4 billion by 2050, the research shows that robots and autonomous systems (RAS) will be key to the goal of achieving net-zero-carbon wind energy projects.

In terms of energy projects generally, the global RAS market could be worth €9.75 billion by 2050, with these systems likely to be utilised most widely in operations and maintenance activity.

REDUCING RISK

The report points out that, with windfarms expected to be located in deeper waters, potentially challenging in terms of human accessibility, an increase in the use of autonomous systems is a logical step.

Recalling data from a 2020 ORE Catapult report, the organisation states that two thirds of operations and maintenance costs at offshore windfarms come from people and vessels. Integrating an uncrewed surface vessel into a 2GW cluster site, it said, could reduce capital expenditure by approximately €8.7 million and operational expenditure by some €24.5 million, over a 25-year lifetime.

Furthermore, insurer Allianz reported in 2019 that at least 75% of marine accidents were due to human error.

The new ORE Catapult report says, "Accelerating and investing in the development of advanced RAS will mitigate this risk and means robots will handle not only routine maintenance tasks, but also improve pre-emptive maintenance, which will extend the life of components and turbines at sea, supporting the industry's waste reduction drive."

ce

Hitachi reveals telematics application programming interface

Hitachi Construction Machinery (Europe) has announced new products to improve fleet and data management.

The firm is now providing a new telematics application programming interface (API) for customers with different brands of equipment, who want to view their machine data in one place.

The Hitachi telematics API system will allow them to receive the data from different OEM remote monitoring systems into a platform of their choice.

This includes existing manufacturer-supplied platforms or an independent fleet management software. Customers also have the option to receive

data on their fleet every 10 or 60 minutes, or every 24 hours if they prefer, according to the company.

In addition, Hitachi is also working closely with fleet management telematics company ABAX to provide a

comprehensive fleet management system to owners of mixed equipment fleets.

This device-free solution, A Smart Connect, enables customers to monitor the location and operational information of all their construction equipment, as well as tools, vehicles and other assets with one set of login details.





'Tipping point' for digital infrastructure

The global technology and construction industry must work closer together to ensure that the worldwide demand for data is able to be met, according to a report from Mace.

The report from the construction and consultancy company highlights that, as the number of global internet users continues to grow, capacity and demand for data processing and storage worldwide will only increase.

While demand is rising, all industries are under increasing pressure to cut emissions – digital infrastructure is estimated to account for up to 3.2% of total global carbon emissions. The global technology industry must therefore build differently in order to contribute to global efforts of tackling climate change.

In 2020 alone, more than 100 hyperscale data centres were built, with Google, Microsoft and Amazon delivering 39% of the total global digital infrastructure.

According to Mace's report, 'Global connectivity: Transforming digital infrastructure', global technology companies must radically change the way they deliver their data infrastructure by adopting modern methods of construction, machine learning, AI and the latest low carbon construction solutions in order to reverse their impact on climate change.

John Jeffery, director, international technology at Mace, said, "We know first-hand the urgency around carbon reduction and rapid deployment in the data centre sector. It takes a joint effort between tech companies, consultants and the supply chain to adopt cutting edge offsite manufacturing techniques that will facilitate this globalised growth with a sustainable focus."



Hexagon offers digital twins of entire cities

Munich, Milan, Tokyo and New York among cities available as digital twins

Hexagon has announced that it is now offering ultra-high-resolution 2D and 3D digital twins of major cities as an off-the-shelf product through the HxGN Content Program.

Announced at the Intergeo show, the company revealed that the Metro HD city data will expand the data stack to include high-definition true orthophotos, obliques, digital terrain models, LiDAR point clouds, 3D building models 3D meshes, and land use maps of entire cities.

Cities captured in 2021 include Munich, Cologne, Vienna, Milan, Amsterdam, Stockholm, Tokyo, Dallas, New York, Stuttgart and Frankfurt. More cities will be added in early 2022.

The program uses a hybrid urban mapping sensor, the Leica CityMapper-2, that collects LiDAR and aerial imagery. The derived products, based on the strength of each subsystem, are said to result in superior accuracy.

"By creating a 3D digital twin of the world, the HxGN Content Program is supporting the global need for geospatial data that enables insightful, data-driven decisions," said John Welter, President Geospatial Content Solutions at Hexagon.

Hexagon says that the data consistency and flexible use terms of the HxGN Content Program makes it the ideal data source for artificial intelligence, machine learning, automatic feature extraction and large volume analytics.

Additionally, the 3D digital twins will enable city administrations and infrastructure providers to manage and monitor critical assets, assess and model risks, and support the visualisation of new infrastructure projects with the goal to create smarter, more sustainable cities.

ce

Trimble Construction One launches

Trimble has announced the launch of Trimble Construction One, which will replace the company's ViewpointOne platform, and will connect project finances with field and operational data.

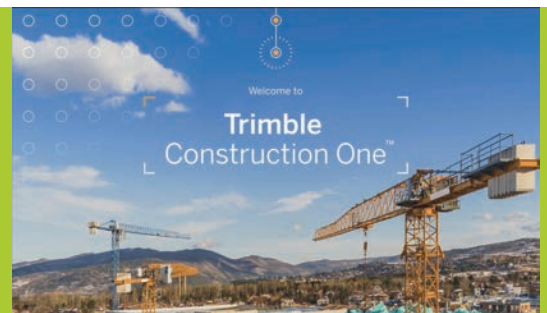
According to the company, Trimble Construction One will enable contractors to leverage a purpose-built

connected construction management platform that reveals the right information at the right time.

"The growing needs of our customers has always been our focus, and they've told us that connecting project finances with field and operational data is at the top of their wish list," said Matt Harris, vice

president and general manager, Trimble Viewpoint.

"With Trimble Construction One, we offer expanded connections across the construction project lifecycle enabling better data for decision making. All existing ViewpointOne customers are now automatically on Trimble Construction One and



have the opportunity to access additional benefits and flexibility."

The company says that connected construction management software

allows contractors to connect how they "Plan, do and manage" their construction projects and associated data for greater returns.

Concern as indexes

Negative results show up across the board
– are supply chains ready to snap?

CONTRACTORS

The Contractor index shows an overall change of -1.4%. This is surprising, not because we might expect to see positive figures at this time, but because all but two companies on the Contractor index show negative results.

At the top of the list is Spain's Tecnicas Reunidas – the only company to make a positive move – posts a 1.7% gain.

Tecnicas is a huge company, but receives relatively little coverage in Construction Europe, largely because the majority of its operations take place in GCC countries.

This article will assess the period for listed contractors, equipment manufacturers and material producers from week 36 to week 40 of 2021 (3 September to 1 October, 2021).

For the first time this year, all of the CE indexes show negative movement, with Materials seeing a fall of -8.4%, Equipment down -3.1% and Contractors on -1.4%. Whether this is a blip or the first signs of supply chain issues tugging at the recovery remains to be seen.



EQUIPMENT MANUFACTURERS

-3.1% ⬇️

Company	Currency	Price at start	Price at end	Change	Change (%)
CEE INDEX		488.7	473.5	-15.2	-3.1%
Astec Industries	US\$	60.3	53.81	-6.5	-10.8%
Atlas Copco (A)	SEK	593.2	525.6	-67.6	-11.4%
Bell Equipment	ZAR	10.9	13.8	2.9	26.6%
Caterpillar	US\$	211.78	191.97	-19.8	-9.4%
CNH Industrial	€	16.65	16.61	0.0	-0.2%
Deere	US\$	384.95	335.07	-49.9	-13.0%
Doosan Infracore	WON	11,800.00	9,150.00	-2650.0	-22.5%
Epiroc (A)	SEK	168.80	153.07	-15.7	-9.3%
Haulotte Group	€	6	5.62	-0.4	-6.3%
Hitachi CM	YEN	3355.00	3105.00	-250.0	-7.5%
Hyundai CE	WON	48850	40650	-8200.0	-16.8%
Kobe Steel	YEN	719.00	666.00	-53.0	-7.4%
Komatsu	YEN	2839.00	2651.50	-187.5	-6.6%
Konecranes	€	40.28	33.74	-6.5	-16.2%
Kubota	YEN	2333.00	2333.00	0.0	0.0%
Liugong	CNY	8.64	7.87	-0.8	-8.9%
Manitou	€	30.55	28.70	-1.9	-6.1%
Manitowoc	US\$	23.78	21.42	-2.4	-9.9%
Metso Outotec	€	9.25	7.78	-1.5	-15.9%
Palfinger	€	37.65	37.20	-0.4	-1.2%
Sandvik	SEK	223.50	197.90	-25.6	-11.5%
Sany Heavy Industry	CNY	28.13	25.44	-2.7	-9.6%
Tadano	YEN	1233	1135	-98.0	-7.9%
Terex	US\$	50.49	42.10	-8.4	-16.6%
Volvo (B)	SEK	194.76	192.64	-2.1	-1.1%
Wacker Neuson	€	26.00	24.58	-1.4	-5.5%
XCMG	CNY	7.22	6.99	-0.2	-3.2%
Yongmao Holding	SGD	0.90	0.80	-0.1	-11.1%
Zoomlion	CNY	8.63	8.25	-0.4	-4.4%

Period: Week 36-40, 2021



MATERIALS PRODUCERS

-8.4% ⬇️

Company	Currency	Price at start	Price at end	Change	Change (%)
CEM INDEX		283.0	259.2	-23.8	-8.4%
Buzzi Unicem (Ord)	€	22.37	19.41	-3.0	-13.2%
Cemex (CPO)	MXP	16.16	14.89	-1.3	-7.9%
CRH	UK£	44.5	40.13	-4.4	-9.8%
Ferguson	UK£	10620	10220	-400.0	-3.8%
HeidelbergCement	€	72.86	63.54	-9.3	-12.8%
Holcim	€	48.06	41.18	-6.9	-14.3%
Kone (B)	€	70.02	60.02	-10.0	-14.3%
Saint-Gobain	€	61.35	56.47	-4.9	-8.0%
Schindler (BPC)	CHF	282.6	237.2	-45.4	-16.1%
Schneider Electric	€	154	141.96	-12.0	-7.8%
Titan Cement Int. (Common)	€	16.10	14.32	-1.8	-11.1%
Vicat Group (Common)	€	42.9	38	-4.9	-11.4%
Wienerberger	€	33.44	28.9	-4.5	-13.6%

Period: Week 36-40, 2021



CE BAROMETER

Some confidence follows recent recovery wobbles

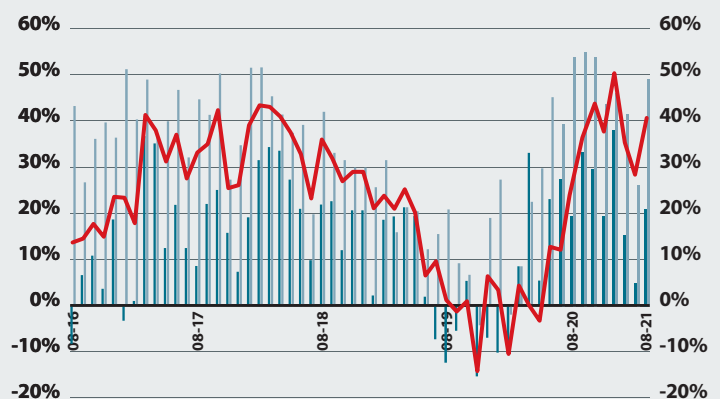
The August 2021 barometer survey was completed during the first three weeks of September.

The balance figure (the difference between those reporting on improvement or deterioration in conditions between February and March 2021) now stands at 21.3%, up from just 3.3% in the July Barometer.

Looking at levels of business for August, compared with the previous month, the numbers look significantly healthier, with 41.3% of respondents seeing improvement, compared with 27.8% in July.

The number seeing a reduction in their business has fallen to 20%, down from 24.4% last month, leading to the strong balance figure.

This much needed upward trajectory 'stops the rot', following three consecutive months of a reducing balance figure, as the Covid recovery showed distinct signs of wobbling, while supply chain



CURRENT SITUATION

FUTURE OUTLOOK

OVERALL CLIMATE

turn red

It recently signed a long-term agreement with Saudi Aramco, to work on its oil and gas brownfield projects, which could explain its relative strength on this month's contractor index.

Under the circumstances, Spanish companies have fared relatively well, with Acciona, OHL, Ferrovial and ACS all joining Tecnicas in the top seven performers and only experiencing mild negative shifts.

The only other company not in the red on this month's list is Italy's Astaldi, which holds fast at 0.0%. In its recently-published half-year results, the company highlighted an increase of €1.1 billion in its order backlog. Italy accounts for the majority of this, with Astaldi winning major rail

projects on the mainland and on the island of Sicily.

At the other end of the table, the three Swedish companies in the index have all seen significant downturns, with Skanska third from bottom at -12.1%, PEAB sitting at -10.5% and NCC at -9.8%.

With -13.7%, two UK companies – Taylor Wimpey and Morgan Sindall – are holding up the index, while the other UK firms fare little better, with none making it into the top half of the list.

