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# GRADERS FOR THE FUTURE

Motor graders are having their moments under the sun. Infrastructure projects are pushing up demand for these machines...22



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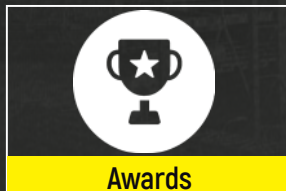
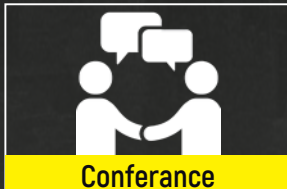
17 MARCH, 2021

6<sup>th</sup> INDIAN CEMENT REVIEW CONFERENCE 2021

4<sup>th</sup> INDIAN CEMENT REVIEW AWARDS 2021

## 11<sup>th</sup> INTERNATIONAL CONFERENCE & AWARDS

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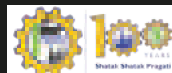
### CONTACT

#### For General Queries

Mr. Niket Mehra  
Mob: +91 810 828 8300  
Niket.M@ASAPPmedia.com

Ms. Shweta Virdikar  
Mobile: +91 810 836 6300  
Shweta.V@ASAPPmedia.com

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## HIGHLIGHTS

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TO VISIT

# Equipment INDIA

**Founder & Editor-in-Chief**  
Pratap Padode

**Member - Editorial advisory board**  
KGK Moorthy  
Email: KGK@ASAPPinfoGLOBAL.com  
Mobile: 98412-85108

**Group Managing Editor**  
Falguni Padode  
Falguni@ASAPPinfoGLOBAL.com

**Group Executive Editor – Construction & Infrastructure Group**  
Shashidhar Nanjundaiah  
Shashidhar.n@ASAPPinfoGLOBAL.com

**Sr. Sub-Editor**  
Karthik Muthuveeran  
Email: Karthik@ASAPPinfoGLOBAL.com

**For Advertisement**  
Adsales@equipmentindia.com

**Delhi/Mumbai**  
Dipti : +91 84228 74027

**Pune**  
Umesh Purohit: +91 84228 74048

**South**  
Sudhir : +91 84229 87406

**Kolkatta**  
Abhijit Saha : +91 84228 74022

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## HOW NIP HAS SET THE TRACKS FOR GROWTH

Recently during an interaction with the Union Minister of Roads Transport & Highways Nitin Gadkari, the Minister reiterated that he was proud to have launched a CNG based equipment model of JCB. The JCB 3DX DFi industry's first dual-fuel CNG (compressed natural gas) backhoe loader can operate on CNG and diesel simultaneously using the HCCI (homogeneous charge compression ignition) technology. Environment and therefore emissions have become a major element of innovation today. The Ministry of Road Transport and Highways (MoRTH) had notified amendment to CMVR 1989 through GSR 598(E) dated September 30, 2020 deferring the applicability date for implementing the next stage of emission norms for tractors (TREM Stage-IV) from October 2020 to October 2021 and for the CEV, the applicability of the next phase of emission norms is proposed to be with effect from April 1, 2021. The CE industry has now to contend with the higher capital cost of offering the new emission norms. Fortunately, the infrastructure impetus provided in the Union Budget 2021-22 should be able to allay the burden of this capex. The road ministry has clocked construction of 30 km per day during the year hit by the pandemic paving the way for a credible target of 40 km per day in the year ahead.

One of the biggest exhibitions for the construction industry, organised by bauma and CONEXPO, bCIndia, which was deferred from November 2020 to April 2021, has now been finally cancelled in the light of the pandemic. Speaking on the impact **Samir Bansal, General Manager, Off-Highway Research**, stated, "The current demand for CE is not being fully met owing to supply constraints; therefore, cancellation of the show will not have an immediate impact on sales."

The government's ambitious vision in the form of the Rs 111 trillion National Infrastructure Pipeline (NIP), has budgeted 34 per cent for transportation infrastructure. Apart from roads, the metro rail construction pace is also boosting the order books of contractors. Until 2014 the metro network was operational for about 248 km in five cities. With a consistent push by the government, the metro network has expanded by more than 469 km, and a total of 717 km metro is operational in 18 cities today and going forward Minister of State for Housing & Urban Affairs, Hardeep Singh Puri told us in an exclusive interaction that the metro system would extend to 1,000 km of operational Metro by the 75<sup>th</sup> year of our independence, that is, 2022 and 1,700 km metro rail in 25 cities by 2025 and then extend the metro network to 50 cities in the years to come.

Motor graders are used for grading and levelling of ground surfaces. Major applications are in road projects, airports, urban infrastructure and mining where grading and levelling is needed. Demand for motor graders is picking up with the road projects are on fast track. The cover story on motor graders focuses on the market scenario and demand drivers for motor graders, market opportunities and challenges, technology trends and market outlook.

Skid-steer loaders are gaining importance in the recent years due to the reasons of more mechanisation in rural construction sector and non-availability of labour, after the corona crisis. Also, more urbanisation in the country prompts for compact multifunctional equipment like skid-steer loaders. Thus, skid steer loaders are becoming a viable option for many municipal corporations and urban local bodies to carry out various applications in narrow space due to its compact size. The feature on skid-steer loader elaborates on the advantages of skid-steer loaders in the current scenario and way forward.

**Equipment India's 13<sup>th</sup> Annual issue** releases this month at a virtual event. The theme for the annual issue is on "Demand" and where it is coming from with experts providing their vision. Do sign up and look forward to the blockbuster issue.



*Pratap Padode*

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Vivek Hajela, Vice President and Head – Construction Equipment Business, Larsen & Toubro, says, “The grader has a strong role in the pre-compaction stage and sub-base preparation with fine grading, spreading and levelling the ground. It uses a hydraulic blade to push large amounts of soil and can be adjusted with a simple lever by the operator.”

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Tony Van Herbruggen, General Manager, Atlas Copco India, Power Technique Customer Center, shares how their company is contributing to the construction equipment sector, and new products and solutions offered in this segment.

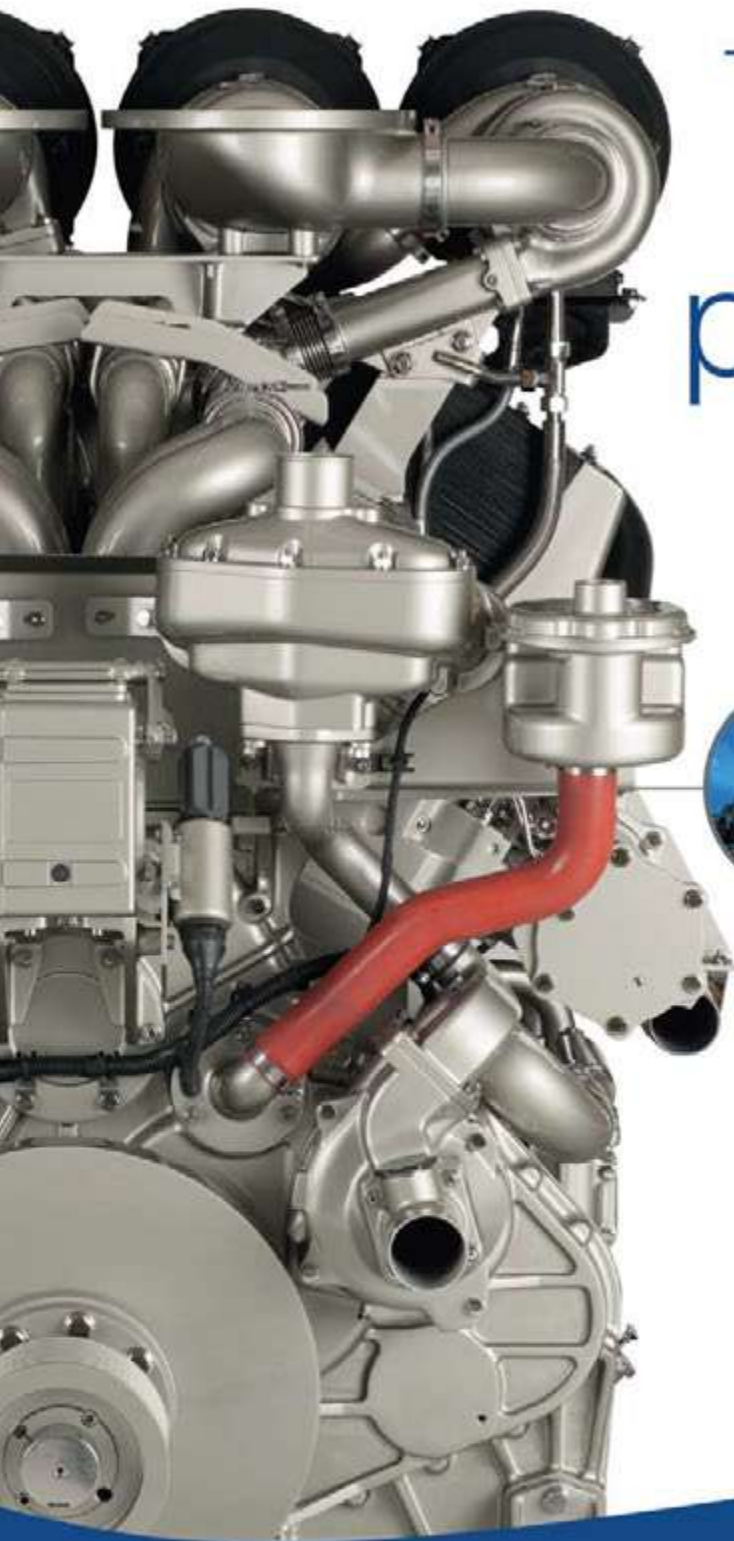
**SPECIAL FOCUS: HYDRAULIC MOTORS IMPROVING PRODUCTIVITY** 50

Hydraulic motor is a major component that brings in the desired productivity in a heavy construction equipment.

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Italian construction equipment market shows a stable trend



Ashok Leyland reduces its carbon footprint by 60 %



Danfoss setting new standards for safety & sustainability of metros

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# INBOX



We are regular readers of Equipment India magazine. It is a reader-friendly magazine with various articles, interviews and news articles being presented in a simple and elegant way. I like reading features and case study type of articles. We are looking forward to more product information in equipment components like hose, bearings, etc.  
 - Dhaval Thakkar, Jamnagar

The February issue of Equipment India magazine was a good mix of articles and interviews on various topics. The cover story was in-depth with the market dynamics and realities have been explained with facts and figures. The article drew the market trends and technology updates in the segment with inputs from the leading players, though a couple of them were missing. It is a fact that the market condition is tough for the construction equipment companies due to the pandemic and also the cancellation of Bauma 2021. But it is great to understand that the construction equipment companies are working on new products for the changing market conditions.  
 - Dinesh Konar, Trichy

We got a chance to go through the May 2020 issue of Equipment India. The interviews appeared in the Cover Story section were worth reading as they highlighted the current market conditions and how they are prepared to overcome these challenges. It is also inspirational to see that how these companies are strategising their overall operations and preparing to go ahead. Mutual support among the stakeholders is important in this situation. While the government has to support the industry, the vendors have to support the customers. We hope that the market will bounce back soon.  
 - Abhaye Mehta, Delhi



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## Schwing Stetter inaugurates IoT enabled, energy efficient facility in TN

Schwing Stetter India, one of the largest manufacturers of concreting and construction equipment's across the country, inaugurated its fifth manufacturing facility in Cheyyar, Tamil Nadu. The state-of-the-art integrated facility of 52 acres comprising 50,000 square metres of built up area will now become a Global Manufacturing hub for Schwing's concrete boom pumps, stationary pumps, self-loading mixers, shotcrete pumps, excavators, wheel loaders and motor graders. Schwing Stetter signed an agreement with the Tamil Nadu Government through the Global Investors Meet in 2019 and has already



invested Rs 300 crore in this facility. The company will continue to invest in this facility in the next couple of years.

Schwing Stetter, the market leader in concreting equipment industry, currently has four factories located in

Sriperumbadur, Tamil Nadu. The new facility, built to be sustainable with a natural green cover, focuses on ensuring digitalisation of all equipment's and production process with an extensive usage of telematics, IoT and robotic machine learning. The new facility will also include a NABL Certified Quality Testing Lab and a custom bonded warehouse facility.

Schwing Stetter India, which is a "Centre of Excellence" for training in concreting products is a partner to the IESC Skill Council and will be housing a modernised training centre at its new facility, which will provide skilling to youth across nearby districts.

## CASE plant in pithampur wins prestigious award

CASE Construction Equipment's plant in Pithampur won the Platinum Award in the MUDA Category in the 9th Edition of the Confederation of Indian Industry (CII) National 3M Competition, created to promote lean manufacturing processes. It recognises implementation of processes that aim at eliminating wasteful practices on the assembly line, which are called Muri, Mura and Muda – collectively known as the 3 Ms.

The CASE team consisting of Team Leader Sadanand Yadav and Mr Lallan Prasad received the award for their 3M reduction project in the 6-spool valve assembly station. The aim of the project was to reduce Mura, that is activities that consume resources without creating value for the customer. This initiative was part of the Pithampur plant's World

Class Manufacturing (WCM) system based on continuous improvement and designed to eliminate waste in the production process. It involves all employees in identifying and proposing solutions with the aim of achieving objectives including zero injuries, zero defects, zero breakdowns and zero waste. Improvements are certified by third-party audits, and the Pithampur state-of-the-art facility has achieved Bronze WCM level.

Satendra Tiwari, Plant Manager, stated: "All of us at the Pithampur plant are very proud of this award. It is an important recognition of our achievements in Workplace Organization within our World Class Manufacturing programme. I would like to thank Mr. Sadanand Yadav and Mr



Lallan Prasad for their dedication to delivering quality and added value to our customers."

Sudhir Pandey, Plant HR Manager, added: "It is an honour to receive such a prestigious award. All our people here at the Pithampur plant feel deeply involved in improving our processes, and seeing their efforts recognised will be a source of pride and provide great motivation to continue aiming for excellence."

### Marc Llistosella is new CEO & MD of Tata Motors

Tata Motors announced that Marc Llistosella has been appointed to the role of Chief Executive Officer and Managing Director of the company effective 1st July 2021. Llistosella was most recently the President and

CEO of Fuso Truck and Bus Corporation and Head of Daimler Trucks in Asia. He was earlier the MD and CEO of Daimler India Commercial Vehicles.

### MV Rajasekhar assumed charge as CMD, BEML

MV Rajasekhar, Director

(Mining & Construction) and member of the board of BEML Limited has taken additional charge as Chairman & Managing Director of the company from Feb 01, 2021. He succeeded Dr Deepak Kumar Hota, who retired from service on account of superannuation.

### Mahindra appoints Bhat as Group CFO

Mahindra & Mahindra announced Manoj Bhat as the Group CFO with effect from 2nd April 2021. Dr Anish Shah the current Deputy MD and Group CFO of the Mahindra Group will assume the role of MD and CEO from April 2, 2021.



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## Eicher completed 200<sup>th</sup> tipper delivery to APCO

Eicher Trucks & Buses, part of VE Commercial Vehicles, completed the 200th vehicle delivery to APCO INFRA TECH PVT. LTD. The company executed an order of 200 Tippers and Trucks from the Lucknow-based infrastructure major. The order included 6028T Tippers, 6028TM Tippers, 6046 Tractor, 3019 water tankers and 10 other medium duty trucks. The vehicles are commissioned in the prestigious mega NHAI Expressway Projects in Uttar Pradesh and Maharashtra.