EQUIPMENT

It's certainly a strange month on the CE indexes, with so many negative results following a number of months in which it seemed a boom was around the corner.

On the Equipment index, there is one huge outlier: South Africa's Bell Equipment, which has seen a positive change of 26.6% from last month's results.

Bell is an articulated dump truck specialist, but also manufactures backhoe and wheeled loaders, rigid haulers and other material handling equipment.

A key strength of this OEM, however – and one which has stood it in good stead through the pandemic months – is its business agility; it has signed agreements with a number of fellow manufacturers to become their appointed distributor in selected territories, making it something of a one-stop-shop for earthmoving equipment.

There is only one other company on this month's index that is not in negative figures, and that is Japan's Kubota, which sits at 0.0% change.

At the bottom of the index during a pretty bad month for equipment sit Hyundai Construction Equipment

(-16.8%) and Doosan Infracore (-22.5%).

This is clearly not what Hyundai Heavy Industries had in mind for these companies when it purchased a majority stake in Infracore and promised to transform the pair into top global players.





MATERIALS

There are no silver linings on the Materials index, with every company in the red. Switzerland's Schindler has taken the biggest hit, with a -16.1% change from last month, while the UK's Ferguson sits at the top of the index on -3.8%.

Of the 13 companies represented on the index, eight have posted double-digit negative results.

There doesn't seem to be a regional pattern to explain the performance of these companies; the theme running through this and the other indexes is simply a poor showing all round.

ce

Index	Beginning of period	End of period	Change	Change (%)
 CEE (Equipment)	488.7	473.5	-15.2	-3.1%
 CEM (Materials)	283.0	259.2	-23.8	-8.4%
 CEC (Contractors)	277.5	273.6	-4.0	-1.4%
 CET (Total)	344.3	328.1	-16.2	-4.7%
Dow	35443.82	33843.92	-1599.9	-4.5%
FTSE 100	7180.22	7027.75	-152.5	-2.1%
Nikkei 225	29128.11	28771.07	-357.0	-1.2%
CAC 40	6724.66	6466.5	-258.2	-3.8%
DAX Xetra	15833.03	15119.88	-713.2	-4.5%

Period: Week 36-40, 2021

KEY INDEXES

-4.7% ↘

Company	Currency	Price at start	Price at end	Change	Change (%)
CEC INDEX		277.5	273.6	-4.0	-1.4%
Acciona	€	142.3	141.1	-1.2	-0.8%
ACS	€	23.54	23.13	-0.41	-1.7%
Astaldi	€	0.43	0.43	0	0.0%
Balfour Beatty	UK£	293.2	270.4	-22.8	-7.8%
Bam Group	€	2.78	2.73	0.0	-1.8%
Bauer	€	12.22	11.06	-1.2	-9.5%
Bilfinger	€	30.96	29.82	-1.1	-3.7%
Bouygues	€	36.02	35.32	-0.7	-1.9%
Eiffage	€	92.12	86.14	-6.0	-6.5%
FCC	€	11.18	10.38	-0.8	-7.2%
Ferrovial	€	25.28	24.88	-0.4	-1.6%
Hochtief	€	70.34	68.3	-2.0	-2.9%
Keller Group	UK£	1,016.00	943.00	-73.0	-7.2%
Kier	UK£	126.20	117.74	-8.5	-6.7%
Morgan Sindall	UK£	2,680.00	2,312.74	-367.3	-13.7%
Mota Engil	€	1.39	1.37	0.0	-1.4%
NCC (B)	SEK	153.50	138.50	-15.0	-9.8%
OHLA Group	€	0.64	0.63	0.0	-1.6%
Peab (B)	SEK	101.50	90.80	-10.7	-10.5%
Porr	€	17.44	15.54	-1.9	-10.9%
Sacyr	€	2.20	2.10	-0.1	-4.5%
Skanska (B)	SEK	249.50	219.40	-30.1	-12.1%
Strabag SE	€	40.45	38.75	-1.7	-4.2%
Taylor Wimpey	UK£	178.25	153.85	-24.4	-13.7%
Tecnicas Reunidas	€	8.09	8.23	0.1	1.7%
Trevi Group	€	1.19	1.11	-0.1	-6.7%
Veidekke	NOK	111.40	106.80	-4.6	-4.1%
Vinci	€	92.17	88.44	-3.7	-4.0%
Webuild (formerly Salini Impregilo)	€	2.35	2.17	-0.2	-7.7%
YIT	€	5.05	4.54	-0.5	-10.1%

Period: Week 36-40, 2021

CONTRACTORS

-1.4% ↘

CE AUGUST SURVEY RESULTS

issues took the edge off high demand.

It should be noted, however, that, while the respondents seeing better business now than last year has also grown (up from 66.7% to 68.8%), so has the number reporting a reduction in business (up from 11.1% to 16.3%).

Looking 12 months ahead, though, the picture appears rosier, with 60% forecasting improved levels of business (that's an increase of almost 18% on the previous month's response).

Furthermore, those predicting lower levels of business has fallen from 16.7% last month, to just 11.3% in the latest barometer.

TAKE PART

The survey, which takes just one minute to complete, is open to all construction professionals currently working in Europe.

■ See www.construction-europe.com/ce-barometer for more info.

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A leap forward for crawlers



With rugged components usually seen in 30 tonne-plus excavators, Doosan's DX245NHD-7 is easily moved between sites, with a transportation width of only 2.54 m

Crawler excavators are peerless when it comes to heavy earthmoving applications, but the operator experience is also a driving force behind the latest models, as Mike Hayes discovers

This particularly affects crawler excavators because a high proportion of the machines sold in Europe are imported from Asia."

SMART SYSTEMS

Supply chain issues are clearly hampering equipment manufacture, but the excavator show must go on, and Doosan recently launched its DX245NHD-7, a 25 tonne heavy duty excavator built with 30 tonne undercarriage components to increase its lifespan and allow it to take undertake rugged applications.

The machine is powered by a Doosan DL06V diesel engine, providing 131kW at 1800rpm.

Doosan says the engine offers a new

Being seen as pure workhorses, whether it be on construction sites or in quarries and mines, has not prevented the world's biggest excavator manufacturers from taking design leaps to make them more eye-catching, more environmentally friendly and more comfortable.

They have good reason to put in some overtime on these giants of construction; for one thing, sales in Europe this year are expected to surpass the previous high set in 2019, as the rebound from the Covid pandemic gathers pace. This according to specialist market research and forecasting company Off-Highway Research.

Furthermore, in 15 of the largest markets in Western Europe, sales are expected to reach 31,400 machines this year, marginally ahead of the previous high tide mark of 31,200 units sold in 2019. This would represent a remarkable 23% rebound from the Covid-affected sales level seen in 2020 – and demand is forecast to move even higher in 2022, with sales expected to exceed 32,000 units.

Off-Highway Research managing director Chris Sleight said, "Demand for equipment in general – and crawler excavators in particular – has been robust this year as contractors and rental companies alike renew their fleets in response to high workloads and the anticipation of more to come from the various stimulus spending

plans around Europe."

He added, "We believe sales this year would have been much higher had it not been for the supply chain constraints and shipping difficulties which have been widely reported.

Hitachi beds in nicely

Austrian firm GLS Bau und Montage wasted no time in purchasing one of the first Hitachi ZX300-7 excavators, when it was tasked with creating a 12km bypass channel to the River Danube.

The conservation project, that will enable fish to pass the Altenwörth power station to spawn, will require a huge number of man and machine hours between now and the conclusion of the project in March 2022.

The 30 tonne machine was delivered last May and within five months had completed some 700 working hours.

GLS Bau und Montage saw it as a priority that its operators could work in optimal working conditions as they dug the new riverbed, created embankments and developed meanders for the river.

The company's workshop manager, Johann Eder, said, "We waited for the launch of the new models in order to offer our 20 operators the best possible comfort and the latest technology. Now we're one of the first contractors to use the new ZX300-7."

He added, "The cab is very spacious and quiet, has a Bluetooth hands-free system and air-sprung Grammer seats with air-sprung joysticks."

The new machine also features automatic air conditioning, an entertainment system and a multifunctional monitor.



CRAWLER EXCAVATORS

solution to exceed Stage V regulations, without the need for exhaust gas recirculation (EGR). The technology boosts the air during combustion, raising the temperature and reducing the volume of particulates produced.

The manufacturers says a combination of this design and efficient after-treatment technology increases the maintenance interval of the diesel particulate filter (DPF) to around 8000 hours.

The new excavator is designed with the increasing use of tiltrotators in mind and features a 5 tonne standard counterweight, which also aids with increased lifting and digging capabilities.

Doosan says the DX245NHD-7 also features a smart hydraulic system that promises a 30% improvement in attachment work, compared with predecessor models. A new Tiltrotator mode is also standard, optimising the hydraulic flow and eliminating back pressure for more accurate tiltrotator control.

Upgrades that benefit operators also include a new leatherette seat, larger touchscreen, DAB audio (with handsfree and Bluetooth), air conditioning and eight LED work lights. Optional extras include four more LED lamps, a 360-degree monitor and cameras and ultrasonic obstacle detection.

Stephane Dieu, Excavator Product Specialist at Doosan, said: "The DX245NHD-7 adds a new highly sturdy option in the medium-sized range of crawler excavators from Doosan. With regard to the name of the machine, the 'N' stands for 'Narrow Track' and the 'HD' stands for 'Heavy Duty' illustrating its suitability for the most challenging applications. Complementing this, the 'narrow' design of the DX245NHD-7 offers the further advantage of a transportation width of only 2.54 m."

IMPRESSIVE EFFICIENCY GAINS

Of course, when an excavator model is launched, you would expect it to be new and improved, but Cat's new 17 tonne 317 promises operating efficiency gains of up to 45%, while its 317 GC is said to lower



Go big, go electric

While modern diesel equipment has reached incredible levels of emissions reduction, it can't match the zero local emissions of electric equipment.

The problem for heavy electric equipment working on construction sites is the size of the batteries required to power them and the need for mobile or semi-mobile charging infrastructure.

Things are a little different in the more static world of mining and quarrying, where electric equipment has added a new dimension to operations.

Liebherr recently launched two new crawler excavators – the 90 tonne R 976-E and the 100 tonne R 980 SME-E – not converted diesel machines, but machines designed to be electric. In fact, both the machines and their electric power systems were designed by Liebherr-France in the company's manufacturing facility in Colmar.

With 6000V of power coming from a cable connection, which can be attached to the centre of the undercarriage or on the side of the machine, the machines promise longer service life, due to the constant speed, whatever the load.

Liebherr says the excavators also offers a high availability of transient power for complex machine movements, enabling enhanced productivity.

Designed to withstand rugged working environments, the machines feature two toughened electrical cabinets, assembled by welding to form a specially strengthened structure.

Adding to the benefits of an electric machine, such as the significant reduction in noise and their inherent environmentally friendly nature, Liebherr cites lower operating costs for the two new machines, which it says make them more cost-effective than their diesel counterparts.

From an operator perspective, the excavators feature a cab equipped with an automatic air-conditioning and heating system and a 270-degree camera system, as well as an armoured windscreen and roof window.

maintenance costs by up to 20%, compared with its predecessor.

The machines boast Smart mode, which automatically matches the engine and hydraulic power to the current working

conditions to improve efficiency.

An ECO mode also reduces fuel consumption when applications are not particularly power-hungry.

Both excavators have a new main valve control, which Cat says eliminates the need for pilot lines and reduces pressure losses, also aiding fuel conservation.

On board technology is one reason for the efficiency gains Cat claims for the two new excavators. This includes Cat Grade with 2D, which operators can use to guide depth, slope and horizontal distance. This system can also be upgraded to Cat Grade with Advanced 2D or Cat Grade with 3D.

Cat Payload technology allows operators to weigh loads on the go and estimate payloads to improve loading efficiency and this operating data, including payload summaries, fuel usage and more, is automatically captured by Product Link, which can be accessed by fleet managers to improve overall efficiency.

50/50 FOR PRODUCTIVITY

The two new 50 tonne crawler excavators from Volvo CE are the first the company has



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Volvo Construction Equipment





Volvo's EC530E and EC550E machines are its first 50 tonne excavators – promising the performance of 60 tonners

manufactured in this size class. Going the extra mile, the company has ensured both machines deliver digging and lifting forces one would expect to find in larger machines, and both feature the highest engine power in the class.

Volvo says that, as the EC530E and EC550E are both suited to loading articulated haulers in the 30-40 tonne class, fewer passes are required to load them. This is part of the reason the company promises a potential boost in productivity of up to 20%.

On both machines, the reinforced undercarriage and equally rugged upper and lower frame are complemented by a boom and arm that include a larger pin size for additional strength.

As powerful as these machines are, they also promise fuel efficiency gains of up to 25%, primarily due to a recently designed electro hydraulics system.