Eicher has a complete range of trucks best suited for heavy duty construction applications. The 6028T and 6028TM tippers, for example, are built on Eicher's



proven Pro 6000 platform. Developed on Eicher's latest innovative BSVI solution, EUTECH 6 and powered with a robust and reliable VEDX8 engines, Pro 6028T tippers deliver a power of 260HP at 2200 rpm and a peak torque of 1000Nm at 1000-1700 rpm. Similarly, the Pro 6028TM is built on proven VEDX5 engine delivering 210HP at 2200 rpm and peak torque of 825 Nm at 1200-1600 rpm.

## BEML signs MoUs to explore & enhance the business in defence & aerospace

BEML is a leading multi-technology 'Schedule A' company under the Ministry of Defence signed of MoUs with 11 entities to explore and enhance the business in Defence & Aerospace Sector in the presence of Rajnath Singh, Raksha Mantri at the Bandhan Ceremony, AERO INDIA 2021. MV Rajasekhar, CMD, Suraj Prakash, Director (Finance), and AK Srivastav, Director (Defence Business) were present on this occasion.

MoUs: With UP Expressway Industrial Development Authority (UPEIDA) to explore the opportunities for establishing ware house storage for parts and activity center for servicing come overhauling of BEML products (MRO).

With Advance Navigation Positioning Company (ANPC) for joint manufacturing of transponder landing system (TLS) for Indian armed forces, Airport Authority of India (AAI) and Oil exploration companies.

With Primoco UAV SE, Czech Republic for manufacturing of '150 kg class' Surveillance UAV for Indian as well as global requirements such as Intelligence based agriculture, Remote mapping, Pipeline Monitoring, Mining Support, Security & intelligence, Disaster Management & Surveillance.

With IIT Kanpur for joint development and manufacturing of 25 kg class Tactical UAV for Armed forces.

## KBL wins big at 2<sup>nd</sup> ASSOCHAM Award

Kirloskar Brothers Limited (KBL), one of the global market leaders in providing fluid management solutions and services, recently received back to back honours from two prominent associations, Associated Chambers of Commerce and Industry (ASSOCHAM) and International Research Institute for Manufacturing (IRIM) for its contribution towards promoting an all-inclusive work-culture and manufacturing excellence, respectively.

KBL's all-women manufacturing facility located at Kaniyur near Coimbatore, Tamil Nadu, was honoured for being the Best Employer for Women at the 2nd ASSOCHAM 'Diversity & Inclusion Excellence Awards 2021'. The ASSOCHAM 'Diversity & Inclusion Excellence Awards, as the title suggests,



recognises some of the most significant endeavours and persistent efforts of corporates and leaderships to promote diversity and inclusiveness at their workplace. KBL, which bagged the second-runner up position at the event, was recognised for promoting an all-inclusive work culture at its all-women manufacturing facility at Kaniyur.

### L&T to build two units of Kudankulam Nuclear Power Project

The construction arm of L&T has secured a significant order in the Nuclear sector from Nuclear Power Corporation of India (NPCIL) for its Heavy Civil

Infrastructure business in India to construct the main plant civil works of the Kudankulam 5&6 units (KKNPP 5&6 – 2X1000 MWe)

The Kudankulam nuclear power plant is India's first light water reactor (LWR) of six units with a generation capacity of 1,000 MWe each.

### NHAI to penalise firms for lapses in quality

To maintain high quality standards in highway development, National Highways Authority of India (NHAI) is taking all steps to ensure adherence to the standards during construction and

maintenance of the projects. In order to deal with the lapses in highway development, NHAI has issued a strict policy to decide penal action against defaulting firms/ personnel if there are any lapses in construction standards of bridges/structures/ approaches to structure.





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## ISSUE HIGHLIGHTS

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## Liebherr delivers 1<sup>st</sup> hydraulic excavator with Leica Geosystems' system

Liebherr and Leica Geosystems, part of Hexagon, have been partners in the machine control systems area since last year. A Liebherr R 934 G8 crawler excavator, the first hydraulic excavator with a factory-fitted Leica Geosystems machine control system, has been delivered to our customer Brad-Pave in Great Britain.

The partnership between Liebherr and Leica Geosystems allows Liebherr customers to purchase generation 6 and 8 crawler excavators and wheeled excavators with a factory-fitted 2D and 3D machine control system as an option. The first customer to benefit from this arrangement is a British company, Brad-Pave.

The generation 8 R 934 crawler excavator comes with the Leica 3D passive system and will be soon



updated with a semi-automatic system featuring an automatic inclination/rotation function. According to the company's director Paul Bradshaw, the machine control system is critical. It's the key to accurate and effective work.

It was the quality and expertise of Liebherr that persuaded Paul Bradshaw to opt for a Liebherr machine. Other factors tipping the balance in Liebherr's

favour were excellent service and several possible adaptation with the machine. These are the most important considerations for this British company. On its first construction site job, the R 934 was mainly used to dig a large drainage trench across a field. The machine's power and responsiveness were entirely to the operator's satisfaction.

The 7.1 tonne counterweight and 800 mm pads ensure good stability in all conditions. The machine has run up 350 hours on the clock since delivery. The director declares that he will definitely be coming back to Liebherr for his next purchase. This is our reward for high-performance customer service and for the advice and support provided with previous purchases of machinery and equipment.

## Italian CE market remains stable in 2020

During the 12 months of 2020, 16,962 construction equipment have been sold in the Italian market, with a stable trend compared to 2019 (+0.2 per cent). More in detail, earth-moving machines sold were 16,251 (0 per cent), and 711 were road machines (+15 per cent). On the other hand, machines sold in 2020, fourth quarter alone were 6,914, up 13 per cent compared to fourth quarter 2019, completely erasing the January-September market losses

This data came from the last market survey conducted by Unacea - Italian

construction equipment association - which presented the results during a press conference organised with CER - Centro Europa Ricerche.

"The Italian construction equipment market has been able to dynamically recover the stop imposed by the first lockdown in March, said Mirco Risi, President of Unacea. The market has shown that it can play a countercyclical role for the economy as a whole, along with all the construction sector. Now we expect a certain and stable process of defining the Recovery and resilience plan, in order to push forward the



resilience in the current year."

According to Stefano Fantacone, scientific director of CER, "Despite the general climate of uncertainty, the construction industry, along to the machinery sector, is benefiting from a new and useful trend of investments."

### Raimondi Cranes inaugurates 5 LR273 luffing cranes

Raimondi Cranes SpA, heritage manufacturer of precision heavy lifting machinery for more than 150 years, announced the appointment of Korea's La On as the country's official dealer of its tower and luffing cranes and its range

of crane accessories. The new agency appointment, effective from February 2020, was inaugurated with the sale of company's first five Raimondi LR273 luffing cranes.

Two of the new cranes are already at work participating in the construction of a noteworthy large-scale

development in Dongtan, a newly-built city in the metropolitan area near Seoul.

### Kalmar to supply Mitsubishi

Kalmar and Mitsubishi Logisnext Americas group have entered into a supply and distribution agreement for the Americas market.

Under the agreement, Kalmar will produce and supply its Essential product line of 10-18 T Class 5 pneumatic tyre forklifts under the Mitsubishi forklift brand for the Mitsubishi Logisnext Americas group. These forklifts will be sold and serviced through the authorised Mitsubishi.



## CNH's CE sales plunged in 2020 despite Q4 sales bump

CNH Industrial saw net sales of industrial activities decline by 7 per cent for the full year in 2020; construction equipment net sales worldwide plunged almost 22 per cent. Q4 results, however, were much more positive, with the company's construction equipment segment seeing a net sales increase of 6.4 per cent compared with the same period in 2019. The company says global demand for construction equipment in Q4 increased in all segments, with

compact and service equipment up 17 per cent, general construction equipment up 24 per cent, and road building and site preparation equipment up 4 per cent.

Regionally, the company saw Q4 construction equipment demand increase 10 per cent in North America, decrease 4 per cent in Europe and South America and increase 33 per cent in the company's Rest of World segment, including a 51 per cent increase in China. Compact equipment



was up 16 per cent in North America and 31 per cent in Rest of World

Net Q4 global construction sales were up 6 per cent, prompted by higher volume and positive price realisation, says the company.

## Komatsu aims for lead in hydrogen-powered mining trucks

Komatsu, Japan's top construction equipment maker, plans to develop hydrogen power as an alternative to diesel for heavy-duty mining dump trucks, in a first for the industry, Nikkei has learned. The company will start its hydrogen development programme in 2021 and aims to have the trucks ready for practical use by 2030. This effort to bring hydrogen power, which has made inroads into buses and road trucks, to mining comes as Komatsu customers seek to strip as much carbon dioxide emissions as they can from their business. Some mining trucks run on electricity from overhead power lines, but most are diesel-powered. Using hydrogen as a fuel has the benefit of letting zero-emissions trucks travel on routes where power lines do not reach.

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## Doosan Bobcat gearing up for expected 19% NA sales boost

Further proof that compact equipment sales have escaped the significant downturn felt by heavy equipment sales in the past year is shown in Doosan Bobcat's Q4 and 2020 results. Boosted by a global

sales increase of 8 per cent in Q4 — including a 9 per cent increase in North America — Doosan Bobcat's total 2020 sales saw a 6.2 per cent decline. Though an annual sales decline is always bad news for a company, Bobcat's 2020 dip was much lower than the double-digit revenue decreases reported

for 2020 by Cat, Deere and Volvo, to name a few.

## MAJOR welcomes new authorised dealer

MAJOR announces the appointment of Haver & Boecker Middle East FZE as its new aggregate and mining screen media authorised dealer. Haver

Middle East FZE will serve customers in in the Middle East region, including Bahrain, Jordan, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates (UAE). The company will offer MAJOR's screen media solutions, including FLEX-MAT high-vibration wire screen tensioned and modular versions.



# FOCUS ON INFRA TO REVIVE ECONOMIC GROWTH

The government's focus on building infrastructure will create jobs and revive economic growth.

The Budget proposal to the Parliament comes amidst unprecedented circumstances of pandemic, lockdown, job losses, and plummeting economic growth of the country. Finance Minister Nirmala Sitharaman proposed to significantly enhance capital expenditure to Rs 5.54 lakh crore in the next fiscal, besides creating institutional structures and giving a big thrust to monetising assets to achieve the goals of the National Infrastructure Pipeline (NIP), which was launched in December 2019 with around 6,835 projects.

Asset monetisation is the sharp shift in the government's stance. Sharp hike in capital expenditure allocation will lead to new projects announcements across infrastructure sectors, which will aid the construction companies. Order books are set to bloom. Regulatory support to facilitate debt financing and investments in InvTS/REITs by foreign investors will help construction companies monetise HAM and BoT projects. Facilitating InvTS will aid in monetisation of the completed HAM/ BoT projects thereby releasing capital for these companies. Urban Swatcch Bharat Mission 2.0 with outlay of Rs 1.48 trillion over five years will generate additional business opportunities requiring construction work in urban and rural areas for EPC companies.

NIP has now been expanded to 7,400 projects and around 217 projects worth Rs 1.10 lakh crore under some key infrastructure ministries have been completed.

She also announced the launch of a

"National Monetisation Pipeline" of potential brownfield infrastructure assets, stating that monetising operating public infrastructure assets is a very important financing option for new infrastructure construction.

Five operational roads with an estimated enterprise value of Rs 5,000 crore are being transferred to the NHAI infrastructure investment trust (InvIT). Similarly, transmission assets worth Rs 7,000 crore will be transferred to the PGCIL InvIT.

**Deepak Shetty,**  
Chief Executive  
Officer and  
Managing Director,

JCB India, "It is heartening to note that the two key areas which needed strong focus in the budget have been given the impetus. These being Infrastructure development and Health care. The outlay for the Ministry of Road Transport and Highways is the highest ever this year. The capital expenditure allocation for FY 2021-2022 is also much greater than the previous years."

Other core infrastructure assets that will be rolled out under the asset

monetisation programme are -- NHAI operational toll roads; transmission assets of PGCIL; oil and gas pipelines of GAIL, IOCL and HPCL; AAI airports in tier II and III cities; other railway infrastructure assets; warehousing assets of CPSEs such as Central Warehousing Corporation and NAFED, among others.

To strengthen urban infrastructure, a new scheme will be launched at a cost of Rs 18,000 crore to support augmentation of public bus transport

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services. Major ports will be moving from managing their operational services on their own to a model where a private partner will manage it for them.

“Increase of over 35 per cent capital expenditure for infra sector with major portion going to road sector and the launch of national monetisation pipeline for brownfield projects, are major highlights of budget from road sector point of view,” said **Ramesh Palagiri, MD, Wirtgen Group India.**

**Deepak Garg, Managing Director of Sany India and South Asia,** said, “The budget has come as a relief for the CE Industry at the time when the nation is recovering from the pandemic-induced recession. The government’s major focus on ‘National Infrastructure Pipeline’ will certainly work as a core driver for the steel and cement sectors and also will give a push to localisation, and Aatmanirbhar Bharat initiative. Infra projects will significantly increase the employment opportunities for all types of workers both skilled and unskilled.”

He added, “The recent covid crisis exposed a very fragile but critical segment of our society “the migrant workers”. Our construction industry greatly depends on the migrant workers for jobs ranging from operation of construction equipment to plain manual labor on the construction sites. We are happy to see many schemes like One Nation One Ration Card, Swasth Bharat Yojna, gig. Portal to help formulate health, housing, skill, insurance credit and food schemes which can benefit our migrant workers to a great extent.”

“With the formation of a Development Finance Institute (DFI), the stress in Capital Requirements for long-term infrastructure projects should significantly ease out. This was critical to infrastructure development. The Government has shown a strong intent towards generating funds by proposing a Privatisation drive and Monetisation of assets. Another



positive in the budget announcement is focus on Hydrogen Energy and the aim to create an ecosystem for alternative fuels,” said **JCB’s CEO & MD.**

Besides, the government will set up a new development finance institution called the National Bank for Financing Infrastructure and Development. This will be set up on a capital base of Rs 20,000 crore and will have a lending target of Rs 5 lakh crore in three years.

**Dr Harsh Kumar Bhanwala, Executive Chairman, Capital India Finance,** had this to say: “The budget allocation for the affordable housing, overall infrastructure, will bring sustainable impact to these segments. Lending in the construction

sector should become easy as recoveries would become better due to increased sales, especially in the non-metro cities. The announcement

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of Rs 1.10 lac crore to critical infrastructure areas like Railways, national highways and privatising of the Airports would ease the sector related issues, as lending is the key to address needs of the overall infrastructure sector.”

**Anshul Singhal, Managing Director, Welspun One Logistics Parks,** said “The Government’s focus on capital expenditure and infrastructure development will be a shot in the arm for the warehousing and logistics sector in the country. The proposed Development Finance Institution will act as a provider, enabler, and catalyst for infrastructure financing. Also, the budget has earmarked a sharp increase in capital expenditure at Rs 5.54 lakh crore in 2022, from Rs 4.39 lakh crore in 2021. A planned boost to road infrastructure across the country and seven port projects will aid in job creation and income generation. Overall, the large-scale infrastructure augmentation coupled with asset monetisation program of core infrastructure assets will go a long way in realising the national infrastructure pipeline, thereby benefiting the logistics sector.”

“The setting-up of a professionally managed Development finance institution with targeted lending portfolio of Rs 5 lakh crore within three-years is therefore a welcome move since it shall act as a provider, enabler and catalyst for infrastructure financing”, said **Himanshu Chaturvedi, Chief Strategy Officer, Tata Projects Ltd.**

Added Chaturvedi, “The AtmaNirbhar Bharat-PLI scheme, wherein the government has committed nearly Rs 1.97 lakh crore, over five-years starting FY 2021-22, will be a gamechanger, especially since it will provide a major fillip to construction of industrial and manufacturing facilities – both greenfield and brownfield. Continuation of tax benefits for affordable housing and tax exemption



to rental housing will spur activity in the realty sector thereby providing support to a key industry and creating thousands of new jobs.”