Digging into this a little further, the excavators feature Independent Metering Valve Technology (IMVT) – basically an electronically controlled system that makes operations more precise than a mechanically controlled system.

The option of Comfort Drive Control is available on the new machines, giving operators the option of steering using the joystick rollers instead of the foot pedals.

Another fatigue-limiting feature is boom-and-arm bouncing reduction technology, which lessens machine shock.

With uptime crucial to productivity – and profit – the components of the EC530E and EC550E have been designed to be particularly durable. The electrical system has connectors that exceed water ingress protection standards and hydraulic pilot lines have been removed, reducing the number of couplings required.

At the same time, engine oil and filter change intervals now extend to 1,000 hours.

A BEST SELLER

With one in every five crawler excavators in Europe bought being within the 20-tonne class, it seems like good business for Hyundai Construction Equipment Europe (HCEE) to launch a 22 tonne machine.



Hyundai's HX210AL 22 tonne crawler excavator carries the new A series livery, as well as machine control and machine guidance features

The HX210AL has a power output of 129kW, which comes from a Cummins B4.5 Stage V-compliant engine.

Hyundai says the engine has an innovative integrated 'all-in-one' exhaust after-treatment system, that reduces both emissions and maintenance requirements. According to the company, removing the need for EGR leads to enhanced reliability and simplified maintenance.

The HX210AL boasts 780Nm of peak torque – 7% more than the predecessor machine. This is balanced against another feature, electronic pump flow control (EPFC), which enhances controllability for precision work.

The new machine also features, as an option, machine guidance (MG) and machine control (MC), automatically controlling the attachment and indicating the current work status.

The MG displays the bucket tip's position, while the MC takes control of grading with the bucket tip.

The HX210AL is part of Hyundai's A series of machines, which carry a new livery, with a dark grey boom and dipper. Along with this makeover, operators will likely appreciate the new cab, with the lower glass area in the door improving visibility.

A Grammar air-suspension seat is another

Case of the mountain goat excavator

Crawler excavators are often praised for their durability and power, as well as the volumes of earth they can shift. Their compactness and agility, however, often go unmentioned.

Case Construction Equipment's CX145D SR crawler excavator, however, was recently deployed by Italian company Bancoline, to maintain a number of mountain roads – and the company did just that.

Designed to be operated in limited space (as the image demonstrates), the CX145D SR is one of only a few machines on the market with a cabin that can fully rotate with minimal risk of coming in to contact with the job environment.

Mauro Goss, the owner from Bancoline, said, "Working on these tightly packed mountain roads at altitude means a machine with CX145D SR's manoeuvrability is essential and a great time saver."

Giuseppe Santo, crawler and midi excavator product manager at Case, said, "the Case crawler excavator range is designed to meet the demands of any jobsite. The machine's features are geared towards versatility, power and unique precision, which explains why we are seeing them being used in a huge range of applications throughout Europe."



feature, as well a touchscreen monitor and jog-shuttle rotary controller.

Gert Peeters, product specialist supervisor at HCEE, said, "We're really excited about this model. We think this is going to be a great entry into that 20 tonne class that the market is demanding. We are convinced the HX210A will become the new standard throughout Europe when it comes to performance and operating experience."



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Digital twins enter

The Covid pandemic and advances in computing are pushing the use of 'digital twins' into the construction mainstream. But experts say we are only beginning to see the implications for the technology. Lucy Barnard reports

Surrounded by grey water as far as the eye can see, the Clair Ridge oil platform off the coast of Shetland is a pretty remote spot in which to be carrying out routine maintenance.

But the technicians in blue overalls and hard hats abseiling down the side of the vast structure in Scottish territorial waters in the North Sea are connected to thousands of up-to-date maintenance reports and work instructions using digital twin technology as well as to dozens of other team members back on the mainland.

Using an iPad, workers on the remote platform can access a digital replica of the entire off-shore platform to check maintenance records and engineering data for each of the components they inspect.

At the touch of a screen they can access data from sensors throughout the platform which monitor everything from flow rates to temperature to wind speed. And any work or unusual findings can quickly be logged onto the digital twin.

"The implications for digital twin technology are huge," says Lee Tedstone, global VP, head of digital project execution at software developer Aveva, which worked with a team led by BP on the project. "We can use augmented reality where people use technology to see part of the digital twin. That means the guy conducting maintenance on the oil platform can look at each component and see its operational performance, scheduled maintenance etc."

Faced with a sudden need to maintain social distancing and enable more staff to work from home during the pandemic, more and more

big oil, energy, construction and engineering companies have been speeding up their plans to create digital twins.

"We had quite a few customers coming to us in March/April 2020 with requests to help them keep the workforce connected through our online software offering for unified project delivery," says Tedstone.

"People had to work remotely, but company infrastructures were generally not geared to manage heavy remote working, in particular with their 3D design solutions. We saw a

huge uptake in our offering during that time which in turn accelerated a lot of digitalisation initiatives forward. By having the software in the cloud it was easier to access therefore driving productivity."

But this is just the beginning. As advances in technology enable companies to harness the Internet of Things to

constantly measure the things that they are building and operating, digital twins provide a good way to keep track of that real-time data and use it in a meaningful way.

JUST HOW BIG IS THE DIGITAL TWIN MARKET?

A survey by market research company Markets and Markets predicted that the global digital twin market is set to increase to €41.5 billion by 2026 – more than 15 times its size in 2020. Construction companies are expected to be among the biggest drivers.

"Digital twin technology is one of the fastest growing concepts in the construction industry," says Frank Weiss, senior director for new products at Oracle Construction and Engineering, an arm of computer giant Oracle



Frank Weiss, senior director for new products at Oracle Construction and Engineering

IMAGE COURTESY BP



A maintenance engineer climbs a stairway on the Clair Ridge oil platform

the mainstream

which specialises in developing software solutions for construction firms. “Digital twins can play a profound role in how owners manage built assets, and how consumers interact with these structures.”

Weiss says that digital twins can make the construction process quicker and faster and help teams work together better using more up-to-date information, especially if teams are working on a project from different physical locations.

“Today’s organisations want to consolidate as much as possible into a single, cloud-based platform, and eliminate on-premise silos of duplicate information,” Weiss says. “A digital twin helps ensure that team members will be working off the latest data analytics for a project, including those for repeatable

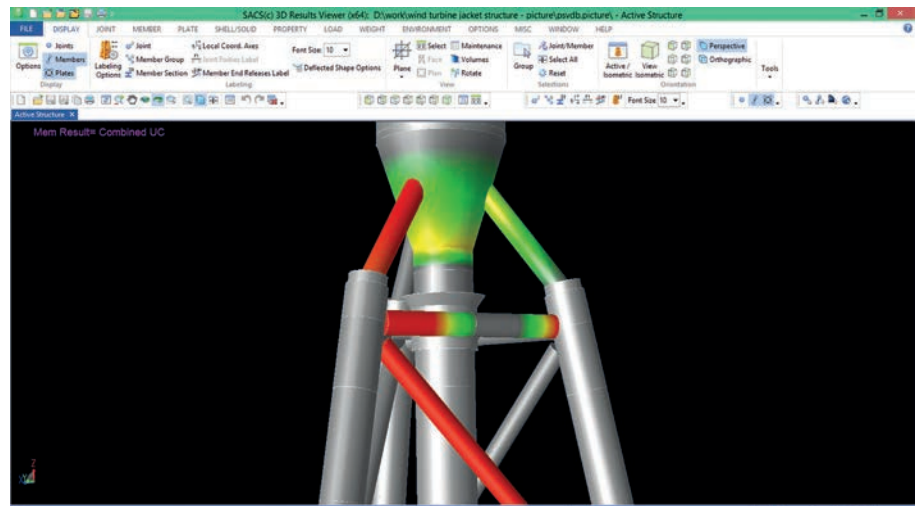


IMAGE COURTESY BENTLEY SYSTEMS

An illustration of Bentley Systems’ design integration simulations

What is a digital twin?

A digital twin is a complex digital representation of a physical thing with a real-time connection. It is an assembled aggregation of data captured by other tools, usually including a 3D model.

A digital twin in the construction industry spans the lifecycle of a project, from the beginning (planning and building), to the middle (operating and improving), to the end (decommissioning and disassembling the asset in a sustainable and cost-effective manner). For the construction industry, digital twins can play a profound role in how owners manage built assets, and how consumers interact with these structures.

processes that are being built offsite. It can help act as the cornerstone for prefabrication and can play a prominent role in achieving efficient communication and construction business processes.”

And, he says, the information from the digital twin can then be used in computer simulations to predict how a project will perform over time – providing information which can then be used by the designers and engineers to optimise their designs before work has even started.

“A 4D simulation [over time] provides the context and chronology to create simulation scenarios in the digital twin,” he says. “It helps the design and engineering phase of a construction project by expediting and automating traditional design, production, and operational processes. It will identify opportunities to improve the construction of an asset as the project is evolving.”

Rich Humphrey, vice president

Rich Humphrey, VP construction product management at Bentley Systems



of construction product management at another software firm, Bentley Systems, agrees. He points out that unlike Building Information Modelling (BIM) software, which has been used to varying degrees in construction for the past twenty years, digital twins provide real-time information about projects, making them invaluable on construction sites where designs can be altered based on the conditions in the field.

“A digital twin is a realistic digital and dynamic representation of a physical asset, process, or system in its built environment,” he says. “The keyword is dynamic and that is what distinguishes a digital twin from any other static model. It’s living. It’s changing along with the physical asset.”

Humphrey says his teams start work on digital twins before construction has even started, capturing existing conditions on site such as survey results and encapsulating design models and engineering data from the design phase. Then, on-site sensors can monitor construction conditions in real time.

“Digital twins can significantly benefit the construction industry,

helping users make data-driven decisions and achieve more predictable outcomes,” he says. “They quickly allow users to perform construction sequences and simulations, so that they can detect and resolve errors before construction begins which reduces time for project teams and, therefore, costs for the owner.”

By buying materials early and plugging the data from it into a digital twin, software firms say contractors can start engineering components such as piping 3-4 months earlier than would otherwise be possible, reducing overruns and bringing construction projects closer to budget.

The Clair Ridge oil platform, 75km west of Scotland’s Shetland Isles



DIGITAL TWINS

HOW ARE DIGITAL TWINS USED IN CONSTRUCTION?

And, once a digital twin is built, the sky is pretty much the limit in terms of the sort of simulations you can perform. Engineers can assess how a structure would be likely to behave when faced with freak high winds or earthquakes.

They can run a test to see how a structure will perform over twenty or fifty years. They can look at what would happen if they changed a key part of the structure or designed it with cheaper materials.

DIGITAL TWIN TECHNOLOGY FOR CONSTRUCTION DESIGN AND ENGINEERING

Florent Thebault, areas sales director for Southern Europe at simulation software specialist Ansys, works with companies looking to understand how to design and engineer their products more efficiently.

Computer simulations of digital twins can give clients information about just how long each component can keep working efficiently, he says. Replacing a pipe too late could cause a costly and dangerous leak - but replacing them too early is a waste of money, time and global resources.

"You can optimise the efficiency and profitability of the company," he says. "So, simulation can ensure that a cable is not too small so it might break and you can also ensure it is not too big. So I can use a smaller or cheaper cable perhaps and save money or I can be faster to produce it. You can play with several parameters to optimize your design."

And, as part of a team helping to build the vast International Thermonuclear Experimental Reactor (ITER) experiment in the South of France which is hoping to produce nuclear fusion, Thebault is at the cutting edge of seeing where simulation technology could lead.



The ITER team use computer simulation

"The main value of simulation lies in being able to physically represent all the phenomena on the computer," Thebault adds. "It opens all the doors to testing in very difficult environments like space or deep seas. All of this kind of stuff can now be possible on the computer."

At ITER, where teams of scientists are building the world's largest nuclear fusion reactor by heating plasma into extreme temperatures and confining it within a super-strong electromagnetic cage or tokamak, Thebault says the technology really comes into its own.

PRACTICAL USE OF A DIGITAL TWIN

"For the ITER tokamak this is where simulation is making sense," he says. "We don't have any real prototype of the ITER tokamak but we can take the data of the materials and virtually test it in that environment. That it means that you are sometimes going to discover more in the research mode of what might be the results that you can expect in that situation that we have never faced."

As a result, Thebault says, Ansys has been able to help design and engineer key

components of the experiment including the vacuum chamber, the cooling system and the microwave antenna which heat gas up to 150m degrees to turn it into plasma.

Aveva's Tedstone too believes that the full potential of digital twins is only starting to become apparent. Once companies get used to the concept, he believes it could revolutionise the way in which companies look at their environmental impact.

His aim is to include data on the amount of carbon produced by each component on a project in its digital twin in the same way that cost is currently treated, enabling engineers to model a structure's environmental impact over time and to procure and construct in the most sustainable manner.

HOW WILL DIGITAL TWINS DEVELOP IN CONSTRUCTION?

"When our customers are buying materials, we could include information from a government online catalogue of materials providing them with an associated carbon score," he says. "We could then give our customers the option of buying materials from place A or place B but place A has a much better sustainability initiative. You start making those types of decisions."

But, despite the optimism, many in the construction industry remain to be convinced. Sceptics point to the fact that many large companies in the sector are struggling to implement digital twins because they have legacy systems which are incompatible with the technology, or do not currently employ staff with the skills and training to be able to use the technology at scale.

"The use of digital twin is still in the early stages in the construction industry," admits Bentley's Humphreys. "Building Information Models [BIMs] aren't even that widespread."

"But the good news for those that have BIM, the gap isn't that big to take them to a digital twin and we don't suspect it will take long," he adds. "However, for those users in construction who haven't even embraced model technology as part of their contract, may take a little longer to transition to a fully digital world."

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With over 10 million parts, the ITER reactor is probably the most complex machine ever constructed

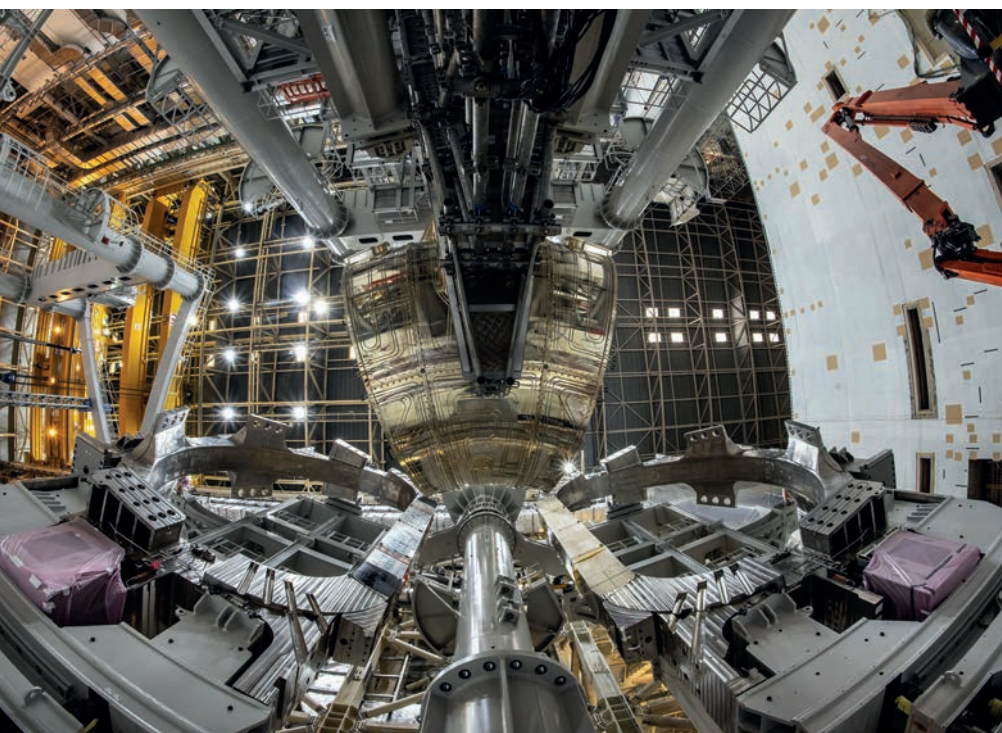


IMAGE COURTESY ITER ORGANISATION

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MASCHINEN



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

The complexity and requirement for cutting edge construction technology in Trevi's work on the Grand Paris Express project is staggering



Deep innovations

In France, one of the largest and most ambitious infrastructure projects in Europe is ongoing – the Grand Paris Express.

When completed, the new metro network will reduce road traffic in the French capital, improve air quality and, hopefully, make the lives of Parisians a little easier.

The project encompasses the extension of line 14 of the metro and the construction of new lines 15, 16, 17 and 18. Along with approximately 200km of new lines, some 60 new stations are being constructed. In total, the planned investment for the network is more than €35 billion.

CAPITAL SOLUTIONS

Undertakings of this magnitude can only be built on the most robust foundations, which

In construction, nothing goes up before first going down. Mike Hayes looks at some foundations challenges and their imaginative solutions

is where the Trevi Group comes into the equation.

The company is undertaking foundation work as part of the construction of the underground stations of Paris' Le Bourget Airport, Aulnay and Saint-Denis Pleyel, set to be the largest of all the Grand Paris Express stations and crossed by tunnels of lines 14, 15 and 16.

Marcello Varese, project director at the

Saint-Denis Pleyel station says it is "the main station of the whole Grand Paris project, as it connects four metro lines with two railway lines and is located near the Stade de France [the national sports stadium of France]."

What makes the station unique is its 9000m² surface area, as well as the fact that Trevi is undertaking excavation here using the 'top down' method. In fact, in order to allow the 'top down' excavation, it was necessary for the company to add 36 plunge columns, which allow simultaneous superstructure construction and basement excavation.

So, not only did Trevi construct 141 structural diaphragm wall panels, it also fabricated 36 plunge columns, each weighing 90 tonnes and which had to be laid to a depth of 36m. According to Trevi, this is a first.

Trevi is undertaking groundwork across the Grand Paris Express project, with one of the first items on the agenda being land treatment; consolidating the treated soil and significantly lowering the level of groundwater to ensure tunnels can be



Trevi utilising the foundation drilling equipment of its subsidiary company Soilmec during construction work on the Grand Paris Express

excavated safely.

Trevi is also involved in the excavation of a number of service shafts by tunnel boring machines (TBM), which will allow access for rescue and evacuation of passengers, ventilation and power supply.

These shafts run to significant depths and require the construction of reinforced retaining walls through diaphragm walls that can sometimes reach more than 60m in depth.

For these applications, Trevi is using drilling equipment including advanced heavy-duty buckets and hydromills.

SQUARE DRILLS IN ROUND HOLES

Just as the Grand Paris project attempts to future-proof the capital city, in terms of transportation, Bauer Maschinen is looking to the future of megacities with its latest technology.

In cooperation with construction firm Denys, Bauer has developed the 'Cube system' of underground cutting equipment, which allows for the construction of, for example, subway stations, in busy urban areas, with greatly reduced noise, dust and traffic upheaval.

The cube milling system is based on Bauer's existing cutting technology, but with the cutters fitted into a container-sized frame, which can be individually lowered into a shaft.

The cube system can then progress along microtunnels with diameters as small as 3.8m, milling diaphragm walls.

Dr Rüdiger Kaub, managing director of Bauer Maschinen, says, "Imagine you're



Drilling in the digital age

On the site of a hospital to be built in Oberwart, Austria, deep foundations specialist Züblin Spezialtiefbau introduced connected Liebherr equipment to prepare the land for construction work.

In an area of 23000m², Züblin was tasked with installing 1,310 piles in preparation for the hospital building. The piles are being installed using the continuous flight auger (CFA) method, with an anticipated construction period of approximately four months.

Züblin brought in a Liebherr LB 28 drilling rig for the job, equipped with the LIPOS positioning system, as well as a Liebherr THS 110 concrete pump in support.

HOW THE SYSTEM WORKED

First, the total construction area was measured, with the location of each of the piles accuracy identified. This data was used to create a drilling plan, which was fed into the on board LIPOS system.

The operator was able to see the position of the rig at all times, with centimetre accuracy, moving easily between drilling points – no stakes or colour markings are required.

Using the LIPOS technology, the operator was able to handle the rig more quickly and

flexibly, without having to worry about watching for ground markings or the concrete hose. The optimal drilling plan is also programmed into the LIPOS system.

Liebherr says that, without the system, the drilling points would have to be newly measured, drawn and marked at least three times a day.

Ultimately, Züblin was able to complete the contract in just three months; one month earlier than planned.

Site manager Harald Fugger says "The LIPOS positioning system is ideally suited for completing jobsites, especially using the CFA method. It has proven itself well on

the jobsite and makes working processes easier allowing continuous real time control and monitoring.

"Quality management is considerably improved through the automatic recording of the processes. The LIPOS system is basically self-explanatory for the operator and convinces through easy handling."

Groundforce's towering achievement

In Gothenburg, Sweden, the Karlstad development, which includes no fewer than nine high-rise buildings. One of these is the 245m-tall Karlatornet tower, the tallest building in Scandinavia.

Having completed its tasks on the Karlatornet project, specialist construction solutions firm Groundforce is now working on the adjacent building, Capella.

The basement of this building measures 72m long by 60m wide, with a cut-out in one corner. The excavation is only between 2m and 3m deep, but comprises soft clay soil, meaning the sheet-piled retaining walls require support ahead of the basement slab being cast.

Due to the irregular heights of the basement sides, Groundforce braced the retaining walls across the corners with 150 tonne capacity MP150 hydraulic props as 'knee' braces.

These raking props transfer the lateral loads from the waling beam to concrete thrust-blocks cast into the floor of the excavation.

Groundforce's European sales manager Sam Oldroyd says "All the loadings were supplied by the client's consulting engineer and it was then a simple matter of sizing the equipment.

"The modular design means our props can be incredibly flexible. You can quickly modify the length by adding or removing components.

"In total, the Phase 2 excavation required only four MP150 knee-braces and four MP150 raking props. If we can reduce the number of props required, that will drastically cut down on transport and cost."



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Keeping the foundations in good SHAPE

As advanced as foundation drilling is today, it is still a tall order to make a drilled shaft without irregularities, which could affect its performance.

A product from US-based Pile Dynamics Incorporated could hold the answer for ensuring the quality of deep foundations, such as drilled shafts, bored piles, slurry walls and barrettes.

The SHAPE (or shaft area profile evaluator) is a device which provides a representation of the foundation excavation – including its verticality – ahead of placing concrete.

The SHAPE module is lowered into the shaft where it measures its radius with eight ultrasonic transmitters and receivers, plus the depth using pressure transducers.

Having separate transmitters and receivers, there is minimal signal overlap, as the travel time to the wall and back to the module is extremely short.

The SHAPE measures the slurry wave speed to interpret the distance from signal travel time, as well as record the depth with pressure transducers.

Every second of the SHAPE's descent and ascent from the shaft (which proceeds at approximately 300mm per second), it is collecting measurement data. As an example, the SHAPE will collect all necessary data on the radius of an 18m shaft in approximately two minutes.

Completely wireless, the device automatically corrects for any rotations that can occur when lowering it on a single line. PDI has also recently developed its own deployment system, should the drilling rig be required elsewhere during the evaluation process.

Some of the benefits of the SHAPE include quick connection to a Kelly bar, wireless data acquisition, effectiveness in water, polymer and mineral slurries and the inclusion of Sitelink remote technology.

The device also allows operators to view in real time the pressure increase during its descent and decrease during ascent.

George Piscalko, president of Pile Dynamics Incorporated, said of the updated technology within the SHAPE device, "We felt the market needed a modern and rugged device where we eliminate common points of failure such as electronic cables running from the surface to the device to provide increased accuracy and performance."



Bauer says its new Cube system will open up completely new application possibilities in the production of diaphragm walls in the future

planning a new subway line in a densely populated metropolis.

"With our BAUER Cube System... this is now possible. It can be used exactly where the new subway station is to be built: underground – under the existing buildings!

"This opens up completely new possibilities for planners and architects."

The Cube system is still being tested by Bauer and Denys, but is expected to be fully developed and launched before the end of this year.

THE RIVER AND THE RIG

Where laying foundations is challenging on land, on the water things can get complicated in the extreme.

Such is the case with the foundations for Norway's longest railway bridge over the River Vorm in Minnevik, which is being undertaken by Aarsleff Ground Engineering.

Aarsleff was engaged by PNC, a company owned by Porr, to carry out the piling works for the foundations of the bridge. The construction consists of 20 pier shafts with 280 friction piles, which Aarsleff has to drive into the ground.

Dennis Jensen, senior project manager with Aarsleff, says, "Before rail traffic is permitted,

the piles must rest for at least two years. The design challenge lay in achieving the ground-bearing capacity because the rock lies so deep, therefore inclined piles were required. The project is situated in an inland lake, which makes the transportation of large machines and large materials much more difficult."

Aarsleff decided to use a Liebherr LRH 600 piling rig with fixed leader system for the task. Jensen says, "We decided for this machine because of the possible hammer sizes for inclined piles. It is very strong and stable.

"We have to drive in the piles with an inclination of up to 1:5 and the hammer size was an important requirement both for Aarsleff and also the capacity of the LRH 600. Liebherr was the only supplier that could fulfil our technical requirements with a short notice and deliver a carrier machine and leader as a complete package."

Aarsleff brought in a Liebherr HS 895 HD duty cycle crawler crane as the carrier machine, positioning it on a barge, from which the rig has to drive half of the piles into the bed of the river.

Each of these mighty piles is 58m long, with a diameter of 1016mm and a weight of 29 tonnes.

Jensen says, "The stability of the piling rig on the barge is surprising. Even with strong currents we can position the piles within the tolerances specified for the project in water 12-14 m deep."