**Ravichandran Purushothaman, President, Danfoss India,** said, “The Union Budget 2020-21 heralds a positive turn in the infrastructure ecosystem of the country. The proposed investment on various infrastructure development projects under the National Infrastructure Pipeline will set India on the right path towards improving the ease and standard of living across major Indian cities. Further, the investments in infrastructure will be pivotal in enhancing the nation’s manufacturing prowess, thereby acting as a catalyst in India’s journey towards becoming a powerhouse for local production.”

Given that the

economy is well on its path to recovery, **Samantak Das, Chief Economist and Head of Research, JLL India,** said, “Union Budget 2021 has focused on enhancing expenditure while keeping the fiscal targets at bay in the short term. This Budget focuses on augmenting infrastructure with a

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special focus on expediting urban infrastructure projects which will act as a strong catalyst in driving real estate in urban areas.”

### Boost to railway infra

The Union Budget has lined up the highest-ever capital expenditure (capex) plan of Rs 2.15 lakh crore for the Indian Railways for the financial year 2021-22. Railways will monetise dedicated freight corridor assets for operations and maintenance, after commissioning.

This is 29 per cent up compared to the capex plan for 2020-21, which was Rs 161,042 crore. This is going to be spending on major infrastructure projects of the railways including the construction of new lines, doubling, tripling and electrification, overhauling of the existing signalling and telecommunication system, station redevelopment and introduction of modernised rolling stock.

**Madan Sabnavis, Chief Economist, CARE Ratings,** said, “The budget in a limited manner has provided some boost to industry through higher capex in roads and railways. This will have a virtuous backward linkage with industries such as construction, steel, cement etc, and help to revive their prospects too. The important thing is the continuation of such expenditures to ensure the sustenance of the growth process. The Budget has not given much on taxation which is a disappointment as a lot was expected to boost consumption and savings. But this has not been done and the focus has been on expenditure only. The fact that there is no hurry to get back to the path of fiscal prudence is encouraging.”

**Vimal Kejriwal, Managing Director & CEO, KEC International,** said, “The 2021 budget is a budget for an Aatmanirbhar Bharat; a forward-looking budget focusing on construction and capex-led economic recovery. Significant allocation towards creating a future-ready railway system, 100 per cent railway electrification by 2023, focus on DFCs

and Urban Infra, including new metro projects and emerging technologies, infra creation for Power Distribution companies, expansion of Gas Distribution network to 100 new cities, thrust on Renewables, developing one lakh Digital Villages through BharatNet, and the creation of a development finance institution for infrastructure financing augurs well for our company.”


### Vehicle scrappage policy

The soon to be introduced scrappage policy has put a question mark on the future of historical and old vehicles in India. The proposed policy is aimed to create new demand stimulus in the auto sector which has been facing one of the worst slowdowns.

**Mohammad Athar(Saif), Partner, Economic Development and Infrastructure, PwC India,** said, “The voluntary scrapping policy announced in the budget will, for the first time, bring fitness test as a criteria for scrapping old vehicles. Over one crore light, medium and heavy commercial vehicles with an age of more than 15 years have been plying on Indian roads. The policy will enable shifting of older to new vehicles which will be safer and cleaner, and reduce road accidents.”

“With a significant outlay on Infrastructure spend and the much-needed Vehicle Scrappage policy, the government of India has finally set the tone for recovery of Auto Sector which

has been significantly impacted by the pandemic. This will not only help boost the demand for production of Commercial vehicles but also support the entire transportation ecosystem. Also, while it would have been good to see some more initiatives to promote Electric Vehicles in this budget, we are glad that the government has noted India’s critical role in the global automotive supply chain post Covid-19,” said **Warren Harris, CEO & MD, Tata Technologies.**

Said Shetty of JCB, “Encouragingly Railways is set to emerge as a growth driver in addition to Roads and Highways, which was long overdue. A record allocation for Railway Corridors and other Structural Developments has been made. This will certainly help in generating on ground activity in the sector.” 

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# GRADERS FOR THE FUTURE



Motor graders are having their moments under the sun. Infrastructure projects are pushing up demand for these machines.

**M**otor graders are a highly-evolved technology product. The grader has a strong role in the pre-compaction stage and sub-base preparation with fine grading, spreading and levelling the ground. It uses a hydraulic blade to push large amounts of soil and can be adjusted with a simple lever by the operator. The higher-powered machines are generally used for grading requirements of 160-200 cum/hour, while the lighter units are for grading requirements of 100-120 cum/hour.

The demand for motor graders is directly proportional to the construction of roads and highways. Both Central and State Governments

have been giving impetus to roads and highways since early 2000s, when Golden Quadrilateral and North-South/East-West corridors construction was underway. Since then, the demand for motor graders has expanded. The construction of roads and highways has further expanded to Bharatmala, expressways, economic corridors, coastal roads, strategic roads at the border, etc., and now the announcement of National Infrastructure Pipeline (NIP) encompasses all of them.

During the past few years, the government spending on Infrastructure and construction activities is on the rise globally, especially in the developing nations like India, China. The compact

design of the grader is highly suitable for small to medium road projects in villages and cities and also makes them the most preferred choice of contractors for road projects like Pradhan Mantri Gram Sadak Soyjna (PMGSY) schemes, etc. in developing nations like India.

The Asia-Pacific region remains the largest market for motor graders market. This growth can be attributed to the factors such as increasing construction activities in the countries like China, India, which are the fastest developing nations in the world. The government in the region are spending heavily on developing world class facilities, which are driving the demand for motor graders.

Many big players in the region are spending heavily on research and development of environment friendly and technologically advanced motor graders to reduce the pollution in the region and reduce the human efforts and enhance the productivity in minimum time. For instance, Shandong Lingong Construction Machinery (SDLG), in January 2020, announced the addition of latest product G9290, which is a heavy-duty motor grader. With a base operating weight of 22.9 tonnes and a 14 inch wide blade as standard, the impressive productivity of blade down force and blade pull makes the SDLG G9290 the best in its size class.

SDLG is banking on its 12-tonne G9138, powered by 111kw engine and 15-tonne G9190, powered by 148 kw engine 199 hp motor graders to build up sales. "Both the products deliver lowest cost of operations, with the capability to work in tough site conditions in airports, highways, road construction and water conservancy construction. Their efficient no spin differential axle greatly improve the dynamics and traffic ability. G9138 is equipped with a robust power shift transmission to adapt to complex work requirements," said **Surat Mehta, Head – Marketing & Retail Development, SDLG, India.**

In March 2020, John Deere Co. revealed a new factory-installed Premium Circle option for all G-Series, GP-Series and Smart Grade motor graders. This option features a fully sealed bearing and pinion design, reducing maintenance costs and downtime, while also significantly



boosting circle torque and speed.

A report from Off-Highway Research revealed, "Sales of motor graders follow very closely the trends of expenditure on the construction of new roads and the maintenance of the road network, so demand for machines will largely depend on the speed at which existing and future road projects are executed. The backlog of pending road construction work in the country as well as the government's ambitious infrastructure development plans, offer huge potential for growth in the motor grader demand."

CASE has a strong portfolio of motor grader 865B and 845B customised for tough mid-mining projects and large road projects. CASE graders are powered by in-house FPT engines with variable horsepower, which deliver maximum performance with optimal fuel consumption in all

working conditions. There are over two lakh FPT engines working extraordinarily well in the field today, which is a testament to the reliability of the performance of FPT engines.

Another unique feature of CASE motor grader is the moldboard. CASE moldboards are available in a range from 12-14 ft, which are recommended on the basis of the application and strata of use. CASE moldboards have two unique features. Firstly, they are hydraulically controlled, meaning the operator can adjust the pitch of the angle of the moldboard from the comfort of the air-conditioned cabin, compared to conventional methods – thus saving time. Secondly, the CASE graders have a unique multi-radius moldboard, which ensures that maximum material is rolled off in each pass, further improving productivity by reducing the number



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of passes required.

Said **Sandeep Mathur, Brand Leader, CASE India**, “The “A” frame of the drawbar is robust and rigid. Larger wear surface provides longer life (reduces wear) and the externally driven circle is easy to clean and better protected in case of shocks. Consistency of controls and response of hydraulic operations, as the ability to make small and precise adjustments in the blade position has a significant impact on profitability for the job which CASE graders smoothly provide. These features make our graders a perfect solution for infrastructure and mining projects.”

Komatsu graders viz., GD535 and GD555 are popular models in the premium segment and have a pan-India presence with deployment in highways and expressways. The large-size Komatsu Grader models like GD705 and GD825 have been deployed for maintenance of haul roads in coal and mining projects.

Komatsu motor grader model GD535 is digitally compliant and incorporate the KOMTRAX technology for tracking location and health parameters. This latest technology enables the users to get the best out of the machine in terms of performance and productivity.

“L&T offers Komatsu motor grader models in the 150 hp-280 HP range for the Indian market. For roads and highways, our latest generation model Komatsu GD535-5 incorporates advanced technology of



dual mode transmission with lock-up converter, hydraulic blade tip control, KOMTRAX technology and emissionised engine complaint with current norms. This has enabled the contractors to introduce the state-of-the-art product for the construction of Indian roads which has ushered new benchmarks in grader performance,” said **Vivek Hajela, Vice President and Head – Construction Equipment Business, Larsen & Toubro**.

Caterpillar CAT 120 next generation motor grader offers higher fuel efficiency, a more comfortable cab and lower maintenance costs. It has an efficient Cat C7.1 engine with variable horsepower optimizes power in all gears. Coupled with ECO mode and engine idle shutdown, it reduces fuel burn per hour by up to 15 per cent.

LeeBoy India Construction

Equipment has launched their new series compact motor graders for India and other overseas developing markets. The new compact model LeeBoy motor grader 585 is fitted with a 10-ft moldboard and powered by 110 BHP engine developing 380 Nm torque.

Leeboy 585 has advance design features such as heavy-duty tandem axle, front axle leaning and oscillations, articulated frame structure, ZF power shift transmission, variable flow load sensing hydraulic system etc, compared to similar capacity models available in India. **K Sunil Kumar, President, Leeboy India**, said, “This compact grader is fully designed in India by our engineers and augurs well for ‘Make in India’ initiatives promoted by the Government of India. The compact design is highly suitable for small to medium road projects in villages and cities and also makes them a preferred choice of contractors for road projects like Pradhan Mantri Gram Sadak Soyjna (PMGSY), etc. LeeBoy 585 offers 20 per cent more productivity and 10 per cent lower fuel consumption, compared to similar range of products in India.”

With the Government’s focus on infrastructure development, and with the ambitious vision of Rs 111 lakh crore NIP, the demand for motor graders remaining robust for the next 5 to 10 years.



- KARTHIK MUTHUVEERAN



# ConTech - CXO Speak



## Highlights:

- » Capture the action plans of various companies – in terms of adopting ConTech – to benefit from the biggest gains in the construction process.
- » Profile of CONSTRUCTION WORLD Person of the Year
- » Listing of India's Fastest Growing Companies in Construction; Construction Equipment; Cement; Paint; Steel; and Tile, Ceramic & Sanitaryware. Along with a list of emerging companies; Top International Contractors; sectoral analysis by experts, and much more
- » This issue will be launched at 6th India Construction Festival, 15-16 October, 2020

## Articles from Industry Experts:



**SN Subrahmanyam,**  
CEO & Managing Director,  
Larsen & Toubro (L&T)



**Gopalakrishnan Padmanabhan,**  
Managing Director-APAC &  
Middle East, Green Business  
Certificate Inc. (GBCI)



**VG Sakthikumar,**  
Managing Director,  
Schwing Stetter India



**Subodh Chandra Dixit,**  
Executive Director-Engineering &  
Construction, Shapoorji Pallonji  
and Company (SPCPL)



**Abhijit Roy,**  
Managing Director & CEO,  
Berger Paints India



**Anuj Puri,**  
Chairman and Founder, ANAROCK  
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**Pradeep Bakshi,**  
Managing Director & CEO,  
Voltas



**Richard Humphrey,**  
Vice-President, Construction  
Product Management, Bentley



**Ramesh Palagiri,**  
Managing Director & CEO,  
Wirtgen India, a John  
Deere Company



**K Jalandhar Reddy,**  
Executive Director,  
KNR Constructions



# "MOTOR GRADERS ARE NOW MANDATORY FOR CONSTRUCTION OF HIGHWAYS"

"The grader has a strong role in the pre-compaction stage and sub-base preparation with fine grading, spreading and levelling the ground. It uses a hydraulic blade to push large amounts of soil and can be adjusted with a simple lever by the operator. We can roughly divide the graders into three categories –small, medium and large," said **Vivek Hajela, Vice President and Head – Construction Equipment Business, Larsen & Toubro**, during an interaction with **Equipment India**. Excerpts from the interview...

## How do you look at the current scenario of motor graders in India?

The demand for motor graders is directly proportional to the construction of roads and highways. Both Central and State Governments have been giving impetus to roads and highways since early 2000s, when Golden Quadrilateral and North-South/East-West corridors construction was underway. Since then, the demand for motor graders has expanded. The construction of roads and highways has further expanded to Bharatmala, expressways, economic corridors, coastal roads, strategic roads at the border, etc., and now the announcement of National Infrastructure Pipeline (NIP) encompasses all of them.

For the next FY22, the Central Government has allocated 1.18 lakh crore for roads and highways. The Ministry of Road Transport and Highways (MoRTH) is targeting to increase the pace of highway construction to about 40 km per day from 30 km per day. All these investments bid well for the motor grader demand particularly and for CE



**Vivek Hajela,**  
Vice-President and Head –  
Construction Equipment Business,  
Larsen & Toubro Limited.

industry in general, which had seen a healthy CAGR 12 per cent in the last six years and brought substantial benefits to both the manufacturers and the equipment users. However, Covid-19 impacted the activities and gave us anxious moments and uncertain times.

But from September 2020 onwards, many construction projects have restarted and machines being re-activated. The stimulus package announced by the government has spurred the momentum. The CE demand has rebounded quite strongly including motor graders, though overall during FY2020-21, it may contract by 20 per cent as compared to FY2019-20. FY22 looks very promising with demand likely to grow upwards of 25 per cent for various CE segments.

## What is the current market size of motor graders in India?

Motor graders are a highly-evolved technology product and now mandatory for the construction of highways. The grader has a strong role in the pre-compaction stage and sub-base preparation with fine grading,

spreading and levelling the ground. It uses a hydraulic blade to push large amounts of soil and can be adjusted with a simple lever by the operator. We can roughly divide the graders into three categories –small, medium and large. Put together, the market size of graders in India is 1,600 numbers annually. Komatsu graders viz., GD535 and GD555 are popular models in the premium segment and have a pan-India presence with deployment in highways and expressways. The large-size Komatsu Grader models like GD705 and GD825 have been deployed for maintenance of haul roads in coal and mining projects.

## Roads and highways is one infra sector that was back in action faster, after the Covid-19 pandemic impacting the overall industry and economy. How optimistic are you in the sector in terms of project execution and growth?

As explained here, post-pandemic, the revival in demand for construction equipment will depend primarily on the pace of execution of infra projects – roads, railways, ports, etc. In particular, MoRTH is giving thrust on highway construction and NHAI is





looking at awarding more than 10,000 km highway construction contracts during FY2020-21. While the stimulus package was largely focussed on easing credit flow, quick contract awards is strongly aiding the revival of demand for CE. The site activities have gained pace considerably aiding the deployment of more machinery. The spread of Covid-19 had impacted the first half of the FY 2020-21, but since then revival too has been swift and strong. The key to CE demand growth is the actual implementation of Infra projects announced by Government of India, especially NIP.