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Constructing the foundations for the railway bridge in Norway, Aarsleff was impressed with the stability of the piling rig on the jack-up barge

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Demolition raises its game

Despite everything that Covid-19 has thrown at it, Europe's demolition industry has lost none of its innovation or ingenuity.

That is the conclusion to be drawn from the shortlists for this year's World Demolition Awards, held this month by Construction Europe's sister title Demolition & Recycling International alongside the European Demolition Association and the National Demolition Association of the US.

The strength of solutions on offer was summed up by Jim Graham, principal of US-based company Winter Environmental and one of the nine-strong international judging panel that ultimately decides the award winners, who felt 2021 was the best year yet.

"There are some incredible applications in each category," he said.

"This has been by far the most challenging year I have had as a judge. The quality

As this month's World Demolition Awards demonstrate, consistently improving standards mean Europe's contractors are proud to put recent projects under the spotlight of global scrutiny

of the projects has shown a consistent improvement, and this has amplified the global desire to be recognised by industry peers as first class."

While the shortlists themselves comprised entries from four continents, there were several from Europe that could be said to meet Jim Graham's description.

DEMOLITION ON TRACK

Take for example the UK-based Coleman Group, which was appointed demolition contractor for capital delivery as part of the Euston HS2 rail project enabling works. The company was responsible for demolishing a section of the live railway station to allow the construction of the London terminus of the new rail link.

There were several key challenges to overcome to successfully deliver the project, most notably the demolition of a structure still connected to a live and operation railway station. In total over 2,220 t of concrete and

550 t of steel was demolished and cleared without impacting one of the UK's busiest stations.

A railway station project also took centre stage for Italian company Despe.

This was the Vinci station in Lyon, France, owned by the country's national railway company SNCF.

In this genuinely international project, Despe used the cut and drop technology, developed in Japan, that it had first employed during the first stage of the project in 2019.

Despe said the use of this system for the Lyon station hall allowed it to develop new knowledge on the behaviour of buildings. It tested a new demolition method based on the reversal of the standard sequence, reducing or even eliminating the use of large machinery.

First, Despe conducted the international deconstruction of the building, leaving just the bearing skeleton structure and the roof. Once this operation has been completed, the support pillars were replaced at ground level with hydraulic jacks controlled by a PLC system.



Coleman Group plays a major part in the HS2 enabling works in London

DEMOLITION

This system allows Despe to bear the load and lift a building with a total weight of over 2,200 t from the base, and the lower it step by step.

Before placing the cut and drop lowering system, the building was prepared by eliminating all the non-structural parts. Furthermore, some specifically calculated metal structural reinforcement elements were also applied.

THREE-STAGE PLAN

At the opposite end of the spectrum – both in terms of the project and geographically – is the Voronezh nuclear power plant in Russia.

This was built between 1981 and 1992, only for 90% of the plant to be mothballed. It remained unfinished until the start of 2020, when the Rosenergoatom Concern JSC signed an agreement with demolition contractor



Russia's Volgaspetsstroy takes down the Voronezh nuclear plant

Volgaspetsstroy to move ahead with the dismantling of the power station.

The three-stage project comprises dismantling the reinforced concrete structure of the water treatment building, the reactor

compartment outbuilding and finally the main building of the reactor compartment.

The water treatment building is 17.7 m high with 60 cm thick walls and floor, while the upper part of the reactor compartment is a metal dome that is 67 m high at its peak with cylindrical walls that are 1.6 m thick.

Elsewhere in Russia, the Crushmash Group helped implement the programme to terminate the open-hearth production of the Vykxa Metallurgical Plant.

In the project, Crushmash's specialist staff dismantled industrial buildings and reinforced concrete pipes with a height of 80 m.

Along with several other industrial facilities on the site, the open-hearth plant consisted of reinforced metal structures, so dismantling it required a combination of manual and mechanised methods. Metal structures were manually trimmed ahead of mechanical dismantling, and four reinforced gas pipes were manually dismantled due to the density of the industrial development nearby.

After these were lowered from their original 80 m height to 25 m, the excavator started dismantling.

All the dismantled equipment, as well as some of the metal structures, were to be preserved intact and transferred to the customer's museum.

SQUARE DEAL

Returning to the UK capital where this tour of European demolition started out from, the works carried out at London's Paddington Square by Erith Contractors are paving the way for the creation of the Renzo Piano designed Paddington Cube due to open in 2022. This phase of works included demolition of existing structures, basement demolition, site wide excavations, top-down-bottom-up hybrid basement construction, break out of the ticket hall slab, installation of piles, tunnelling works to establish connection of the London Underground box to the existing platform infrastructure as well as the construction of the new road, sewer diversion works and substation relocation.

Erith remained in constant communication with St Mary's Hospital, Royal Mail Group, Network Rail, Transport for London, London Underground, London Ambulance Service, Santander Bikes and Westminster City Council during the works – not least because the site is located on a blue route for ambulances between Paddington Station and St Mary's

Max Wild's 'spectacular' bridge demolition

Germany-based contractor Max Wild has executed what was described as a "spectacular" demolition project in the south of the country.

The old Saar Bridge at the Saarlouis motorway junction has been replaced by a new, modern bridge with a higher capacity. The plan for demolishing the older bridge was to break it down into sections that could be placed on pontoons and floated to a crushing facility on the riverbank. To disconnect the lateral cantilever arms and the concrete slab between the two hollow boxes, the company used a 40 t excavator with a Kemroc cutter wheel attachment.

Demolition of the old bridge started after the four lanes of the new bridge were completely opened in November 2020. The client, the western subsidiary of Autobahn GmbH, awarded the contract for the overall project to the Schnorpfel /SHE consortium, which sub-contracted the demolition to Max Wild.

The first stage in the detailed plan for the demolition process involved lightening the hollow box section concrete beams spanning the bridge in both directions by removing all structurally non-essential items from the bridge deck. Once this was complete, the main structural components of the bridge should be lowered onto the floating pontoons.

Structurally non-essential items included the cantilever arms and the concrete slab between the hollow boxes of the autobahn lanes. To remove these components, Max Wild tried Kemroc's DMW 220/1000/130 cutter wheel excavator attachment (220 kW rated power, cutting depth 500 to 1,000 mm, cutting width 130 mm) which was to be mounted on one of the company's 40 t excavators.

Mounted on the arms of hydraulic excavators, the DMW range is designed for tough applications. Equipped with two lateral hydraulic motors, these attachments develop extremely high cutting forces which produce high production levels. They can even be used to cut through rock with a uniaxial compressive strength of 120 MPa or through heavily reinforced concrete.

The concrete was cut into segments, each weighing between 6 and 10 t. Each segment was lifted out with a crane and transported to the crushing plant.



Max Wild and Kemroc combine to take down Germany's old Saar Bridge

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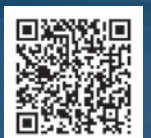
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The report is compiled from survey responses of demolition professionals across Europe

EDA: Demolition remains 'strong and stable'

"Despite 2020 being a challenging year for everyone, the results of the European Demolition Industry Report 2021 show that the sector has remained strong and stable."

That is the verdict of the European Demolition Association (EDA), which represents national associations, contractors and equipment manufacturers across Europe.

The association published its European Demolition Industry Report for 2021, a new edition of the now traditional study prepared by the European Demolition Association (EDA) from the survey responses of professionals from all over Europe, in August.

The results of the European Demolition Industry Report 2021 include general data on the sector and on specific aspects of the previous year (2020): income, volume of work and investment.

In addition, and as is also traditional, it includes a series of forecasts, all differentiated between contractors and suppliers.

"In terms of the evolution of the workforce, suppliers reported that 2020 was stable and that, according to 17% of respondents, there was a slight increase of between 5% and 15%," said the EDA report.

"There is also mention, at the contractor level, of a stable 2020 in terms of turnover, investment and equipment. These professionals have pointed out that, in those cases where there has been a reduction, it has been significantly reduced."

During the summer of 2021, negative publicity surrounding the carbon footprint of demolition projects as opposed to repurposing buildings was picked up television programmes as diverse as the BBC News and UK broadcaster Channel 4's coverage of the Tour de France.

And it is fair to say the industry still needs to refine its relationships with its construction counterparts.

But in terms of what is currently happening on the jobsite, there is still much about which the continent's demolition industry can feel positive.

ce



Cantillon's Blossom Street project in London was the company's first project to include a major substructure package

hospital and Erith was commended by the hospital staff for ensuring that the route remained clear to ambulances.

The ever-changing nature of London's skyline has also created opportunities for two further British contractors, Cantillon and Deconstruct UK.

Cantillon's Blossom Street project marks the company's largest ever contract, and the first to incorporate a major substructure package.

Described as one of the city's complex demolition projects, it required Cantillon to demolish six buildings across three sites, and to overcome challenges including working adjacent to a main line station, and above two London Underground lines; facilitating a 20-week archaeological dig with Historic England and MOLA (Museum of London Archaeology); retaining three historic façades from the 18th and 19th century; and protecting numerous key assets including adjoining properties and a Grade II listed



A tightly constrained site is all part of the challenge for Deconstruct UK

Georgian cobbled road.

Deconstruct UK was employed by Royal London Asset Management to undertake the demolition and redevelopment of Castlewood and Medius House on New Oxford Street.

Castlewood House, a post-war building, was predominantly a brown brick façade above a single-storey stone plinth. It was solely office use, from lower ground floor to level 08.

Medius House has buildings on the other two sides and limited access. The existing building was six storeys, with a three-storey courtyard area to the rear. The wedge-shaped site measured approximately 18 m (59 ft) in the north-south direction and 25 m (82 ft) in the east-west direction at its widest point.

The works comprised the wholesale demolition of Castlewood House, demolition and retained facade to Medius House, followed by a double basement substructure and 10-storey RC core to Castlewood House with substructure piling and reinforced concrete frame to Medius House.

The works had unusual challenges due to the site being an island site bounded to the North by New Oxford Street, South by Bucknall Street, East by Toni & Guy and West by Earnshaw Street. Also within the footprint of the site two properties remained live throughout, Toni & Guy on New Oxford Street and a Warehouse on Bucknall Street.

Key to the success of the project was the advancement and off-site construction methods employed to facilitate the facade restraint system installation enabling the demolition activities.

WORK TO BE DONE

Of course, demolition in Europe still faces a number of challenges.

The well documented skills shortage and the problems of attracting the next generation of demolition industry workers are close to, if not at, the top of the corporate agendas of many large contractors and the industry's trade associations.

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Lowering the environmental cost of construction

The cost of running a construction site has always been a primary concern. Historically, that cost has mainly been defined in terms of money.

Now, however, as the whole of Europe bands together to achieve its net-zero-carbon goal, the word 'cost' is increasingly being used to refer to the toll construction activities take on our environment.

While much of the focus on sustainability and low carbon technology is being placed on equipment such as excavators and wheeled loaders, it is in the onsite equipment sector where it has been most successfully incorporated.

Often among the easiest and cheapest ways for construction firms to lower their carbon footprint, the latest onsite equipment on the market also represents one of the most practical ways of reducing carbon emissions.



Leila Steed looks at how technology is transforming onsite construction equipment and helping contractors reduce their carbon footprint

GENERATORS

Take generators, for example. New innovations from manufacturers have led to the release of a range of low-emission products that can help reduce both the environmental and financial cost of construction operations.

Most recently, Caterpillar launched the 200kVA Cat XQP200 mobile generator set – the company's first Stage V compliant mobile power solution for engines used in non-road mobile machinery.

Designed with a dual-wall, open-top fuel tank that contains spills, the Cat XQP200 generator allows users to switch between 50 and 60Hz and across a range of voltages, and can handle the varying loads required by construction, mining and oil and gas

applications.

"The Cat XQP200 mobile generator set leverages numerous technological advances from Caterpillar's equipment portfolio to deliver the consistent performance, reliability and fuel efficiency that improve the competitiveness and productivity of mobile equipment users," says Tom Caldwell, global general manager for electric power rental solutions at Caterpillar.

"At the same time, it helps our customers meet their sustainability goals while addressing current regulatory standards, which is especially timely as growing numbers of European municipalities institute low emission zones."

Indeed, the increasing concerns around carbon emissions has led some companies to move to newer power sources.

Construction equipment provider Loxam

Drone monitoring for construction sites

Technology specialist Hexagon has expanded its BLK range of laser scanning sensors with the addition of the new Leica BLK2FLY.

The Leica BLK2FLY is an integrated drone and laser scanning sensor that enables users to take accurate aerial shots of environments and buildings.

Designed to meet "the growing demand for autonomous solutions", the new scanning sensor model uses data software, 3D point cloud and LiDAR laser technology to automatically record spatially-accurate visuals of its surroundings while in motion.

Ola Rollén, President and CEO of Hexagon, says, "The robots, sensors and software work together, dynamically adjusting reality capture missions to offer seemingly limitless business applications – from as-built site documentation for buildings to monitoring and situational awareness of remote or hazardous environments."

According to the manufacturer, the airborne scanning device can be used by companies – in a range of industry sectors – that need to collect data from "inaccessible or hard-to-reach areas", such as the exterior of built structures.

Hexagon says, "The BLK2FLY introduces the next generation of flight safety with advanced autonomous obstacle avoidance. Sensor fusion of LiDAR, radar, cameras, and GNSS ensures optimal and safe flight paths."





The EHR Battery Power unit from HimoinSA can be used with standard diesel or gas-powered generators, as well linked to mains power grids and solar panels

recently signed a deal with French specialist Energy Observer Developments (EODev) to introduce a hydrogen powered generator into the European market.

The 80kW GEH2, which uses a Toyota fuel cell and a lithium-ion phosphate battery and produces no pollution, CO₂ emissions or particulate matter.

The unit, which has a footprint of less than 4m², includes a “peak shaving” mode that enables it to connect to the power grid and a 4G connection. This allows the unit’s location, usage data and hydrogen reserve status to be continuously monitored online.

According to Loxam, the addition of the GEH2 is part of its ongoing efforts to move away from diesel and petrol powertrain products.

GREEN CREDENTIALS OF BATTERY POWERED STORAGE

HimoinSA’s new EHR Battery Power unit can be used with standard diesel or gas-powered generators, as well as being linked to mains power grids and solar panels.

Launched just this month, the new battery-powered genset is available in single phase 10kVA and three phase variations with 15, 30



The Cat 200kVA Cat XQP200 mobile generator set

and 45kVA nominal power.

Offering zero emissions and zero noise, the EHR stores and distributes energy from standard generator units using lithium ferro phosphate batteries. This enables users to reduce the amount of time a standard generator is run for, thereby lowering fuel usage and operating costs.

According to HimoinSA, the EHR includes its HICORE System, which ensures energy is used efficiently.

“This smartgrid controller selects the most favourable energy source for each charging condition, achieving the greenest and efficient energy solution”, says the manufacturer.

Alongside the batteries, which can be fully charged in less than 1.5 hours, the unit comprises an inverter, control unit, power connections and solar MC4 connectors.

The unit provides users with a choice of Plug & Play, Low load, Load sharing, Peak saving and UPS modes for different applications.

With Europe’s drive towards net zero now unstoppable, this level of flexibility has become increasingly important in other types of onsite equipment as well.

CONSTRUCTION SITE LIGHTING TOWERS POWER UP

A case in point is Lind’s new All-In-One Beacon LED Tower. It is described as a single lighting asset that replaces the need for three separate lighting units.

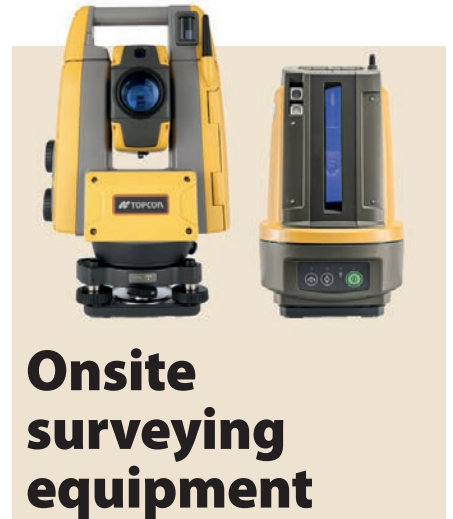
This means it can function as an all-in-one generator powered light tower, a diffused light tower and an electric tower.

Sean Vandoorselaer, CEO of American manufacturer Lind Equipment , says, “It’s first and foremost a durable and tough remote generator light tower that replaces the bulky, traditional 4x1000W metal halide towers.

“Secondly, it can work as a no-glare diffuser light tower for nighttime road work or events that require diffused lighting. All that’s needed for this mode is to simply clip on the diffuser frames to each light head to create



Lind’s All-in-One Beacon LED Tower does not require a generator



Onsite surveying equipment

Topcon Positioning Group has launched new surveying instruments that aim to improve the accuracy, efficiency and productivity on curb and gutter paving applications.

The self-leveling LN-150 robotic layout navigator and the GT-1200 robotic total station are designed to help paving teams overcome challenges such as foliage canopies, large buildings, tunnels and overpasses, and to ensure curbs and gutters are laid with accuracy.

Both products also use LongLink communication to ensure GPS coverage issues are minimised.

Brian Lingobardo, Topcon business manager, says, “Although Millimeter GPS has become the gold standard for efficient, accurate, curb and gutter work, situations do arise in which that solution is simply not available.

“In such cases, temporarily turning control of the paver over to a robotic instrument will still ensure that production is maintained.”

According to Topcon, the new instruments “offer support for a prism solution” by allowing a quick switch between Millimeter GPS and LPS (local positioning systems) concrete paving systems.

While the GT-1200 allows users to produce accurate layout and survey plans on complex projects, the LN-150 is designed for smaller geopositioning, land surveying, topography, mapping and vertical construction applications.

no-glare diffused light.

“Thirdly, it can work as an electric powered light tower off an external power source for indoor and outdoor applications.”

Because the Beacon LED Tower does not require a generator, Lind says it halves the cost of a traditional generator powered light tower.

Currently available in the UK, France, Spain and Norway, Vandoorselaer says the model means contractors will no longer need different products for each of these applications.

Similarly, lighting tower manufacturer Generac Mobile has also introduced an all-in-

ONSITE EQUIPMENT

one model. However, unlike Lind's Beacon LED Tower, Generac's lighting tower represents an "all-round change" that is said to provide a "solution for any kind of need".

The company's new CUBE PRO model incorporates a "whole new technology" that allows contractors to choose from diesel, battery, hybrid or plug-in power modes at the flip of a switch.

The lighting tower model features an integrated diesel generator and a rechargeable battery pack.

While the diesel generator and battery pack can each provide 100% of the power supply, the CUBE PRO also includes Generac's Hybrid System, which enables it to alternate battery

working cycles with diesel recharging cycles.

"Some customers will ask for a full-battery model because they need total silence and zero carbon emission; some others will need the power of a generator-driven model," says Generac.

Additionally, the unit can be plugged into an external power source to give contractors even greater flexibility when it comes to power options.

With ability to be flexible of key importance on construction sites, recent improvements to air compressors are now providing contractors with more options, while helping to reduce emissions on site while.

AIR COMPRESSORS

For example, Atlas Copco has recently updated its 8 Series range of portable air compressors with new technology and new engines, to meet Europe's Stage V emissions regulations.

The 8 Series range consists of 11 machines that are now fitted with the latest Stage V compliant engines from Kubota. The smaller diesel engines in the range, which include the D902 and D1105 power units, offer reduced CO₂ and NOx emissions and a 25% increase in fuel efficiency.

Rodolfo Reimberg, vice president marketing portable compressors and tools at Atlas Copco, says, "The updated range allows construction managers to comply with Stage V regulations while keeping the known benefits of our 8 Series such as lightweight, integrated generators, and HardHat PE hood."

"Additionally, this range gives users better control over their energy consumption, helping them achieve a more cost-efficient, sustainable, and productive way of working."

Many of the 8 Series models also include a new Xc2003 controller, which features the manufacturer's PACE (Pressure Adjusted Through Cognitive Electronics) and ECO-mode apps.

ECO-mode allows operators to further lower fuel consumption by up to 50% when in idling mode during downtime.

According to Atlas Copco, the air compressors also incorporate its Air Element design. This means that most of the 8 Series



Atlas Copco recently launched its new Stage V TwinPower QAC1350 containerised generator



Atlas Copco's 8 Series range consists of 11 machines that are now fitted with the latest Stage V compliant engines from Kubota

machines weigh under 750kg and can be towed behind a car without needing a special driving licence.

Meanwhile, the new Mobilair M255 portable compressor from German manufacturer Kaeser offers a maximum available flow rate of 25.5 m³/min and delivers pressures between 6 and 14 bar.

Described as "ideal for drilling, quarrying or blasting work", the model features a Cummins 210kW engine with a diesel particulate filter and an SCR system.

The M255 also incorporates an energy-saving fan and air filter with safety elements, as well as a new oil separation system that uses easily replaceable cartridges for reduced maintenance times.

Kaeser's largest oil-injected portable compressor, it includes a rotary switch and a touch display, which operators can use even when wearing gloves. It also includes the company's new Sigma Control Mobil 2 (SCM 2) compressor controller for use with multiple stationary systems in a compressor station.

ce



Trime phases out fossil-fuel equipment

Italy-based Trime Group has introduced its T-ZERO PRO initiative – a line of battery, solar, hybrid and plug-in products that "dramatically reduce noise, vibrations, fuel consumption and CO₂ emissions".

The T-ZERO PRO power module units are intended to replace many of the diesels, gasoline and LPG powered engines currently fitted to Trime machinery on construction machinery.

"The use of fossil-fuel engines to power our lighting towers and generators is on course to cease production by 2025," says Matteo Tagliani, Trime Director of Sales.

"We are committed to invest in new solar and battery technologies. We will continue to market the largest range of sustainable power products and lighting towers available worldwide."

Trime, which is well-known for its lighting towers, is anticipating that by the end of this year half its production will be made up of solar, solar/hybrid and full battery generators and lighting sets.

The company is aiming to give the market only low carbon footprint products by 2025 as part of its "GOAL 2025" environmental targets.



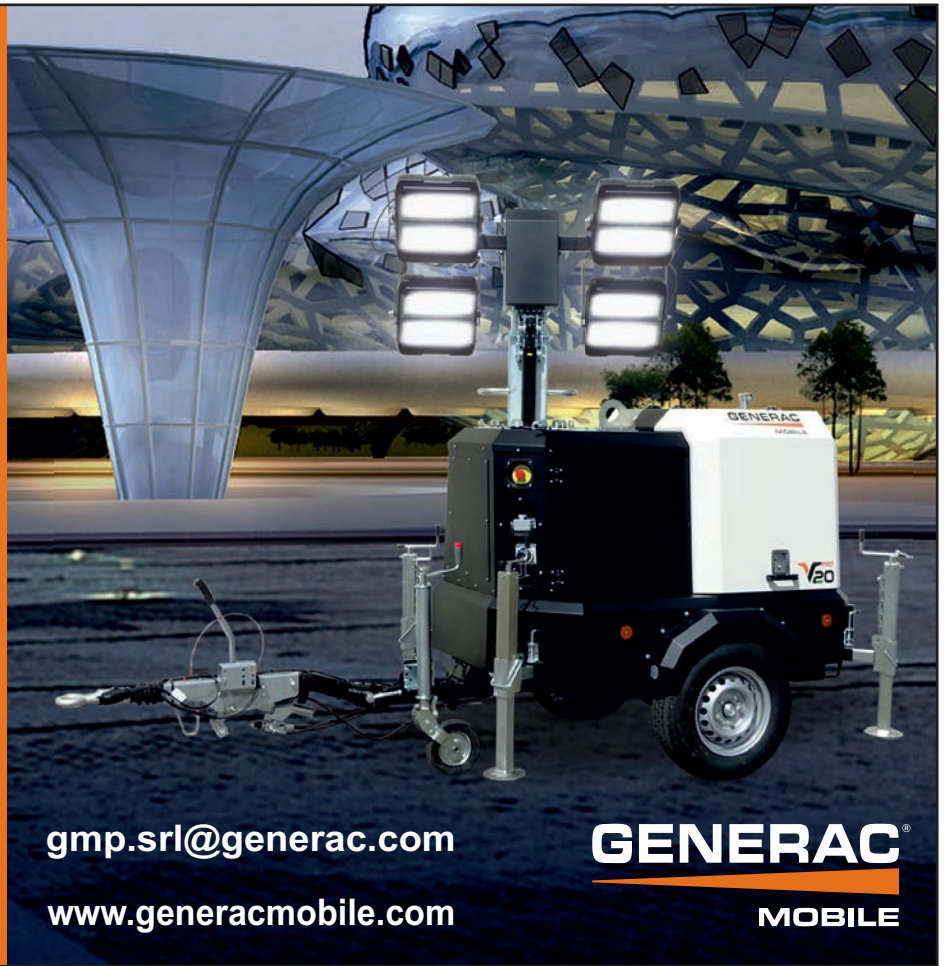
Himinsa also offers gas gensets in the 30 to 110kVA range that can operate on both LPG and Natural Gas

PRO V20

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EARTHMOVING

Case launches three 'kings'

New SV series backhoe loaders boast productivity and emissions benefits

In a live virtual event, Case Construction Equipment introduced its new SV range of backhoe loaders to the European market.

Case has produced these construction workhorses for more than 60 years, dubbing its models 'kings' of backhoe loaders.

The company said the 580SV, 590SV and 695SV machines are already available in selected markets, but Europe-wide availability was coming soon.

The event included testimonials from construction professionals around Europe who had individually tested the loaders, with many of them praising the digging and breakout force, as well as increased visibility along the boom, achieved through the use of in-line cylinders.