### How do you assess the growth potential for motor graders in India?

With the National Highway Development Programme (NHDP) gaining traction across India and the MoRTH keen on executing the NHS network with a view to develop the road connectivity to Border areas, development of coastal roads, improvement in the efficiency of national corridors, economic corridors and feeder routes under Bharatmala Pariyojana, there is an enlarged scope and high growth potential for the motor graders. The Bharatmala Pariyojana is a highly ambitious programme and will fuel multipoint growth across the country by enhancing logistics efficiency and free freight movement. Looking at this, we see a growth potential of CAGR about 15 to

20 per cent in the coming years for the motor graders, which is extremely encouraging for the equipment manufacturers.

### What are the upcoming digital technologies in motor graders? How interested are contractors towards these technologies?

Komatsu motor grader model GD535 is digitally compliant and incorporate the KOMTRAX technology for tracking location and health parameters. This latest technology enables the users to get the best out of the machine in terms of performance and productivity. The contractors take advantage of this digitalisation and work towards stepping up machine output and operator efficiency. In the graders, jobs like turning, steering, maintaining blade height, angle and managing power is a specialised task for the operators. Contractors face shortage of skilled operators and look for alternate ways to speed up the work, without operator fatigue and improve the accuracy.

Further, maintaining the height of both the leading and trailing edge of the blade is most challenging during the operation. It is necessary to include slope control system as standard/ optional fitment. Such digital technologies are available to make smart purchase decisions by the contractors. L&T also has a robust infrastructure for training operators and building their efficiency.

### What are the latest offerings in your product range?

L&T offers Komatsu motor grader models in the 150 hp-280 HP range for the Indian market. For roads and highways, our latest generation model Komatsu GD535-5 incorporates advanced technology of dual mode transmission with lock-up converter, hydraulic blade tip control, KOMTRAX technology and emissionised engine compliant with current norms. This has enabled the contractors to introduce the state-of-the-art product for the construction of Indian roads which has ushered new benchmarks in grader performance.

### What are the challenges faced by the motor graders market?

Grading is a highly skilled job and needs an experienced operator. One of the key challenges faced by the industry is the dearth of such highly skilled operators capable of using the motor grader functionalities and achieving the exact contours of the road levelling. L&T has been at the forefront of CE industry and preparing the operators through intensive coaching and certifying them. Further, as the demand is highly dependent on the Government spending on road infrastructure, it is impacted by policy decisions of both the State and Central Governments. One of the immediate challenges is to meet BSIV emission norms, which will come into effect soon.

### How do you look at the future of motor graders in India?

As explained earlier, the Government is focused on Infrastructure development. It has rolled out its ambitious vision in the form of Rs 111 lakh crore NIP, of which 34 per cent is for transportation Infra. MoRTH is pushing to increase the pace of highway construction to 40 km per day. Hence, we are highly optimistic of the demand for motor graders remaining robust for the next 5 to 10 years.



# "TECHNOLOGICAL UPGRADES ARE PERENNIAL PART OF CE INDUSTRY"

**S**andeep Mathur, Brand Leader, CASE India, speaks on the current scenario of motor graders in India, and the upcoming digital technologies in motor graders.

## How do you look at the current scenario of motor graders in India?

This year's budget has paved way for more opportunities and projects in the mining sector. In a bid to increase the foreign investment the government is also focusing on opening and commercialising the mining sector, which will result in more opportunities for the motor grader market. Their effort towards further enhancing the roads and highways projects to 7,400 new projects is a welcome step which will ensure a better year for the infrastructure sector as well as for the construction equipment industry. According to Motor Intelligence report, 'The motor graders market is projected to grow with a CAGR of more than 5 per cent during the forecast period'. We are hopeful that all the initiatives and projections will lead to positive growth for the motor graders market.

At CASE, we're ready to make the most of these opportunities with our portfolio of motor graders 865B &



Sandeep Mathur,  
Brand Leader, CASE India

845B customised for tough mid-mining projects and large road projects.

## Roads and highways is one infra sector that was back in action faster, after the Covid-19 pandemic impacting the overall industry and economy. How optimistic are you in the sector in terms of project execution and growth?

The year 2020 was a tough year for all the sectors. However, announcements post mid-year helped the sector in getting back its momentum. For 2021, the Government has proclaimed multitude of announcements and new projects in the budget. The government has added around 7,400 new projects, which will ensure a better year for the infrastructure sector as well as for the construction equipment industry. More highway projects have been awarded in Tamil Nadu, Kerala, West Bengal and Assam and all these will give a much-needed boost to the sector. Further, an announcement of introduction of the Development

Finance Institution providing Rs 20,000 crore has been made to launch the National Asset Monetisation Pipeline and fund new infra projects. Hence, the prospects of this year are positive for the CE sector.

In terms of project execution, the latest report from the government for last year's road and highways project states, "During 2019-20, projects with about 8948 km length were awarded and completion was achieved in about 10,237 km length of roads. The rate of development of roads has increased significantly from about 11.7 km during 2013-14 to about 28 km now. Due to consistent efforts of the Ministry, length of the National Highways has increased from 91,287 km in April 2014 to about 1,36,155 km as on 20 December 2020." The increase in the road development and execution will yield better results and faster incoming of projects. We at CASE are confident that all these efforts will play an important role in reviving the sector and bringing back the economy to normalcy.

## What are the upcoming digital technologies in motor graders? How interested are contractors towards these technologies?

Technological upgrades are a perennial part of CE industry and now even more so. The motor grader is an essential equipment, which could be used from road and highway maintenance to construction and mining sector.

Today, the contractors/customers have become more discerning, are technologically sound and are looking for machines, which help in boosting their productivity and efficiency. At CASE our motor grader comes equipped with the remote diagnosis



and monitoring technology – equipment are installed with a unique trip meter on the operator dashboard that continuously monitors the fuel consumption, hours operated and operating temperatures. Electronic indicators are also connected to the dashboard for safety or operation related parameters. CASE's motor graders are also equipped with closed air conditioning ROPS cabins whereas most of CASE's competitors provide open canopy.

Air suspension seat further adds to the operator comfort. Our machines also come equipped with a multitude of smart features such as an eagle eye telematics system which helps in monitoring the performance, security and efficiency of the machine in real-time. The operator can also customise all the working parameters of the machine to achieve excellent controllability and faster cycle times. The automated functions in the cab, which includes an electrohydraulic joystick to customise the reversing and steering sensitivity, makes the drivers' job easy, allowing them to achieve shorter cycle times and boost their productivity.

### What are the latest offerings in your product range?

CASE has a strong portfolio of



motor grader 865B and 845B customised for tough mid-mining projects and large road projects. CASE graders are powered by in-house FPT engines with variable horsepower, which deliver maximum performance with optimal fuel consumption in all working conditions. There are over two lakh FPT engines working extraordinarily well in the field today, which is a testament to the reliability of the performance of FPT engines.

Another unique feature of CASE motor grader is the moldboard. CASE moldboards are available in a range

from 12-14 ft, which are recommended on the basis of the application and strata of use. CASE moldboards have two unique features. Firstly, they are hydraulically controlled, meaning the operator can adjust the pitch of the angle of the moldboard from the comfort of the air-conditioned cabin, compared to conventional methods – thus saving time. Secondly, the CASE graders have a unique multi-radius moldboard, which ensures that maximum material is rolled off in each pass, further improving productivity by reducing the number of passes required.

The "A" frame of the drawbar is robust and rigid. Larger wear surface provides longer life (reduces wear) and the externally driven circle is easy to clean and better protected in case of shocks. Consistency of controls and response of hydraulic operations, as the ability to make small and precise adjustments in the blade position has a significant impact on profitability for the job which CASE graders smoothly provide. These features make our graders a perfect solution for infrastructure and mining projects.

At CASE, we strive to create equipment that increases our customers' productivity and we will continue to do so.



# THE VERSATILE MACHINE

Most skid steer loaders are designed to work in diverse climates of high ambient of 48 degree Celsius or severe cold and high altitude areas, no matter what climatic conditions.



Rightly called as the “Jack of all Trades”, a skid steer loader can perform numerous functions with aplomb. These mini versatile machines are used in various industries – from mining to agriculture. However, their use in construction activities greatly outweighs all the other sectors. Covid-19 brought the construction industry to a standstill. The manufacturing of skid steer loaders as well as significantly affected.

However, now with the construction industry growing steadily with Government’s impetus on the infrastructure segment, the demand for skid steer loaders is also steadily increasing. Though the skid steer loader market in India is relatively at a nascent stage, equipment

manufacturers are quite confident that the equipment’s sound technical features in diverse sectors will create strong demand for the machine.

Initially the acceptance of this equipment in India was low because the then construction contractors were involved in large to very large projects. This tiny little machine did not catch their imagination or make any sense. As such it was an uphill task for the suppliers to establish this superb equipment in the Indian markets. Fast forward to 2000: the importance of this equipment gained substantial traction because it was found to be the most appropriate equipment to use in multiple urban, non-urban and greenfield applications like municipalities, garbage cleaning, urban infrastructure construction in

congested areas, hill roads construction and maintenance; municipal applications in hill cities and even initial start-up activities for mega greenfield projects.

Off-Highway Research’s analysis on the Indian skid-steer loader market shows demand for this type of machine remains modest. Vertical lift skid steer loaders are highly sought-after across sectors, with the mid-range type witnessing high demand as far as operating capacity is concerned.

Bobcat skid steer loaders are the benchmark for industry with a lot of unique features inbuilt into its design. On the current market of skid steer loaders in India, **Hyunsoo (HS) Kim, Director Commercial, Doosan Bobcat India**, had this to say, “In 2020, the industry for skid steer loader was

600. We are the market leader in this product category. We expect the demand for SSL to grow at a steady pace at 10 per cent CAGR mainly driven by rapid urbanisation and mechanisation of certain labour-intensive work is expected to increase.”

Most skid steer loaders are designed to work in diverse climates of high ambient of 48 degree Celsius or severe cold and high altitude areas, no matter what climatic conditions. Bobcat skid steer loaders can be used for multiple applications including material handling, grading and leveling, road cleaning, erection of road crash barriers, pavement repairs, brush cleaning in road sideways and many other jobs. This versatility of Bobcat skid steer loader increases the utilisation of machine at road construction jobs site and helps in covering wide range of jobsite requirements with a single machine.

Bobcat's strength is its wide range. Said Hyunsoo (HS) Kim, “We have two main categories based on the geometry of lift arm which is radial and vertical lift path. Also, the different models we offer are based on the engine power and the rated operating capacity. We have a total of around seven different models.”

Built tough with more power and torque, CASE skid steer loaders boost productivity and increase operator comfort. The cabs feature increased headroom and lap-bar width, along with improved forward, side, rear and overhead visibility. Ergonomically positioned controls, industry-first side lighting and improved reliability and serviceability help you get more work done daily. To deliver CASE specific performance and productivity to an ever wider range of customers, CASE Construction Equipment has developed the skid steer loader SR130 with the radial boom.

JCB India is positioning its two models of skid steer loaders—JCB 135 and 155—as a highly application driven, material handling, productive machine, featuring high safety



standards. The JCB Skid Steer Loader 155 is a compact wonder that is designed to work efficiently. This skid steer loader has best in class fuel efficiency, lowest maintenance cost and very high productivity among skid steers in India. This resourceful Loader also offers unmatched safety and operator comfort in any condition. This skid steer loader has IP 67/69 certified dust and water proof electrical connectors. It is also designed to work efficiently for any kind of application and designed to give maximum returns with the lowest cost of maintenance.

Caterpillar announced its entry into Skid Steer Loader market in India with the launch of its Cat 216B3 model. Over the years, they introduced various models. Built for tough work, the Caterpillar skid steer loaders deliver reliability, durability, and efficient operation. Caterpillar skid steer loaders have multiple levels of security to ensure operator and machine safety. For instance, parking brakes are automatically engaged when the armrest is raised or engine goes off as the operator seat is vacated or if it fails to sense a minimum weight of 22 kg. If the machine gets trapped in a congested

area, the operator can come out of the machine without the need of breaking the rear glass; all he has to do is to pull one ring on the rear window and remove the beading of the glass to come out. CAT 216B are powered by CAT engines complying with BS III emission norms.

Skid steer loaders have been in the Indian industry for more than 15 years. However, the majority of the machines sold are imported and their spare parts cost is higher with less ease of availability. These reasons have also contributed to the slow and muted growth of skid steer loaders over these years.

Demand for skid steer loaders has been rising at a CAGR between 2.5 to 3 per cent over the last five years. This market continues to witness significant opportunities across the globe, on the backdrop of increasing demand for energy-efficient construction equipment. There is good business potential for the skid steer loader in India for the end-users and the rental companies. However, there must be greater awareness amongst them on the versatility of the machine and its range of attachments that widens its scope of application.



- KARTHIK MUTHUVEERAN

# "BOBCAT SKID STEER LOADERS CAN BE USED FOR MULTIPLE APPLICATIONS"

**B**obcat Company leads the industry in the design, manufacture, marketing and distribution of compact equipment for construction, rental, landscaping, agriculture, grounds maintenance, government, utility, industry and mining. **Hyunsoo (HS) Kim, Director Commercial, Doosan Bobcat India**, speaks on the demand for skid steer loaders in India, and the unique features of their products.

## How do you look at the current market of skid steer loaders in India? What is its market size?

In 2020, the industry for skid steer loader was 600. We are the market leader in this product category. We expect the demand for SSL to grow at a steady pace at 10 per cent CAGR mainly driven by rapid urbanisation and mechanisation of certain labour-intensive work is expected to increase.

## With construction activities in the country getting revived, do you see a rise in demand for skid steer loaders in India?

Construction segment, industries and waste management are predominantly the growth driver for smaller capacity skid steer loader machines whereas for bigger machines, traditionally process Industries have been the traditional growth drivers. But due to market creation activities led by our team, we also feel that the rural road development and road widening projects would also be the new drivers.

## A skid-steer loader is truly a "jack-of-all-trades". What is its potential in rural infrastructure in India?

Conventional road construction equipment like grader and excavator are expensive and not ideal for the for



Hyunsoo (HS) Kim,  
Director Commercial, Doosan Bobcat India

rural road construction. These equipment are also meant for specific jobs, and the contractor has to have multiple equipment for one jobsite and their utilisation would be less there by increasing the overall cost of operation. Beside that, these machines are large in size and cannot be used in rural road construction sites. Bobcat solutions are primarily the skid steer loaders and attachment, which are low investment solutions and a perfect fit given its compact size and versatility.

Bobcat skid steer loaders can be used for multiple applications including material handling, grading and leveling, road cleaning, erection of road crash barriers, pavement repairs, brush cleaning in road sideways and many other jobs. This versatility of Bobcat skid steer loader increases the utilisation of machine at road construction jobs site and helps in covering wide range of jobsite requirements with a single machine.

Most of the rural roads are between 3 to 7 metres wide. Maneuverability of large equipment in this narrow road is limited and this results in traffic congestion and reduces the pace of road construction.

Bobcat skid steer loaders are compact which can turn 360 degrees within their footprint and has excellent maneuverability to work at tight spaces. Compactness of Bobcat skid steer loaders also makes it most preferable equipment for road widening jobs of existing roads. The versatility of the skid steer loader comes from the way it has been designed to handle and power different kinds of specialised attachments, which are unique and meant for specific jobs.

## Most skid steer loaders are designed to work in diverse climates and jobsites. What makes your product unique?

Bobcat's strength is its wide range. We have two main categories based on the geometry of lift arm which is radial and vertical lift path. Also, the different models we offer are based on the engine power and the rated operating capacity. We have a total of around seven different models.

Bobcat skid steer loaders are the benchmark for industry with a lot of unique features inbuilt into its design. Some of them have been listed below:

### Enhanced visibility and safety:

Bobcat design team has come up with the cab forward design which allows the operator to see the bucket edge or attachment without leaning forward and thereby resulting in safe and efficient operation. Visibility has been significantly increased in all directions. Lowered rear screen and cooling package improves rear visibility, which is critical while reversing at high speed. Also, the side windows are made larger increasing the visibility to the tyres and the sides when the loader arms are raised. Bobcat machines are equipped with rollover protective structure (ROPS), and falling object protective structure (FOPS).



**Fuel efficiency and productivity:**

We, at Bobcat, proudly claim that our skid loaders offered for Indian market today are the most fuel efficient as the power to weight ratio is best in the industry. The dual path cooling system is unique only to Bobcat, which provides effective engine cooling at extreme working conditions, which also increases the fuel efficiency of the engine.

**Powerful hydraulics:** Bobcat loaders consistently meet high expectations for performance. The design, balance and weight distribution deliver more usable horsepower, powerful breakout forces and faster cycle times. The machines work quicker, lift more and outperform to meet various jobsite requirements. Each component, including the engine, pumps, and hydraulic system are engineered to deliver maximum hydraulic performance which results to faster cycle times and better on-site productivity.

**Smart cooling system:** Cooling on Bobcat loaders features the exclusive smart fan that only turns as fast as needed resulting in reduced load on engine and increasing fuel efficiency. The patented design of dual path cooling system cools more efficiently, while the radiator and hydraulic oil cooler are protected from jobsite hazards. Higher the cooling system capacity means long working hours in extreme temperature without overheating issues.

**Glow plug:** The glow plug provides cold start ability, which is highly useful



when the machine has to work in extremely cold weather where the engine needs to warm up and can be started without any difficulty.

**Are there any telematics inbuilt in skid steer loaders?**

Telematics in skid steer loader like any other construction equipment is mainly to monitor the asset condition, which is in a remote location. Currently, we are not seeing a lot of pull from SSL customer for telematics because the number of large fleet customer are very limited. However, the growing demand from rental, road construction, process industries and waste management segments give us an indication that telematics will be needed for skid steer loaders in the future. In developed markets like US and Europe, Bobcat is already offering telematics system, called "Connected Machine" that offers remote access to information including location, machine health, performance, fuel levels, operator performance. So when the market is ready we will offer in our products.


**What is the price disparity and acceptability of these machines?**

Price disparity does exist when we compare it with respect to other machines available like mini excavator or a backhoe loader. But however, the challenge in terms of acceptability, the

main factor would be the lack of awareness about the versatility of the skid steer loader. Certain products like backhoe loader have much more visibility in terms of street presence and as a result there is a tendency to utilise those machines even though they may not be apt and skid steer loaders are perfect for that.

And the other factor would be that even now barring developed states there are many regions in the country where manpower cost is still lower and the cost economics still favour manpower.

**How do you look at the future market for skid steer loaders in India?**

Growing urbanisation and the infrastructure requirements that comes along with it are key to compact construction equipment demand. The government plans for higher capital spending on power, roads and urban infrastructure has been encouraging. Several road projects under various Government schemes and urban infrastructure projects are among the key influential segments which will have a positive impact. Among the roads, the Government is also giving a lot of importance for rural roads which forms almost 90 per cent. As a result, we feel that there is lot of scope and growth opportunities for the skid steer loaders in the coming future. 



# LIFTING INDUSTRY MOOD?

Growing building and construction spending due to a rise in per-capita disposable income along with enhanced infrastructure in Asia Pacific and Latin America will drive the crawler crane market.



Insights. The shipments are expected to grow at a CAGR of over 4 per cent. However, the crawler cranes market continues to remain a fragmented landscape with presence of various large and medium-scale participants. In the fragmented scenario, top five companies involved in the manufacturing of crawler cranes account for a significant share of the overall crawler cranes market.

Major players in the crawler crane market include Terex Corporation, The Liebherr Group, Zoomlion Heavy Industry Science & Technology,

**C**rawler cranes can lift over 600 tonne. Crawler cranes can lift the heaviest loads and require the most on-site assembly out of all the mobile cranes. They are efficient for large-scale construction projects. Likewise, due to their size, these machines primarily act as stationary lifts in a confined workspace. Despite this limitation, crawler cranes still provide a great option where heavy lifting is required. When it comes to other types of mobile cranes in India, there has been a marked increase in interest but a significant drop in rental rates over the last couple of years – partly due to intense competition and the large quantity of machines flooding the market.

According to a report, the Asia-Pacific crawler crane market is witnessing a high adoption in the construction and mining sectors and is expected to grow at a CAGR of over 5 per cent from 2018 to 2024. The escalating infrastructure development projects in countries including India will favour the crawler crane market

growth. Rental market is a major growth driver for crawler cranes in India. However, the current market scenario is stagnant for crawler cranes due to various reasons of slowdown in rental market due to low rental rates, slowdown in wind power sector which is considered as the major user of higher capacity crawler cranes, and the popularity of tyre-mounted cranes in heavy lift projects.

Crawler crane market size is set to exceed \$3 billion by 2024; according to a new research report by Global Market



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FOR REGULAR UPDATES

XCMG Group, The Escorts Group, Komatsu, Sany Group, and Manitowoc. Companies including The Escorts Group, Furukawa UNIC Corporation, and Terex Corporation sell their equipment through specialised construction equipment distributors and construction firms across the globe.

Top companies such as Liebherr International AG, Terex Corporation, Zoomlion Heavy Industry Science and Technology, XCMG Construction Machinery, and Sany Heavy Industry, collectively account for a share of more than quarter of the crawler cranes market.

Economic growth across the globe, especially in China, India, and Southeast Asian markets, has led to a better infrastructure demand. Growing building and construction spending due to a rise in per-capita disposable income along with enhanced infrastructure in Asia Pacific and Latin America will drive the crawler crane market.

### Different models for different applications

Increasing utilisation of crawler cranes in the energy sector is anticipated to drive the crawler crane market growth. These machines offer heavy lifting operations at the nuclear and renewable energy sites and facilitate the operators in handling the materials efficiently. Several manufacturers have developed energy sector-specific machines that witness a high demand. For instance, Manitowoc has launched a wind power crane, Grove GTK1100, that is used for wind turbine operations such as erection and construction. Additionally, the crawler crane market is witnessing growth opportunities due to the increasing infrastructure projects across the globe.

To satisfy the diverse needs of customers, the Manitowoc Crane Group has a comprehensive portfolio of crawler cranes and the Grove range of cranes that address requirements

that are specific to the region and application. For maximum functionality and value, nearly all Manitowoc cranes have been engineered as modular base units, available with add-on components that can be quickly added to expand their functionality. Each product meets the requirements of different regions, including international transportation regulations, operational simplicity and efficiency parameter, even in the most challenging environments.

Manitowoc has unveiled its latest crawler crane: the Manitowoc MLC150-1. It is the latest in a line of crawler cranes that have been very successful in North America, especially for their competitive load charts and job site maneuverability. The new crawler crane continues the momentum of its popular predecessor, the MLC100-1, increasing the capacity to 165 USt (150 t) and adding a host of new features. It was designed to meet the needs of customers that desire a compact, maneuverable crawler crane with a strong load chart and easy transport.

“A big component of The Manitowoc Way is listening to exactly what our customers need and want in their cranes,” said **Brennan Seeliger, Product Manager, Manitowoc Cranes.** “We have had great feedback on the MLC100-1, so we based the new MLC150-1 on that model, but boosted the capacity for the 165 USt

(150 t) class.”

The MLC150-1 features a 165 USt (150 t) base capacity and a maximum boom length of 256 ft (78 m). A fixed jib of 80 ft (24 m) with a 29.5 USt (27 t) capacity is available for the crane, and a 170 ft (52 m) luffing jib with a capacity of 50.2 USt (46 t) is another strong option for the job site.

This new crane features quicker assembly than previous models, too. The boom butt mounted sheave enables self-assembly without the boom top, it features a button style rope termination, and a gantry-raised counterweight reduces components. The boom cap, jib butt and struts ship as a single package for fewer connections. It's also easier to transport. An increased hook height enables self-assembly with various trailer heights, and the crane is designed to be transported with minimal permitted loads.



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Action Construction Equipment has the 40T and the 75T crane in its product portfolio which it intends to take up to 160T in the near future. Says **Manoj Agarwal, CGM – Marketing & Product Support, Action Construction Equipment:** “Currently, we offer the 40T and the 75T capacity crawler cranes which we intend to take it up to 160T in the near future. Our crawler cranes are new generation hydraulic machines capable of lifting heavy loads in restricted areas with enhanced safety features and hydraulically extendable/retractable tracks enabling ease in transportation and usage. We offer customers all the options like the standard machine for lifting and erection jobs or with features of single/double-line free fall for usage in the piling activity.”

He added, “Our crawler cranes are loaded with safety features which includes safe load indicator with overload cut-off function; counter balance valves; hoisting limiters provided on main hoist, boom hoist and auxiliary hoist; boom angle

indicator; level sensor; mechanical drum locking system for all the hoist; mechanical swing lock; tri-colour audio-visual external safe load indicator; audio slew alarm and safety brakes on hoist.”

“The demand for crawler cranes has shown signs of improvement in the last few months. With the budget allocation of \$2 trillion in the transport infrastructure, we feel that the demand for crawler cranes will soar in the next few months. Major sectors which would spurt the demand include power and

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Member(Projects)

National Highway Authority of India



**Shri. Dr. Sanjay Kolte, IAS,**

Chief Executive Officer

Pune Smart City Development  
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**Shri. Thiruman Archunan**

Director of Projects

Kochi Metro Rail Limited



**Shri R.K Singh**

Director (Project & Planning)

Indian Railway Station  
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JCB, which manufactures the Liftall range of pick and carry in India, says the crane type is the third highest selling piece of construction equipment behind backhoes and excavators, and the figure is growing, along with the cranes' capacity.

More or less the crawler crane design has evolved. Over the period of time, crawler cranes have become lighter, transport-friendly (maximum individual component weight reduced by great extent) and with a lot of electronics and computer controls. The safety features are enhanced considerably. End-users prefer hydraulic crawler cranes over mechanical cranes. But mechanical cranes are equally in demand where free fall operation is a must as they are more efficient than hydraulic crawler cranes.



- KARTHIK MUTHUVEERAN

transmission, bridge constructions, metro and prestigious harbour link projects, etc.," adds Agarwal.

Recently, German manufacturer Liebherr has debuted its second electric-drive large machine: crawler cranes. The company says its LR 1200.1 unplugged and LR 1250.1 unplugged models are the world's first battery-powered crawler cranes. The electric-driven engines have a system performance of 255 kilowatts (341 horsepower). The LR 1200.1 unplugged has a maximum lifting capacity of 200 metric tonne and the LR 1250.1 lifts 250 metric tonne.

The cranes follow the company's LB 16 electric drill rig, introduced at the Bauma trade show in 2019. As with the 265-kilowatt (355 horsepower) electric-motor LB 16, Liebherr says a design imperative with the electric-drive cranes was that there would be no performance depreciation between them and their diesel cousins. Another key: that each machine is capable of putting in a full day's work on one charge. On the drill, that meant a 10-hour shift; the cranes are designed to

accomplish four hours of lifting operation on one charge. The cranes can be recharged on a conventional jobsite electric supply in 4.5 hours; a 2.5-hour rapid charging option is also available. After charging, the cranes can be operated without a cable. The charging port is located in the undercarriage area, giving it ground-level access.

Liebherr says the crane batteries supply sufficient energy for the erection of the main boom with luffing jib and for traveling over a distance of about 650 meters (2,132 feet).

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# "WE WILL CONTINUE TO FOCUS ON INFRASTRUCTURE PROJECTS"

**E**stablished in 1960, Atlas Copco is the India's leading manufacturer of innovative solutions in air compressors and industrial gases, energy efficient vacuum pumps, portable compressors, light towers. **Tony Van Herbruggen, General Manager, Atlas Copco India, Power Technique Customer Center,** shares how their company is contributing to the construction equipment sector, and new products and solutions offered in this segment.

## How construction equipment market has evolved the last couple of years?

The construction equipment industry is continuously evolving through various innovations in application and the product range. The construction sector in India is very important as it contributes to around 60 per cent of the total infrastructure development investments; it will come back strongly to support the economy revival.

In keeping with the expectations from the Indian market, we will continue to focus on infrastructure projects by offering products that meet our customer needs and ensures them long-term benefits. India is a growing economy, and looking at the overall infrastructure requirements coming up, we expect this healthy trend to continue in the coming years as well.

The construction and infrastructure segment today requires more innovation in all areas of core infrastructure such as roads, metro rail, expressway, airports and expansion on existing highways. At Atlas Copco, we have products to match this requirement.

Advanced technology and better productivity solutions will be the demand drivers, going forward. More



**Tony Van Herbruggen,**  
General Manager, Atlas Copco India,  
Power Technique Customer Center

and more customers are moving towards high-pressure band for greater productivity. Customers are seeking results with a higher penetration rate and reduction in fuel consumption.

## How Atlas Copco is contributing to the sector?

Atlas Copco is the undisputed market leader in 'portable air compressor' segment and we continuously strive to upgrade our product portfolio to provide better product and services to our customers.

We undertake a lot of field trials and invest more than a year of R&D before launching any products. A customer always sees the value he will get from the product he is buying. So, other than launching new products, technology advancements are always in our pipeline. In fact our portable air compressors:

- have an advanced well designed acoustic canopy which makes operations sound proof, and
- are most fuel efficient with its energy efficient powerful screw element design.

Further, we have really put our

innovation stamp on LED technology. The lenses in our LED light towers have a very special optic designed specifically for construction and mining applications. Atlas Copco has a strong commitment with the innovation and the environment, and therefore we have developed new technologies that provide bright and efficient light with 40 per cent lesser emissions, lowest fuel consumption and even low noise level.

We have anticipated the shift in customer requirements and are ready to fill the gaps in the market. From electric and dual pressure compressors to demonstrating ground-breaking technological expertise on project sites with our LED light tower range and ergonomic handheld tools, we focus on fuel-efficient equipment equipped with inbuilt features to enhance performance at every level while reducing the carbon footprint.

## What are the new products and solutions offered?

Atlas Copco's forward-thinking compressors just got a boost with the launch of the newly designed 455-650 cfm air compressor range for powering productivity in quarries and mines. This range offers advanced features such as:

- concept vessel for easy access to the air receiver
- closed frame and baffle design for efficient cooling

This ensures 10 per cent better fuel efficiency and improves on site productivity and profitability. Additionally, our 300 - 410 cfm air compressor range also got a makeover. Specially designed for versatile applications in harsh work conditions, and now equipped with a highly efficient screw element and new simple oil separator tank, this compressor



range offers easy service and 10 per cent lower fuel consumption.

Atlas Copco's newest addition to its portfolio, the HiLight V5+ LED light tower two cylinder engine has unique features to light up the way:

- Compact and lighter with HARDHAT canopy which increases light tower stability and robustness.
- Modular COB type LED floodlights with unique directional optics with increased 40 per cent lifetime expectancy
- 40 per cent lesser carbon emission and less fuel consumption
- Two cylinder engine with heavy duty accessories to work continuously and efficiently in harsh working conditions and heavy work load
- IP67 rating for LED lights for better protection

This innovative, fully directional, LED lens design means we maximise the light coverage and reduce "lighting waste". A single HiLight tower can cover an area of up to 5,000 m<sup>2</sup> with a 20 lux (brightness)

average – ensuring a brighter, safer and more productive site.