The new loaders promise the

The cab on the SV range is said to have 10% more interior space than its predecessor

same power and torque as the predecessor ST machines, but with reduced emissions and the potential for fuel savings of up to 10% when using the new Eco Mode, as well as through features such as auto idle and auto engine shutdown.

MACHINE WALKAROUND

In an extended machine walkaround, product manager Umberto Celestini highlighted the loaders' 3.6 litre Stage V-compliant engine, delivering performance of up to 82kW and 460Nm, plus a maintenance-free after-treatment system. He said



the engine was an evolution of the F36 model, designed by engine and powertrain specialist FPT.

The engine's after-treatment system was specifically designed for applications with working cycles that generally generate low exhaust temperatures and include frequent stop and go cycles.

Low rate exhaust gas recirculation (EGR) enables NOx reduction with compact

selective catalytic reduction (SCR) dimensions while optimised diesel particulate filter (DPF) technology ensures high removal of particulate matter (PM) at low operating temperatures.

OPERATOR COMFORT AND PRODUCTIVITY

Perhaps the greatest change from previous loaders was seen in the newly-designed cab, with 10% more interior space, legroom improvements that allow easier seat rotation and four times the storage space of the predecessor models.

Visibility has also been enhanced, with redesigned pillars improving both comfort and safety, plus a new king-class seat and a number of ergonomic operator control developments.

FOUNDATIONS

Bauer shows eBg electric drilling

Bauer has launched the first electric drilling rig produced by the company, the eBG.

As the drilling rig uses electrical power instead of a diesel engine it does not require any fossil fuels and operates quietly, making it suited for use in urban environments.

"We have been working with

electrification for some time now," said Christian Heinecker, head of the Drilling Equipment division at Bauer Maschinen GmbH. "In the past, however, this was tailored to specific customer requests or projects."

Previously, electrification of Bauer equipment has only been applied in specific cases, such as the Dive Drill, a drilling rig operated from ships for underwater drilling in which electrically driven hydraulic power packs were installed.

400KW

The new eBG 33 falls in the mid-range segment of the drilling rig series with a drive power of more than 400kW.

The drilling rig is said to cover a wide range of applications on site; apart from classical

Kelly drilling, it can be used for high-performance methods, for example soil mixing techniques such as cutter soil mixing or double-head system drilling. It is even possible to attach a Bauer trench cutter.

Bauer says that the eBG 33 can significantly reduce operating costs, as diesel consumption is typically very high for this size of equipment.

To deliver the same capacity as a conventional Bauer BG with a diesel engine, the eBG 33 was developed using a direct power supply solution. The currently available battery systems would not be able to manage the capacity in this size class, therefore preparatory work on site must be planned over a number of months to ensure that the power supply

is also provided.

The eBG 33 is designed to be best suited on large-scale and long running construction sites, since the overall benefits, such as significantly reduced operating costs, can be fully exploited over the longer period of time.

The electric engine requires 690 volts, while 400 volts are required for air conditioning and heating. In addition, a 230 V socket provides the option of plugging in additional attachment parts on site, such as percussion tools. The on-board controls require 24 volts as usual.

"Electrification has entered our standard portfolio in the form of individual products as well as deep drilling technology," added Christian Heinecker. **ce**



DEMOLITION

Brokk's Pedestal Boom based on robot tech

Remote controlled demolition robot specialist offers plug-and-play for breaking

Egidio Galano, product management director for Case CE in Europe, said, "The new Backhoe Loader SV Series is the highest performing, most productive, fuel efficient and reliable backhoe loader available."

On the operator experience, he said, "Comfortable operators are productive operators, and the new Backhoe Loader SV Series has many improvements that add up to big productivity gains. A relocated parking brake, new speedometer option, regrouped switches on the right-hand console, new integrated F-N-R switch in the loader control lever on the Power Shift model, new joystick roller switch for extending dipper operation and relocated stabiliser levers all add up to time savings." **ce**

Brokk said the new machine range allows producers to apply the power and precision of Brokk's demolition robots to primary breaking tasks that feed mobile crushers, jaw crushers, gyratory crushers and grizzlies.

The unit can be operated with either the tethered remote or from a control room. Depending on network configuration, the machine can be manoeuvred from 2,000 m (6,500 ft) away or longer, using video monitoring and operation to increase safety and efficiency.

"Brokk saw an opportunity to give our customers a better solution for breaking oversize rock in crushing and grizzly

applications," said Martin Krupicka, president and CEO of Brokk Group.

"We have developed technology that is powerful, compact, flexible and easy to install."

The Brokk Pedestal Boom

is based on the proven arm system and power pack of Brokk's demolition robots. The machine body is then mounted on a pedestal, rather than tracks. This allows the machine to be installed in a stationary position next to a crusher or any area where primary breaking is needed.

Model sizes for the range include the Brokk 200, Brokk 300, Brokk 500 and the Brokk 900 Pedestal Boom, which can produce 3050 J/Nm at a rate of 330 to 680 blows per minute with the BHB 1500 breaker to power through even the toughest rock formations.

All systems feature Brokk's SmartRemote technology. **ce**



rig

LIFTING TECHNOLOGY

Verton tech stabilises lifts with one degree precision

Australian technology company Verton has launched a series of remote-controlled load orientation solutions, designed to negate the need for tag lines and increase safety and efficiency during on-site lifts.

The Everest series uses gyroscopic technology to rotate loads by as little as one degree at a time, at the touch of a button.

Using the modular Spinpod 7.5 for example, Verton says units can be used for multiple applications, including within both traditional and modern and prefabricated projects.

A single unit is capable of orientating loads of between 20 and 40 tonnes, although a number of units can be nested together to increase the load capacity.



NEW EQUIPMENT

EARTHMOVING

JCB's new 245XR excavator has no EGR, which it says makes for a cleaner burning engine

Stage V, reduced swing model unveiled by British manufacturer

New X-series excavator from JCB

Construction OEM JCB has launched its first Stage V reduced swing model in the growing X-Series crawler excavator line-up.

The 245XR will compete in the 22-26 tonne reduced swing market. JCB says that they have focused on operator comfort, stability, productivity, efficiency and serviceability.

The new model has a full size, one metre cab but at 1,720mm, the 245XR has a tail swing that is 40% shorter than the conventional 220X.

The 245XR is powered by

a EU Stage V compliant JCB Dieselmix 448 diesel engine, delivering 129kW (173hp). The 4.8-litre engine uses a Selective Catalytic Reduction Filter (SCR-F) that comprises a combined SCR, Diesel Particulate Filter (DPF) and Diesel Oxidation Catalyst (DOC) with a large ash holding capacity.

There is no requirement for Exhaust Gas Recirculation (EGR) and the system has been removed from the new inlet manifold, resulting in a cleaner burning engine.

At the online launch JCB executives commented that,

apart from the engine, the machine would have the same features whether it was a stage V or IV final model. They added that demand for excavators of this size class was growing.

On a more general note, the executives also noted that governments around the world investing in infrastructure alongside supply chain issues were causing longer lead times for the delivery of new equipment. JCB CEO Graeme MacDonald added that the company would, "probably not" be at Bauma 2022.

ce



ACCESS EQUIPMENT



Manitou shows off its all new electric telehandler

Manitou has put its new fully-electric rotating telehandler on physical display to the public for the first time.

The MRT 2260 rotary telescopic forklift model, which was launched online in April 2021 as part of Manitou's MRT Vision and Vision+ ranges, was first shown at the 39th Matexpo construction industry trade fair in Kortrijk, Belgium.

It is fitted with a lithium-ion battery that allows users up to four hours of working time and has a maximum load capacity of 6 tonnes and a working height of 22m.

The new machine has a maximum lifting height of 21.8m, and a maximum reach of 18.2m.

According to the manufacturer, the 100% electric machine is also available in a further two configurations.

While a second fully electric model is equipped with two lithium-ion batteries for double the amount of working time, Manitou said it is also available in a hybrid "range extender" version.

The MRT 2260 hybrid is equipped with a diesel engine that recharges a single battery, providing users with "continuous use".

Manitou says it has also endeavoured to harmonise its range of rotating telehandlers by offering a single cab across all models, with equivalent control stations.

ONSITE EQUIPMENT

Zero emissions dust suppression

Air quality solutions specialist, Air Spectrum Environmental, has introduced its energy efficient, zero emissions dust suppression misting system, the ecotech Rotary Atomiser (RA).

The system has been designed to meet higher customer demand for sustainable solutions.

It is battery powered, rather than using diesel. Air Spectrum says that as a result, it does not generate any harmful emissions or noise pollution, and can operate for approximately eight hours on one single charge.

Using rotary centrifugal energy, the ecotech RA can be programmed to provide over 15 m (49 ft) of misting at a variety of droplet sizes, depending on user requirements.

It is designed to work with their range of non-toxic chemical additives for odour control and disinfection, as well as dust control.

The ecotech RA was developed to meet higher customer demand for sustainable solutions, and to fulfil Air Spectrum's own environmentally responsible agenda. The company aims to become integral to green supply chains in relevant industries like waste, recycling, construction and demolition.

"The ecotech Rotary Atomiser is the result of three years of comprehensive development, and designed to reduce carbon emissions during the dust suppression process," said Air Spectrum managing director Steve Hunt.

"It represents our commitment to our clients, the environment and prioritising air quality in all our solutions."



GREATER VALUE AT ZERO RISK

To reduce the problem of electrostatic charge in filters, MP Filtri has developed **zerospark**: a range of specialised products that solves the problem of electrostatic discharges inside hydraulic filters.

BENEFITS

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Daniel Owen, CEO of The Armstrong Partnership, shares his insights on how construction brands can rise to the challenge, both creatively and commercially, to market new technology

IMAGE COURTESY: ADOBE STOCK



The advance of technology into construction has been accelerated by the coronavirus crisis

Selling technology

The ever-increasing developments in technology and automation have presented a challenge for construction businesses seeking better ways to showcase new products and services that will not only drive revenue, but also establish a leading presence in an increasingly crowded marketplace.

From CGI cutaways that reveal the composition of installation, to technically rich websites and an active digital presence, many brands are bolstering their position to present architects, specifiers, contractors, and skilled tradespeople with unrivalled product support. Increasingly, traditional building methods are also being challenged by faster, safer and better performing alternatives.

Demand for innovation shows no signs of abating, either. With the construction sector coming under increasing pressure to drastically improve sustainability and reduce its environmental impact to meet carbon emissions targets – how businesses communicate innovation will be key to delivering on these objectives and meeting your customers' needs.

WHAT CONSTRUCTION CAN LEARN FROM CONSUMER BRANDS

One of the biggest challenges for construction manufacturers is how to

distil high volumes of complex technical information to deliver a concise message to potential buyers. Increasingly, the new technologies that businesses are bringing to market involve automation, which cannot always be seen or easily demonstrated, and brands must find ways to display the benefits of something that's not a physical product.

Many of the principles of consumer brand building apply to B2B marketing. The increasing drive towards digital means that we're seeing many industrial brands and their audiences share the same space as consumer brands. It's vital for construction manufacturers to get to grips with a multichannel approach to present their messages well and engage with their target audiences.

This means thinking about how to present the brand and product range effectively. People no longer want, or have the time, to sit through long PowerPoint presentations or browse sales literature. Instead, construction businesses should think about introducing animation, 3D effects, video and digital tools that can illustrate technical elements of a new product in a concise and engaging way.

Leading with visual marketing collateral can also create efficiencies across geographical markets speaking multiple languages. Using creative tools such as animation and CGI will allow business development teams to tailor to local audiences with a compelling sales pitch, while the universal assets allow them to maintain a consistent brand identity across markets.

BUILD A DIGITAL BRAND PRESENCE

Every industry has embraced the drive for digital presence, which has been rapidly increased in the wake of the pandemic. The speed in which we all digest information in

an increasingly crowded marketplace means it's now critical to have a presence on social media, industry platforms and search engines, as well as proactively informing the customer base through webinars and digital marketing.

This change in approach can be difficult for traditional industries to adapt to – it's a reverse mentality for many, and there's a requirement to be much more visible to customers, prospects, employees, and stakeholders. Informative, considered content is hugely important to demonstrate a grasp of the technology that businesses want to sell to their audience, and the market that they're selling in. More importantly, market leaders should be looking to increase their business' contribution to the sector to push the boundaries of innovation and share best practice examples.

CRYSTALLISE AND COMMUNICATE

In the current climate where supply chains are under stress, travel is still restricted and construction businesses are working harder than ever to keep up with demand, the ways in which businesses market new technology have changed. With less face-to-face interaction, it's imperative that businesses crystallise their brand's proposition and maintain contact with customers through increasing their presence across digital platforms and delivering a polished brand image.

Exploring new channels and media to build an effective digital presence will help businesses gain recognition as influential brands of the industry. It also offers an opportunity to be positioned at the forefront of innovation, clearly demonstrating to customers that products are built on foundations of knowledge and with technology that can be trusted to deliver. **ce**

About the author



Daniel Owen is CEO of full-service B2B agency The Armstrong Partnership, which works with some of the world's leading industrial and construction brands including Kawneer, Knauf and Egger UK.