### **What are the applications of air compressors in construction, mining and drilling operations? What is the current demand trend?**

Portable air compressors play a pivotal role in mining, infrastructure and construction applications. The mining application specifically, is a segment of paramount importance, looking at the amount of aggregates which is required for infrastructure and construction projects. Similarly, the extraction of minerals such as iron ore, manganese, coal, limestone, etc. with reliable portable air compressors with the lowest possible energy consumption is an important application under metal mining. Similarly, all the infrastructure and construction projects start with excavations where portable compressors are required and then the entire work chain starts.

Infrastructure, mining, quarrying and construction are the four major

segments of portable compressor business. With the increased focus on road development and the revival in the mining and quarrying segment, there is continued demand for portable compressors.

Our compressors are versatile and one compressor can cater to several applications ranging from abrasive blasting, dry ice blasting, shotcreting, rock drilling and many more.

### **In light of the plans of infrastructure creation and reforms in mining, what opportunities do you foresee for portable air compressors?**

Restoration cannot happen without reform in mining sector. Mining sector has a weight of approximately 14.4 per cent in the Index of Industrial Production (IIP) and it grew at a CAGR of 2.1 per cent from FY13 to FY 20. India witnessed closure of mines in Goa, de-allocation of coal blocks, and various investigations into illegal mining. There was fall in monthly mining from April to September 2020 due to Covid-19.



Fortunately since 2014, the Government was working on reforms for mining industry and going forward more reforms are required to uplift the competitiveness in the industry. Coal production has target of doubling in 2021, which clearly shows encouraging demand for portable air compressors and lighttowers. Iron ore industry is set to pick up pace aided by strong steel demand. I see some dip in the cement industry, which may drop by some points as per the study. So overall for the portable air business in 2021 we may see some interesting mixed trends in the mining sector.

**What all tools and equipment does Atlas has for construction sector?**

Besides portable air compressors and waterwell compressors, light towers and handheld pneumatic and hydraulic tools play a crucial role in the construction sector. With time bound projects and the need for 24x7 action to ensure on time completion, technology which ensures reliable light on site, brings in the required support for meeting the infrastructure project deadlines.

Undoubtedly, the road segment, is where power equipment such as portable air compressors and light towers are most in demand when we focus on infrastructure specifically.

Growth and performance for the handheld tools market in India is expected to be fuelled with the introduction of the ergonomic handheld tools like the TE range of hydraulic, pneumatic and motor driven handheld tools.

Over a period of time, we have upgraded our tools and most of them are ergonomic (silenced and vibration free) to protect both the environment and the operators. We are leading the shift towards ergonomically designed handheld tools designed with ergonomic vibration-reduction handles, significantly reducing vibration intensity and noise, allowing operators to use the breakers comfortably for more than



eight hours. Our medium weight 25 kg breaker RTEK 25 which consumes 50 per cent less air and our heavy breaker 37 kg -TEX 33PE are very powerful with four times less vibration than the same non-ergonomic breaker. Our complete range of Hydraulic powerpack driven breakers 11 to 39 kg are ergonomic.

We are the only manufacturing company, which can also provide hydraulic power pack driven tools and light engine driven tools along with pneumatic tools.

The petrol engine driven breakers, which we offer are very advantageous where one cannot use pneumatic and electric tools on remote sites and are very popular in army rescue

operations and railway applications.

We also offer high performance Dust Collectors, which are very efficient and absorb 99.9 per cent harmful dust. This ensures less dust pollution from rock drilling and less discomfort to the operator, working in mining applications. The DCP 30 is ideal to work with 3 rock drills or breakers and DCP 10 is ideal to work with 1 rock drill or breaker.

With an upgraded portfolio and technologically advanced equipment, Atlas Copco portable air compressors, light towers and handheld tools will continue to touch lives and improve construction and infrastructure needs of India.



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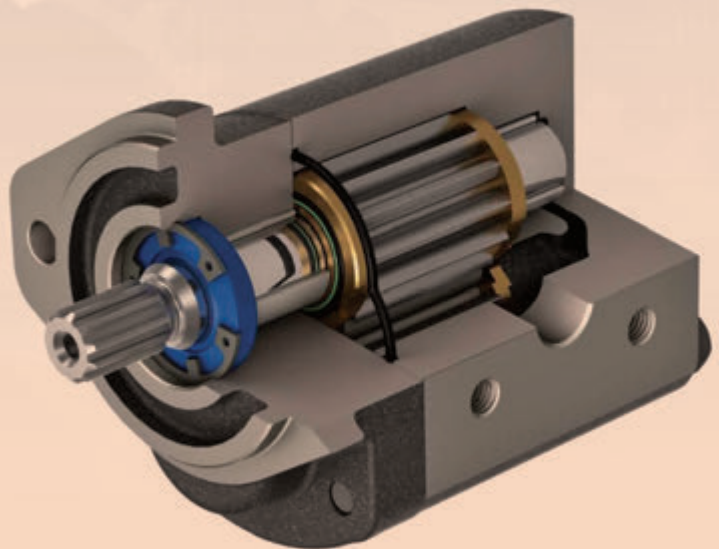
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Hydraulic motor is a major component that brings in the desired productivity in a heavy construction equipment.

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Harish Khanduri

M: +91 88001 38543

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E: harish@interads.in

Faisal Zaidi

M: +91 97168 19771

T: +91 124 4524212

E: sales@interads.in

## INTERNATIONAL PARTICIPATION

Sylvie Monichon

T: +33 1 76 77 14 64

E: sylvie.monichon@comexposium.com

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## Sandvik to invest in new hydraulic & instrumentation tubing factory in Mehsana

Sandvik, a developer and producer of advanced stainless steels, special alloys, titanium and other high-performance materials, will invest in a new Hydraulic and Instrumentation tubing factory at its Mehsana Mill in Gujarat, western India, to meet increasing customer demand.

“The Mehsana Mill is an important facility in our journey towards increasing our footprint in Asia. As part of our strategy to invest capacity and capability in growth markets, the brand new Hydraulic and Instrumentation tubing factory, as well as the extensively revamped finishing facilities for the heat exchanger flow, will enable us to capture growth opportunities created by the change towards increased natural gas in the energy mix,” says Michael Andersson, President of Tube Division, Sandvik.

The Mehsana manufacturing facility



has been successively expanded and modernized in recent years to increase availability of high quality seamless stainless steel and high alloy tubes as well as to strengthen service in the region.

The first phase of this growth initiative was completed in 2020 when Sandvik added a new cold finishing tube manufacturing line mainly for heat exchanger tubing and other demanding industrial applications. The investment this time around is divided into two parts and will be fully completed and operational by early 2023.

## Mafini acquires Combat Industrial Batteries

Mafini Group has acquired Combat Industrial Batteries and Chargers, a Mississauga, Ontario-based industrial battery and charger company with over 60 years in the industry.

Combat Industrial Batteries and Chargers supplies industrial forklift power solutions along with new and refurbished TAB Traction tubular lead-acid and lithium-ion batteries and smart chargers to retail, manufacturing and distribution companies. Combat has a solid reputation in Ontario for delivering superior performance products, field service and in-shop repairs, battery reconditioning, on-site battery washing, preventative maintenance service, safety battery training, motive power consulting, rentals, and environmentally friendly scrap battery recycling.

## Bosch boasts heavy-duty cordless performance with new ProFactor tools

Bosch has launched a new line of heavy-duty cordless tools with a battery power system that the company says makes them more powerful than their corded counterparts. The new ProFactor high-powered rotary hammers, grinders and saws pair Bosch's most powerful lithium-ion battery, the Core 18V, with a new BITurbo brushless motor designed to optimize that battery power for the most demanding jobs.

“It's the part of our tools that produces the high output needed to deliver the corded performance cordless tools so desperately have needed,” said Mike Tsiolis, lead ProFactor marketing manager, during a virtual press event February 9. “Our engineers understood that to deliver serious power on an 18-volt platform, we had to do something drastic.”

## Chicago Pneumatic launches Permanent Magnet motor compressors

Chicago Pneumatic, a part of Atlas Copco group in India, launched two new product variations in their Permanent Magnet motor compressors— CPMV and CPVS range. Equipped with a proven energy saving

technology of permanent magnet motors, the products offer an increased reliability, maintenance free operation and energy savings up to 45 per cent.

The key industry segments such as General Engineering, Manufacturing, Grain sorter, Pharmaceutical, Steel & where pneumatic and screw compressor applications come into play will benefit from these compressed air solutions. The new products with highly engineered innovation are intended towards enhancing customers' productivity, reducing energy consumption, and offering higher uptime and reliability. The products are



available across the country to fulfil the demand of customers even in shorter duration through the distributors.

Andy Prabhakar, General Manager - Brand Portfolio at Atlas Copco, said, “At Chicago Pneumatic, we are proud to be

able to cater to the customer with solutions created only with durable parts, ensuring efficiency of products and services, backed by timely maintenance offerings. The new range of CPMV series screw air compressors for extensive usage in various industries, is a result of Chicago Pneumatic continued commitment to offer products to the customers that are simple enough to be user-friendly, reliable, and efficient. Our commitment has always been to ensure that the products and parts are easily available and serviceable, no matter in which part of the country your business is.”

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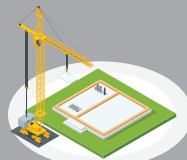
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# IMPROVING PRODUCTIVITY

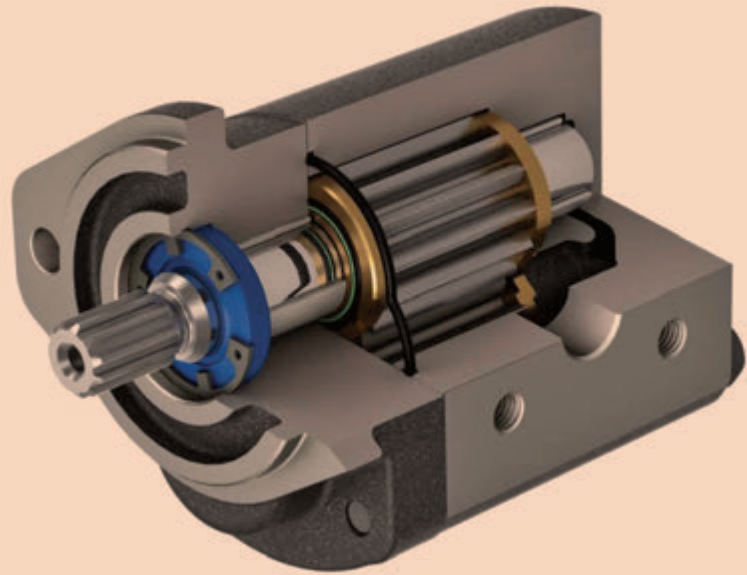
Hydraulic motor is a major component that brings in the desired productivity in a heavy construction equipment.

Infrastructure development and power generation are crucial to keep India's long term growth story intact, thereby stimulating growth prospects of the hydraulic equipment market. Hydraulic motors are used in numerous industries for a variety of applications such as lifting a load, processing material, bulk material handling, etc. It is one of the superior options for heavy-duty applications due to its high power density.

Hydraulic motor is a major component that brings in the desired productivity in a heavy construction equipment. So it is imperative for the equipment OEMs to source these motors with improved design and features. Hydraulic motors make use of fluid pressure for driving mechanical loads. These are important components of hydraulically powered equipment. Hydraulic motors are commonly seen in earthmoving equipment like excavators, backhoe loaders, skid-steer loaders, forklifts, heavy dump trucks, bulldozers, etc. where hydraulic cylinders extend and retract as vital operational parts while the machine performs various work.

Normally, hydraulic motors are used for machines requiring high torque and working in difficult environment. Hydraulic motors are also fitted on other applications where it is required a significant torque. In one machine with hydrostatic transmission, you have typically a diesel engine connected with a hydraulic pump which creates the oil flow that reaches the hydraulic motors that normally are located in the machine's wheels.

The global hydraulic motors market was valued at \$7,874.29 million in 2018 and is expected to witness a CAGR of 4.50 per cent, during the



forecast period, 2019-2025. Some of the major factors driving the growth of the market include the growing construction industry, agricultural sector, and mining industry, primarily owing to an increase in the consumption of base and precious metals. Additionally, consistent technological advancements are expected to offer growth opportunities for manufacturers. However, a shift in the focus toward electrification and adoption of electric motors in applications, such as oil and gas and few construction equipment is expected to hinder the market's growth.

All over the world, more and more electro hydraulic machines are under development or already launched.

**Said a spokesperson from Poclain Hydraulics,** "Hydraulic motors are one of the major components of mobile construction equipment. You can find them in compactors, skid steer loaders, excavators or in horizontal drilling machines, and these are only a few examples. Hydraulic motors are today

the state-of-the-art technology of drivetrains and for most of the function construction equipment has."

**Alberto Gatti, Group R&D Head for Hydraulic Motor Platform, Bonfiglioli,** said, "Bonfiglioli has always pioneered the concept of integrated drive solution - the motor and the gearbox integration forming a unique system - with many advantages in terms of high-power density, compact dimensions and application-based solutions. In addition to all these functional needs, the demand from end-user market is also to have lower operating and equipment costs, which is also a challenge for system providers like us to have an highest technology motors with optimum costs."

He added, "The construction equipment are experiencing a giant revolution. Saving weight on some components could be fundamental to add some batteries or hybrid features without affecting the total machine gross weight. Space is equally important because we need to locate additional components, and so on. For



all the above mentioned reasons, we are keeping untouched the choice of plug-in hydraulic motors, but we are expanding the range of integrated solutions. We cross-feed ideas used initially only on excavators, to other machines, and we always strive to design new products with something more than its predecessor.”

On the types of hydraulic motors, Poclain Hydraulics spokesperson had this to say: “You can find several types of hydraulic motors, depending on the job to perform. For me, the best type is a radial piston motor. We have motors for almost every need in the right size. Our portfolio offers motors from 172 ccm to 30,000 ccm. We produce these motors in several configurations, as multipurpose motor or as specialised motor dedicated for a single function, like a swing drive motor with integrated valves. However, the technology of all these motors is the same; a radial pistons design.”

Added Gatti, “Hydraulic motors are among the most versatile systems used in mobile machines; this is true regardless of the final machine type, purpose, and application. We classify them into three big families: Orbit motors, Swash plate motors and Bent axis motors. Each family of motor has unique performances, overall dimensions, cost, allowable pressure, flow range, and efficiency. All these parameters must be evaluated based on the operating conditions, applications and specific machine functional requirements in order to select the appropriate solution, which provides the optimum performances for final equipment usages. A well-designed hydraulic motor will boost speed performances, gradeability, and overall machine fuel consumption.”

He added, “Our product portfolio has an extremely wide range of solutions for track and wheel drive gearboxes. We must be able to match the right motor to the right gearbox in

any possible case, and this implies that also our hydraulic motor portfolio must be as wide as possible.”

He added, “We see a clear trend to a higher number of integrated functions, like integrated valves, more sensors and a higher diversity. This is why we have increased the number of different motor types over the last years: MZ motors for swing drives, steerable MG motors or the CDM range (a clutchable double shaft motor) or the latest launched range, the MI motors. The time of one fits all is gone as the market is demanding a dedicated product without any compromises. Thanks to the modular design we have, we are able to offer these dedicated products with the same quality standard as all our products, by using standardised parts like cylinder blocks and cams.”

Speaking on the key features of hydraulic motors that improve equipment productivity, the **spokesperson from Poclain Hydraulics** said, “If you see our high torque and low speed motor, you can find several benefits to improve the productivity and efficiency. One of the biggest benefits is, you do not need a gearbox and you have saved a component in between, no additional efficiency coefficient, which will reduce the total efficiency in your system. The same will contribute to an increased productivity, one component less to maintain, one component less which

could fail, in the end, you will have a reduced downtime. A second big benefit of our hydraulic motors is the pressure we can work with, 450 bar for MS motors and 500 bar with our MHP motors.”

**Sugumar Kannan, Bonfiglioli India Design Center Manager for Hydraulic Motor Platform**, said “I would like to mention some of the products like the 600WT/Th68 Series wheel drives which are the best choice for wheeled agricultural equipment, such as self-propelled agricultural sprayers. This solution is the perfect combination of proven mechanical parts, with a new, integrated 68cc variable displacement hydraulic motor, especially developed for closed loop, highly demanding applications. This motor is available with both hydraulic two-position or electric proportional variable displacement control and it has zero-displacement capability. Another product to mention is 700CT/Th45 Series, extremely compact, lightweight, efficient and smooth to operate track drives.”

Added Kannan, “We all know the COVID-19 pandemic has already negatively impacted the global and Indian economy. Understandably, this is a very challenging period for everyone. Our first and foremost priority is employee safety and we have taken all the necessary steps to have the safety of our people at the highest level. We are following new methodologies to keep the projects in R&D running. We have some engineers working from home remotely and some at office. We have provided all the best-in-class tools for design engineers to keep working smartly and safely.”

The long term market outlook remains positive with forward looking measures from the government on infrastructure creation offering new opportunities for equipment players. Hydraulic motors will have a great future. 



- KARTHIK MUTHUVEERAN

# NIGRAANI'S FUEL TRACKING SOLUTION'S GAINS ENABLE ARSS TO INCREASE DRIVER'S SALARY MULTI-FOLD

ARSS Infrastructure Projects (ARSS) achieved an RoI in fuel tracking solution in months.

**A**RSS is civil construction activities company with principal areas of business as road works, bridge works, railway works, power works, real estate works and irrigation works across states of Odisha, Chhattisgarh, Chennai and Kerala, among others. Their widespread operation and fuel pilferage needed a transparent view of fuel usage in its fleet of trucks and heavy equipment to tackle rising fuel costs.

ARSS worked with Nigraani to equip 350 of their commercial vehicles and equipment with fuel monitoring solution. The savings from the precise and real-time sensors helped realise the return of investment in months. The gains have spread further to stakeholders like drivers who have got up to four-fold increase in their salaries.

Infrastructure development is a growing market in India, with an increase base of commercial vehicle like graders, excavators, DG sets and other heavy equipment for construction projects of all sizes. ARSS's main business is in infrastructure development, and the company owns thousand plus units of heavy equipment.

With fuel prices rising in India, saving on fuel is a priority for ARSS, and the company decided to invest in an advanced fuel and fleet management solution to pinpoint inefficient fuel usage with Nigraani solution with 99.2 per cent accuracy.

## Business challenge

ARSS's wide scale operation with a geographically dispersed large fleet of vehicle and equipment presented a huge

challenge in managing fuel tracking – exact volume filled, consumption during course of business and fuel pilferage at various stages. There were associated challenges like inability to plan and forecast fuel requirement, timing fuel procurement, fuel injection kit dysfunction upon fuel tank going empty and high turnover among drivers due to lower pay compared to market.

## Nigraani's solution

Looking for ways to optimise fuel consumption and eliminate manual fuel data entry errors, improve transparency in fleet management, prevent fuel underfilling and enhance their reputation as a progressive and efficient infrastructure company, ARSS looked for a technologically advanced, foolproof fuel-tracking solution.

Rajul Agarwal, Director at ARSS, explains, "With our previous provider we were overpaying for an antiquated technology and were way behind in ease of installation, functionality, and reporting options. It wasn't long before we saw what fleet and diesel tracking could really do for us thanks to Nigraani. The ease of plug and play technology, custom reporting beyond "the norm". With 350 plus units and another 200 in pipeline for installation in both Odisha and across India, we see no signs of slowing down."

Nigraani's successful fuel management solution was referred to ARSS by another leading company in the industry. Following an extensive series of trials, ARSS opted to use Nigraani's complete fuel and fleet management solution, consisting of best in class SaaS-based fuel



management platform, vehicle trackers and Nigraani high-precision fuel-level sensors. The first phase of the project involved 350 units.

## Business benefits

The precise tracking of fuel in real time with high precision of 99.2 per cent enabled ARSS to automatically track filling, prevent pilferage and improve their fuel planning. Profound differences between manually calculated fuel consumption data and the real time accurate data collected from Nigraani fuel-level sensors made the fuel management function easy from the comfort of their offices with complete certainty and precision. ARSS is experiencing significant benefits within months of installing Nigraani's fuel and fleet management solution:

- Return on investment of the fuel tracking solution.
- Prevention of underfilling, avoiding any chances of fuel running out leading to defects in fuel injection kit.
- Ability to plan and forecast fuel consumption at a fleet level from their office without any manual intervention.
- With a strict control on the largest cost in fleet operation i.e. fuel cost – ARSS managed to increase salary of drivers up to four-fold to address the issue of driver turnover and unresponsiveness.

Impressed with the results, ARSS has plans to install Nigraani equipment across the company's entire fleet. 

# CATERPILLAR CELEBRATES 50 YEARS OF MANUFACTURING IN INDIA

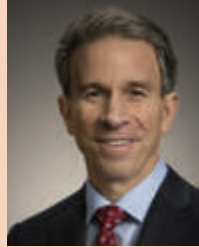


**C**aterpillar, the world's largest manufacturer of construction and mining equipment, enters the 50th year of manufacturing in India. The company has a long history of equipping its machines with leading-edge technology to increase the safety, productivity and efficiency of its operational sectors. Globally, Caterpillar has more than 95 years of product support expertise, a large installed base (approx. two million assets), and a robust worldwide dealer network serving 193 countries with approximately 1,60,000 employees.

While the company has been active in India since the 1930s, Caterpillar now has an established footprint with six state-of-the-art manufacturing facilities, two R&D centres, five subsidiary entities, eight Caterpillar brands and numerous global support organisations. The company's strategy reflects the legacy and unparalleled commitment to meet its customers' needs in India and around the world with the best-in-class product solutions and service innovation. Caterpillar and its strong dealer network employ more than 11,000 people directly and even more with its local supply base in India.

"Caterpillar has been part of India's growth story for many decades. We have been a key partner since the 1930s, and it is

remarkable to witness the progress in this great nation over the years," said **Caterpillar Chairman and CEO Jim Umpleby**. Umpleby, who is also a board member on the US-India Strategic Partnership Forum, said our India team's dedication and commitment to providing service excellence to our customers has been pivotal in reaching this milestone anniversary.



"This year denotes the golden jubilee anniversary as we enter into 50 years of manufacturing in India," said **Caterpillar**



**India Country Manager, Bansi Phansalkar**. "It is remarkable to note that Cat equipment was used in the construction of Bhakra Nangal dam back in 1948. Caterpillar has been supporting the growth in mining, construction, transportation, power generation and infrastructure development throughout India," he further added.

Talking about Caterpillar's commitment towards the sustainable community Mr Phansalkar said, "We pursue various CSR initiatives focused on quality education, access to clean

water, sanitation, hygiene and skills development for the betterment of the communities where we live and work."

## About Caterpillar India

Caterpillar has been active in India since the 1930s. Today, together with our dealers, we employ more than 11,000+ people in India, representing nearly every part of Caterpillar's business. Our India presence includes state-of-the-art manufacturing facilities, high tech research and development, and numerous global support organisations. Caterpillar employees, dealers and facilities are located at hundreds of locations to serve and support our customers and respond quickly to their needs.

## About Caterpillar

With 2020 sales and revenues of \$41.7 billion, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines, and diesel-electric locomotives. Since 1925, we've been driving sustainable progress and helping customers build a better world through innovative products and services. Throughout the product life cycle, we offer services built on cutting-edge technology and decades of product expertise. These products and services, backed by our global dealer network, provide exceptional value to help our customers succeed. The company does business on every continent, principally operating through three primary segments.

**Communication from the management of the company.**

# AJAX ENGINEERING GEARS UP FOR ATMANIRBHARTA



**A**JAX Engineering, the world's largest manufacturer of self-loading concrete mixers (SLCMs), has recently earmarked around Rs 100 crore for allotment of land in Bengaluru from Karnataka Industrial Areas Development Board (KIADB) as well as for building a new manufacturing facility. This investment was made to expand its business operations to meet the demands of the construction industry in the future.

A news release from the company states that the new factory, which spreads across 20 acre, will be equipped with state-of-the-art facilities to design and manufacture the newly introduced products, such as concrete slip-form pavers, boom pumps, and self-propelled boom pumps. The annual production

capacity for the boom pumps and slip-form pavers would be in excess of 100 units and 50 units respectively.

A further investment of Rs 40 crore is being done at Gowribidanur plant, about 80 km north of Bengaluru, to expand its existing facility where batching plants and transit mixers are being produced.



**Jagdish Bhat, MD and CEO, AJAX Engineering,** stated that as the company's indigenously manufactured product

portfolio and engineering expertise continues to cater to Indian and global markets, "we are positive that this investment will further strengthen the Atmanirbhar Bharat

initiative and create employment opportunities for talented youth of the country."

## Import substitution

Government infrastructure spending has focused on road project awards—in April-September 2020, expenditure grew 140 per cent; 23 expressways have been announced with the targeted completion between March 2023 and March 2025. Furthermore, implementation of the \$1.4 trillion National Infrastructure Pipeline (NIP) plan spread over the next five years, will ensure a steady demand for construction equipment (CE) in coming years.

**With the tailwinds of demand blowing in favour of the concreting segment with a strong emphasis on indigenisation, AJAX has strategically aligned its product portfolio with the government's "Make in India, Make for the World" programme.**

The company is making this alignment by indigenising its portfolio—offering state-of-the-art machines equipped with superior technology manufactured at its Bengaluru plant for the spectrum of construction infrastructure segments.

To reach that goal, AJAX is developing cutting-edge features to provide product accuracy and reliability in terms of technological advancement in our concreting machines. One of the company's new innovations for SCLMs is the Load Cell Weigh Batching System, which ensures a higher level of accuracy in the weight management of aggregates and



ensures compliance to IS4925 which no other SLCM manufacturer offers today.

The company is also introducing a first-of-its-kind in India Slip-Form Paver—launched at EXCON 2019—designed, engineered and manufactured in India. AJAX terms the product an import substitute that is “versatile machine for concrete paving projects and is the best solution for paving needs. The paving machine comes with low noise, superior fuel efficiency, reliability and durability.”

Concrete Boom Pumps have been revolutionising the construction of large commercial and residential buildings and structures. AJAX’s Boom Pumps

are especially useful in urban mega infrastructure projects, commercial and office buildings, high-rises, commercial retail spaces, bridges, airports, and various projects under the Smart Cities initiative.

### About AJAX Engineering

AJAX was established in 1992 for manufacturing SLCM and is the global leader in this product, and provides an end-to-end solutions provider, from production to transport, placement, and pavement. Over the years, it has substantially expanded its product range to Concrete Batching Plants, Transit Mixers, Stationary Pumps, Boom Pumps, Self-Propelled Boom Pumps, and Slip-form Pavers. The

company has over 19,000 units of equipment, more than 30 dealers across the country, over 100 sales and support points, with dedicated service centres in Hyderabad, Hubballi, Madurai, Raipur, Surat, Faridabad and Ranchi, with Maintenance, Repair, and Overhaul (MRO) equipment. Its international dealers are located in Nepal and Bhutan, and distribution networks are located in Bangladesh, Sri Lanka, Myanmar, Mozambique, Philippines, Kenya, Tunisia, UAE, Vietnam, Cambodia, Oman, Uganda, and Egypt.

**Communication from the management of the company.**

# OPC UA OVER TSN – UNIFIED STANDARD FOR THE IIOT

In order to keep pace with technological advancements off-highway and mobile industry constantly invest heavily in research and development projects. These projects vary from electronics to mechanics to offer a greater customer experience, performance, safety and much more. Communication plays a vital role in vehicles and currently these industries are in search of a next generation fieldbus satisfying all industry requirements along with providing an enhanced performance.

In today's age of data and information, it is of prime importance to not only exchange data but also to do it safely and securely. CANopen is widely used in automotive, off highway and mobile machinery for exchanging information. Over the years, the amount of data exchanged has increased exponentially and, in the future, will continue to grow. With the addition of sensors, IOs, and cameras the bandwidth requirements have escalated. Camera integration on a vehicle was unthinkable a couple of year back. As a feature available in the vehicle in the minds of the users it has moved from a 'good to have' to a 'must have' feature. CANopen being based on serial communication limits in these bandwidth requirements. Consequently, exhausting all the available resources, the industry is in search of the next generation fieldbus, which provides a common backbone for all communication.

With the size of electronics reducing day-by-day and vehicle light-weighting gaining prominence, if the number of interfaces keep on increasing, the vehicle will not be able to keep pace with industry demands.

Modular, flexible manufacturing solutions are more important than ever – and easier than ever to



**Stefan Bina, Networking specialist, B&R Industrial Automation.**

implement, thanks to technologies like OPC UA and OPC UA over TSN. **Stefan Bina, Networking specialist, B&R Industrial Automation**, answers frequently asked questions on the topics of performance, cyber security, migration and how TSN works in combination with existing fieldbus systems.

## **What kind of performance can I expect from OPC UA over TSN?**

The technology is capable of addressing more than 10,000 network nodes, scalable from 10 megabits to

10 gigabits and beyond. Testing conducted by B&R achieved cycle times below 50 microseconds with a jitter of less than  $\pm 100$  nanoseconds in a network of 200 remote I/O bus couplers totaling 10,000 I/O points. This is consistent with claims that OPC UA over TSN is "18 times faster than today's fastest solution". This level of performance makes proprietary fieldbus networks obsolete. OPC UA over TSN allows high-performance motion control traffic and bandwidth-intensive IT traffic on a single cable without interference between them.

### Will OPC UA over TSN help integrate factory and machine networks with our IT requirements?

OPC UA was designed to communicate with IT systems. OPC UA over TSN will enable you to converge OT and IT networks without disturbing machine operations. This is thanks to TSN and the use of OPC UA security mechanisms familiar to IT departments today, including user authentication and authorisation, encryption and certificate handling.

### Can TSN and non-TSN OPC UA or normal IP devices be used in the same network?

Yes, because TSN is an evolution of standard Ethernet. TSN simply enhances standard Ethernet with real-time capabilities, so it is possible to have standard Ethernet devices and

TSN devices present in the same network. Standard Ethernet devices would not need any interface or gateway to connect to a TSN network. However, only TSN-capable devices will be able to communicate in real time.

### Will it be possible to synchronise POWERLINK and OPC UA over TSN?

Yes, it will be possible to synchronise POWERLINK and OPC UA over TSN devices in B&R systems.

### What about running existing fieldbus protocols – such as EtherNet/IP, Profinet, EtherCAT, EtherCAT G or CC-Link IE – over TSN?

The legacy fieldbus protocols would share a common TSN network, but the devices would not be interoperable as OPC UA devices

would be. These protocols also lack the semantics and methods that OPC UA provides. OPC UA has built-in security and is recognised an international standard for communication from sensor to cloud with new developments being added all the time. The key difference is system interoperability: without it, you are locked into one vendor and one automation solution, with no ability to communicate or synchronise with other systems. In a multi-vendor plant, this means you are unable to secure your communication and implement advanced functionality such as condition monitoring, line balancing, predictive maintenance, machine optimisation and plug-and-produce startup and maintenance. As a machine builder, this means you are limited to the level of innovation offered by your chosen vendor.