CECE reality checks machinery regulations

Association welcomes EU proposal that could bring further legal clarity but sees room improvement

The Committee of European Construction Equipment Manufacturers, CECE, fully supports the alignment with the EU's New Legislative Framework (NLF) package, aimed at improving market surveillance and conformity assessment procedures. CECE also supports the conversion of the Directive into a Regulation as it facilitates uniform application across all European Union Member States and therefore the free movement of goods. This article explains some key aspects that the CECE believes need to be changed urgently, which were published in a position paper on 26th July 2021.

ARTIFICIAL INTELLIGENCE

One general concern is the proposal's definition of artificial intelligence (AI). CECE fears that it is far too general and includes systems which do not learn from data and would enlarge the scope to products without learning capability. Therefore, it believes that the definition of "artificial intelligence" in the AI proposal article 3 and Annex I should explicitly refer to the evolving behaviour of software, rather than simply listing techniques that are

also used outside the scope of AI systems. For example, the current definition would lead to interpret a GPS system as an AI system once the output is used to instruct the driver or to control machinery movement, because at that point it needs to be considered safety related.

HIGH-RISK MACHINERY AND CONFORMITY ASSESSMENT PROCEDURES

Annex I adapts equipment outside the framework of the EU's ordinary legislative procedure and defines criteria, which allows the Commission to include products in the list of high-risk machinery products in view of technical progress and knowledge or new scientific evidence or withdraw an existing machinery product from that list. CECE particularly welcomes this last possibility, but criticises unclear definitions and uncertainties, which could lead to arbitrary and unexpected inclusion of machinery products.

Furthermore, CECE disagrees with the removal of the possibility for the manufacturer to self-assess its machine when using harmonised standards. Manufacturers with products under Annex I will be obliged to involve a notified body in the conformity assessment procedure, generating costs and extra burden for the manufacturing process.

EC IMPLEMENTING POWERS ON TECHNICAL SPECIFICATIONS

Technical specifications versus harmonised standards: In article 17.3 the Commission claims the right to establish technical specifications for the essential health and safety requirements where there is no reference to acknowledged harmonised standards or no harmonised standard has been drafted in time or was accepted by any of the European standardisation organisations.

CECE points out in its position paper that a clear procedure how harmonised standards are developed respecting the current principles of the existing process should not be subject to any substitution made by the Commission. Those principles currently follow a consensus-based text, a balanced representation of stakeholders and transparency, ensured with the public enquiry, which guarantees the involvement of the experts and stakeholders concerned.

CLARIFICATIONS ON CONCEPTS RELATED TO NEW TECHNOLOGIES

As concepts related to new technologies are quite new and often not clearly explained in the Machinery Products Regulation proposal's annex, CECE asks the Commissions for further explanations on some of the concepts, particularly what is meant by a "machinery product with fully and partially evolving behaviour or logic and varying levels of autonomy". Uncertainty will certainly lead

to misunderstandings and will cause problems to manufacturers.


TRANSITIONAL PROVISIONS PLACING ON THE MARKET AND MAKING AVAILABLE

The description of transitional provisions are key points from article 50, which are also critically commented by CECE. The relevant article limits the making available on the market of machinery placed on the market before the entry into force of this regulation, without saying nothing about machinery legally produced and placed on the market before the repeal of the current Machinery Directive. The use of placing on the market instead of making available would additionally bring clarity and consistency with other pieces of legislation.

CONCLUSION

These few examples already show that the problem is in the detail. In its position paper, CECE proposes more than 20 amendments, evaluating and surveying every sentence and its future meaning for construction equipment manufacturers. CECE and its members fear further economic burden and unnecessary bureaucracy for the industry and moreover unrealistic requirements in daily business.

However, CECE's work goes far beyond the publication of the position paper and the amendments. For the next steps, the association has been quite active on advocacy, by contacting numerous Members of the European Parliament and EU Member States' national administrations. The main goal is to present the main messages and amendment proposals to inform and influence the ongoing debate in the legislative institutions.

Interested readers can download the CECE full position paper at www.cece.eu. 



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CECE strongly believes that the future Regulation on machinery products should strive for the correct balance between the responsibilities of each economic operator and those of Member States' authorities. A future-proof machinery legislation should balance the level-playing field, foster the better conditions for innovation to flourish and continue ensuring the safe placing on the market of machinery products.

FIEC says EU's emissions package appears to offer opportunities, false expectations and higher costs in equal measure

In July, while some of us were already on holidays, the European Commission adopted the "Fit for 55" package – a set of legislative proposals to make EU policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels and pave the way for reaching carbon neutrality in 2050. Let's have a look and see what it means for the construction sector, sometimes, and far too simplified, quoted as one of the biggest polluters.

PUBLIC RENOVATION WAVE

Of course, as repeatedly said, the climate agenda entails significant business opportunities for construction companies. What we are reading in the proposal for the revised 'Energy Efficiency Directive' fuels hopes for a renovation wave, at least when it comes to public buildings. Each Member State shall ensure that at least 3 % of

Are proposals 'Fit for 55'?

the total floor area of buildings owned by public bodies is renovated each year to at least be transformed into nearly zero energy buildings. Knowing that renovations have limits, new constructions can be counted if they prove to be more cost effective and sustainable in terms of energy and lifecycle CO₂ emissions.

LCAS IN PUBLIC PROCUREMENT?

Speaking of which... according to the Directive, Member States shall encourage public bodies to consider life cycle carbon emissions of investment decisions. Let us be clear: Life cycle assessments can be a useful, project-specific guidance tool. But nothing else. We should not set any limit values for CO₂ emission per m² due to many uncertainties which can be associated with such calculations. Having a lifetime of 50 to 150 years, buildings are not as easy to assess as coffee cups.

INCREASE THE SHARE OF RENEWABLES

In any case, that the precise impact on companies cannot be assessed at this stage. European Directives have to be transposed at national level. This is where details will be added. It is the same with respect to the 'Renewable Energy Directive' which obliges Member States to introduce measures in their building regulations and codes to increase the share of electricity and heating and cooling from renewable sources. Whether this means that a building's roof has to be covered by solar panels will be figured out at national or even regional level.

TACKLING EMISSIONS AT THE SOURCE

The revision of the 'EU Emissions Trading System (ETS)' holds

more clarity – at least part of it. This market instrument puts a price on carbon and lowers the cap on emissions from certain economic sectors every year. Importantly, many construction materials are already covered such as cement clinker or steel and manufacturers will be incentivised to make them more climate friendly. On the positive side, this makes discussions about embodied carbon thresholds obsolete. Instead of complex and misleading calculations, one can build on existing legislation which tackles emissions at the source. On the downside, material costs will certainly increase. And so will construction costs as a whole as materials represent around 40% of project costs.

CARBON PRICE FOR IMPORTS

Similar effects can in theory be expected from the introduction of the 'Carbon Border Adjustments Mechanism (CBAM)' which will put a carbon price on imports. The scope is more limited but cement, iron and steel are covered here. Still, the impact will be limited as imports of these products represent a minor share of supply. For cement for example, there is no economic rationale for transporting cement over large distances as transportation would exceed material costs (except for shipping of large quantities). Where imported, prices will increase.

EXTENSION OF ETS TO 'BUILDINGS'?

The European Commission proposes to set up a separate new emissions trading system to address the lack of emissions reductions in road transport and buildings. This would not concern construction companies directly. Instead, the economic activity covered is the release for consumption of fuels which

“ We should not set any limit values for CO₂ emission per m² due to many uncertainties which can be associated with such calculations.”

are used for combustion in the building sector. The idea behind is the following: Make heating more expensive to create incentives for building renovations. But policy makers in the European Parliament already expressed concerns that citizens may take to the streets to express their anger at more expensive energy bills.

MORE IS STILL TO COME

As all of this was not enough, key legislative pieces defining the sector's contribution to carbon neutrality are still to come. Although the package addresses public procurement of buildings, energy supply and emissions for materials, construction is so multifaceted and the web of legislation so complex that making construction 'fit for 55' does not end here. The revision of the Energy Performance in Buildings Directive, the Waste Framework Directive and the general Public Procurement Directive – all of these have to be adapted to the climate agenda. And soon, the dream of zero carbon construction will start to meet the tricky trade off regarding who pays.



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Resolving disputes in the Middle East

Arpan Gupta of Pinsent Masons describes the implications of a new decree on arbitration in Dubai

The Middle East is one of the fastest growing regions in the world and has seen rapid infrastructure development. It is a particularly active market for European construction companies. The most common method of dispute resolution on these projects in the Middle East is international arbitration.

Due to the increased dispute resolution offerings in the region, parties have been more willing to resolve their arbitration disputes in the Middle East rather than rely on traditional arbitration seats such as London, Paris, Geneva or elsewhere. However, a recent decree concerning the Dubai International Arbitration Centre (DIAC) has some practical consequences for European construction companies operating in the region and could potentially impact this trend for Middle East seated arbitrations.

LEGAL FRAMEWORK FOR ARBITRATION IN THE MIDDLE EAST

Arbitration Laws

Almost all countries in the Middle East, apart from Kuwait, have now adopted the UNCITRAL Model Law. These include Oman, Qatar Financial Centre (QFC), Dubai International Financial Centre (DIFC), Saudi Arabia, Bahrain, Abu Dhabi Global Market, Qatar and the UAE.

Arbitral Institutions

Arbitration centres in the Middle East are growing in significance and are being used increasingly in construction disputes.

These include:

- Abu Dhabi Commercial Conciliation and Arbitration Centre (ADCCAC);
- Ajman Commercial Conciliation Centre (ACCA);
- Bahrain Chamber for Dispute Resolution – American Arbitration Association (BCDR-AAA);
- Dubai International Arbitration Centre (DIAC);
- GCC Commercial Arbitration Centre, located in Bahrain;
- ICC-ADGM Arbitration Centre (ICC-ADGM);
- Qatar International Centre for Conciliation and Arbitration (QICCA);
- Saudi Centre for Commercial Arbitration (SCCA); and
- Sharjah International Commercial Arbitration Centre (SICAC).

RECENT DEVELOPMENTS

On 20 September 2021, a decree (Decree No. 34 of 2021) issued by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Ruler of Dubai (the “Decree”), concerning the DIAC came into force. The Decree abolishes both the Dubai International Financial Centre’s Arbitration Institute (DAI) and the Emirates Maritime Arbitration Centre (EMAC), and transfers all

property, employees and cases from these centres to the DIAC. This decree raises concerns over the status of the DIFC-LCIA arbitration centre. The DIFC-LCIA was established under an operating agreement between DAI and the London Court of International Arbitration in 2008. It has enjoyed great success particularly in respect of disputes concerning the construction and infrastructure sector.

The Decree outlines the functions, objectives and organisational structure of the reformed DIAC. It will consist of a Board of Directors, a newly established arbitration court comprising 13 members and an administrative body. The Decree makes it clear that all arbitration agreements referring to the abolished centres will continue to be valid and effective. The reformed DIAC will replace the abolished centres in hearing and resolving disputes, unless the parties agree otherwise. In case an arbitration agreement does not specify an arbitral seat, there is a presumption in favour of the seat being the “offshore” DIFC, with the DIFC arbitration law of 2008 being the applicable law of the seat. Any arbitral tribunal already constituted prior to 20 September 2021, shall continue presiding over disputes under the rules already agreed.

The DIAC have been given a six-month grace period to replace the abolished centres. Given the uncertainty created by this change, European construction companies involved in arbitration under the DIFC-LCIA or EMAC rules and/or having DIFC-LCIA or EMAC arbitration rules in their agreements, are recommended to seek advice as to the legal implications resulting from the Decree.

Not only do the changes imposed by the decree bring about uncertainty as to current arbitration agreements but the fact of the decree itself may cause potential problems for



The Decree outlines the functions, objectives and organisational structure of the reformed DIAC.”

unwary companies in cases where the parties sign a contract in the future referring to these abolished arbitration centres (due to prolonged negotiations) after the Decree comes into force. This is what happened in *Oger v Daman Gap* (Appeal Number 806/830 OF 2017, Commercial). In this case, the contract contained an arbitration clause in favour of the Dubai Chamber of Commerce and Industry (“DCCI”). While the parties were in negotiations, a decree was issued in 2007 which replaced the DCCI rules with the DIAC rules, and the contract was signed after the decree came into force. The contractor was successful in the DIAC arbitration and the DIFC Court recognised the award. The employer, however, challenged the result on the ground that the contract had been signed after the 2007 decree came into force and the arbitration clause was a nullity. This argument was dismissed by the DIFC but the employer had also applied to the Dubai courts to challenge the award on this ground and eventually succeeded. Similar problems may therefore arise in respect of the recent Decree and European construction companies currently negotiating contracts in the Middle East should check the arbitration agreements included in these carefully.

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About Pinsent Masons

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