## INDIAN CEMENT REVIEW

INDIA'S FIRST & ONLY BUSINESS MAGAZINE FOR INDIAN CEMENT INDUSTRY

### THEME : INNOVATION IN SUSTAINABILITY

Intrinsically cement is an energy intensive material and moreover its production uses large amounts of nonrenewable materials. Therefore it is of utmost importance for every one connected with the cement industry to address the subject of sustainability.

#### ISSUE HIGHLIGHTS

- The issue will cover authored articles, interviews and some of the case studies.
- Few of the leading cement manufacturers will share their road map on sustainability.
- Machinery manufacturers will share their capabilities on technological innovations.



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# ACCESS AT HEIGHT FOR BRIDGE REPAIRS – HAS INNOVATION IN SAFETY FINALLY CAUGHT UP?



these tests and repair works will involve working under the bridge decks at some point ... which brings us to the central issue.

Carrying out work below bridge decks, or jetties, for testing and repair purposes - especially when it involves dangerous working conditions - can require additional considerations for keeping operatives safe. In an increasing number of situations, traditional methods of access, such as regular scaffolding, cannot provide the 'gold standard' in safety, expected, in the 21<sup>st</sup> century.

Inspecting bridges can be quite dangerous. In addition to inherent dangers that can include being suspended from significant heights, moving around and over potentially unstable structures, and working in and around water, personnel are regularly exposed to outdoor elements, inclement weather, traffic, and more. Significant investment in training is required to ensure safe working conditions for bridge inspectors to minimise risks. The bridge repair challenges become even more problematic when heights become an added factor. So, a novel method of access is required which can address all these challenges.

WEB Systems International offers a unique suite of solutions that addresses all of these predicaments. Most regularly installed by industry-certified and experienced rope access professionals – who have undergone further instruction in the installation and removal of WEB Systems – the products enjoy a successful track record of deployment around the world.

**B**ridges form an essential part of modern day economic and transportation systems. They can be used to connect islands that can span several kilometres into deep seas, connect stretches of separated lands – as well as joining cities, separated by lakes and rivers. Mostly, bridges are made of concrete and steel. Both these materials offer distinct advantages over other materials, owing to their wide-ranging availability throughout the world, cost-effectiveness, and superior performance.

But they get old. And when they do, their properties degrade. They need monitoring and programmed maintenance, if the integrity of the structure is to be preserved. Likewise, jetties have been with us for many centuries now. When sea trade was at its peak and

commerce started to shape the world, jetties were constructed for the harbouring and offloading ships. Modern day jetties are often constructed to serve the purpose of both docking heavy ships as well as providing observation decks for tourists. Again, with a construction of timber and concrete, jetties also face similar environmental challenges to bridges, and in some cases, these can be more severe requiring even more timely inspection and repairs.

Many different non-destructive tests (NDT) have been designed by engineers and transportation officials for checking the integrity of the bridges, jetties and similar assets. They range from visual inspections to drilling cores, performing tests such as ultrasonic pulse velocity test, Schmidt rebound hammer test, acoustic tests to nuclear tests. Almost all of





The company's main products offer improved safety, reliability, cost-effectiveness, and easy installation. These includes WEB Deck, WEB Catch, WEB Net and WEB Map.

Their flagship product WEB Deck offers a viable solution to businesses, governmental, and engineering organisations around the world who are involved in the repair works associated with bridges, jetties, and offshore structures. Salient features of WEB Deck include:

- ▶ Lightweight structure having a load of just 14 kg/m<sup>2</sup>
- ▶ Can carry uniformly distributed load (UDL) up to 2.5 kN/m<sup>2</sup> (50 lb/ft<sup>3</sup>)
- ▶ Easy to assemble and can be hung under bridge decks using robes and cables
- ▶ Can reduce cost and assemblage time by 50 per cent when compared to ordinary scaffolding in certain situations
- ▶ A factor of safety kept at 4:1 for its design
- ▶ Provides a stable working

platform for performing wide variety of heavy repair works. Above-mentioned features indicate not only a reliable and durable platform for catering to the needs of bridge repair works but also offer the ability of engineers to give a green light to heavy repair works. One of the notable features of this type of deck is that it can be assembled in half the time when compared to ordinary bridge deck scaffolding without imposing sufficient extra load on the bridge that might prove to be catastrophic. So, engineers have this potential safety "cushion", which they can use to perform critical bridge repair works ranging from concrete coating, steel bridge welding, installing of drainage pipes, etc. on a stable platform without worrying for the safety of their workers and technicians.

The products of WEB Systems International can be used individually as well as in conjunction in an innovative manner to assist the bridge engineers and technicians to

perform not only repair works but also help in performing NDT tests on bridge piers, bridge girder, etc. in extreme conditions safely and efficiently.

**Mtandt's Director Gopal Modi** is excited by the opportunities that the new WEB technology can bring to the region. Introducing WEB Systems to the Indian market is, in many ways, Modi says, a "game changer" for companies who wish to improve the standard of safety for their employees working at height, with genuine full life-cycle value propositions.

In a recent move to strengthen its presence in the Indian market, WEB Systems International has signed a distribution partnership deal with the Mtandt Group, a well-respected name in the 'working at height' industry, having been providing mobile access solutions - and manufacturing an array of high-quality aluminium products for industry – for over four decades.

**Communication from the management of the company.**

# POWER YOUR PROFITS

Tata Motors' extensive range of 28-tonne tippers helps you maximise profits and have complete peace of mind.



up to 40 per cent. They also result in enhanced tyre life.

A choice of long lasting Radial, nylon or mining tyres in varied sizes ensures right traction for the application. Technologically-advanced features like Hill Start Assist, ensure enhanced safety and reduced maintenance costs. These reliable vehicle aggregates reinforce the 'Power of Lower Total Cost of Ownership', through sustained lower operating costs and

lower maintenance costs, and at the same time ensure higher uptime and higher revenue for the operators.

The series offers the premium Prima cabin and Signa cabin options which provide a fatigue-free driving experience for its user allowing for sustained operations in tough and challenging environmental conditions.

These tippers are available as fully-built vehicles with multiple wheel base options configured to a wide range of heavy duty box body (14/16/20/22 m<sup>3</sup>) and scoop body (14 m<sup>3</sup>) configurations. Customers prefer these fully-built options to further maximise their earning potential.

The Tata Motors M&HCV range comes with the standard fitment of Fleet Edge – Tata Motors' next-gen digital solution for optimal fleet management. The 28-tonne tipper series comes with the best-in-the-industry warranty of six years/6,000 hours\*.

(\*T&C apply)

**Communication from the management of the company.**

**W**ith India slowly regaining lost ground post lockdown, the onus is now on the construction, infrastructure, coal and mining sectors with the increased government focus towards these industries.

The Tata Motors 28-tonne tipper series has always been the preferred workhorse for material movement in these industries. These versatile tippers are engaged in movement of construction aggregate, soil, coal, ore, mining overburden, stones and boulders, and are used in a plethora of other applications. Tata Motors, has always been at the forefront in anticipating the market needs and fulfilling these requirements with innovative products.

This series is powered by the world-renowned Cummins ISBe 6.7-litre and Cummins ISBe 5.6-litre BS6 6-cyl engines, delivering 300/250 hp and 220 hp power respectively. Their high torque rating at low rpm coupled with a wide flat torque curve ensures lesser downshifts, superior

driveability and enhances fuel economy. The three unique drive modes – light, medium and heavy – allow to choose the best power-torque combination based on the load-terrain-speed requirements. These inherent features maximise the vehicle productivity and minimise the fuel consumption for the vehicle, thereby ensuring higher revenue and lower operating costs.

These versatile tippers have been designed for high productivity and continuous performance. Heavy-duty clutch and gearbox mated with proven rear axle configurations ensure high torque at the wheels and pulling power – critical for high productivity and sustained operations. Their heavy-duty suspension is robust and durable to sustain heavy loads on undulating terrain. The 'Ultimaax' suspension – advanced severe-duty rubber suspension is greasing free and provides high dynamic stability in challenging off-road conditions. The all-new iCGT and NGT brake systems ensure cooler braking operations, thereby improving the brake life by

# WORLD RECORD IN CONCRETE PAVING



concrete paver machine- SP 1600 Slipform Paver by Wirtgen.



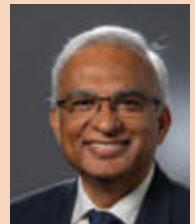
Speaking on achieving the accolade, **Arvind Patel, Managing Director, Patel Infrastructure**, said, “We are ecstatic to have

achieved this colossal task and be a part of the history books in the Indian road construction industry. The nature of constructing a civil project involves many factors that are to be aligned. We endeavoured not to set benchmark only in the segment of road and highway construction but to also do so in a responsible manner.”

**Ramesh**

**Palagiri, Managing Director & CEO Wirtgen Group**

in India mentions: “We are very happy to be associated with Patel



Infrastructure for this world record.”

The WIRTGEN GROUP is the world market leader in concrete paving machines. The SP 1600 is its flagship paver which is in operation in India over past 20 years, building several highways and prestigious projects like the Yamuna Expressway, the Eastern Peripheral Expressway and more recently the Samruddhi Expressway.

Over the past 20 years, we have accomplished technical innovations in our products and have built application expertise in concrete paving.

**Communication from the management of the company.**

**P**atel Infrastructure, an established construction, development and maintenance service company created a history for a World Record by completing 1.28 km of and eight-Lane (2.56 km stretch of four lanes) Vadodara-Mumbai Expressway Project in just 24 hours. The record was established with Wirtgen SP 1600 Slipform Paver which is the World’s largest concrete paver with paving width of 18.75 m in single pass.

The world record has been achieved in four categories and is recognised by both the India Book of Records and the Golden Book of World Records.

1. Highest quality pavement quality concrete in 24 hours

2. Largest quantum of concrete produced by ready mix concrete plant in 24 hours
3. Laying of pavement quality concrete continuously in 24 hours
4. Area of rigid pavement quality concrete laid in an expressway in square metre in 24 hours

The job started at 8 am on February 1, 2021 and was completed by 8 am the next morning totaling 2.58 km each in four lanes, with a width of 18.75 meters, covering an area of 48,711 square meters. The record is part of the greenfield Delhi-Vadodara-Mumbai, 8-lane expressway project developed by NHAI and is being carried out by the world’s largest fully automatic ultra-modern

## COMPACTOR

**1 | The Singareni Collieries Company Ltd**

**Details:**ER120O0140 (Tender ID: 221418) | Tenders are invited for Hiring of 150mm capacity rbh/dth type crawler mounted angle drill 1 no. Required for mocp, rg.1 area for a period of one year/one lakh meters

**Submission Date:** 26/03/2021

**Location:**Godavari, Andhra Pradesh

**Tender Value (₹):** 6,700,000

**Contact:** Rg-1-Pur, Gm Office Godavarikhani Rg1, Godavarikhani Telangana

T: 08728244254 Pd\_Rg1@Scclmines.Com

## CONVEYOR

**2 | Uranium Corporation Of India Ltd (UCIL)**

**Details:**2/PE201076/1 | Tenders are invited for Tail Pulley for Conveyor Belt C1 as per Drg.No: UCI/M-1010/A

**Submission Date:** 15/03/2021

**Location:**Jaduguda, Jharkhand

**Contact:** P.O. Jaduguda Mines Jaduguda - 832102 T : +91-0657273012227302222730,

F: 2730322, jadpur@uraniumcorp.in

**3 | Rail Wheel Factory - Karnataka**

**Details:**RWF-M-20-21-SWCM-PH-II | Tenders are invited for Modification to existing conveyor and provision of additional cutting head in parallel with existing

**Submission Date:** 17/03/2021

**Location:**Bangalore, Karnataka

**Contact:** Rwf Hq-Mechanical, Bangalore Karnataka

## CRANES

**4 | Delhi Metro Rail Corporation Ltd**

**Details:**CEUD-12 ID:2021\_DMRC\_614234\_1 | Tenders Are Invited For Supply, Installation, Testing And Commissioning Of Eandm Works (Electrical, Fire Detection, Fire Suppression, Eot Cranes, Air Compressor System) For Augmentation Of Depots At Shastri Park, Najafgarh And Dwarka Under Delhi Mrts Phase-Iii

**Submission Date:** 19/03/2021

**Location:**Delhi

**Contact:** Cee/Utility Diversion - Dmrc, Delhi Metro Rail Corporation, Opposite Frank Anthony Public School, Lala Lajpat Rai Marg, Lajpat Nagar Iv, New Delhi 110024

**5 | Bhabha Atomic Research Centre**

**Details:**BARC/TSD/206/2020-21 | Tenders are invited for Routine, Preventive & Break Down Maintenance Including Load Testing Of Eot Cranes & Hoist At Tsd, Cfb & Engg. Halls, Barc, Trombay, Mumbai - 400 085

**Submission Date:** 16/03/2021

**Location:**Mumbai, Maharashtra

**Contact:** Trombay Mumbai - 400085

T: 022-25505050/25592000 F: 022-25505151/25519613

## CRAWLER

**6 | Bridge And Roof Co. (India) Ltd**

**Details:** MAT(P)/ERE/61010/705 | Tenders Are Invited For Crawler Mounted Crane & Tyre Mounted Crane On Hire Basis Respectively (I) 01 (One) No - 150 Mt Cap Crawler Mounted Crane With 69.0 Meter Lattice Main Boom Length With 15.0 Meter Fly Jib (ii) 02 Nos - 50 Mt Capacity Tyre Mounted Telescopic Crane With Standard Boom Length For Our Hpcl Barmer, Rajasthan

**Submission Date:** 19/03/2021

**Location:** Barmer, Rajasthan

**Contact:** Hpcl Barmer, Rajasthan

## DUMPER

**7 | Northern Coalfields Ltd (NCL)**

**Details:** DCH/PUR/e-OTE/20-21/20237/135 Dt. 15.02.2021 ID:2021\_NCL\_196422\_1 | Tenders are invited for Supply of hose assemblies for cat 85/100t dumpers at 85t workshop

**Submission Date:** 19/03/2021

**Location:** Sonebhadra, Uttar Pradesh

**Contact:** Dudichua Project, Dch\_Mm, O/O Gm, Dudhichua Area Po- Khadia Distt. Sonebhadra Up, Apc Dudhichua Area Sonebhadra Uttar Pradesh

## EXCAVATOR

**8 | The Singareni Collieries Company Ltd**

**Details:** EYL20O0054 (Tender ID: 219403) | Tenders are invited for Hiring of one number hydraulic excavator (jcb) as and when required, for earth works & dismantling of buildings for use at yellandu area.,sccl for a period of one year on hour basis.

**Submission Date:** 19/03/2021

**Location:** Singareni, Andhra Pradesh

**Contact:** The Singareni Collieries Company Limited-Yld-Pur, The Singareni Collieries Company Limited, Post: Yellandu, Dist: Bhadradri Kothagudem, Telangana- 507124, T : 08745240210, Pd\_Yld@Scclmines.Com

**9 | Mahanadi Coalfields Ltd (MCL)**

**Details:** MCL/SBP/MMD/SEC-III /20-21/Simulator/56 ID:2021\_MCL\_192586\_1 | Tenders Are Invited For Procurement Of 02 Nos. Universal Equipment Simulator Suitable To Simulate Operations Of Ex1200v Hyd Excavators, Ksm 403 Surface Miner, Bh 100 Rear Dumpers, Bd355 Dozer And Idm 30 Rbh Drill (As Available At Mcl)

**Submission Date:** 25/03/2021

**Location:** Sambalpur, Odisha

**Tender Value (₹):** 45,372,572

**Contact:** Mcl\_Critical Tenders, At/Po Jagruti Vihar Burla Sambalpur, O/O Gm Mm Mcl Hq Burla Sbp Sambalpur Odisha



# GMMCO, CATERPILLAR NEW-GEN MOTOR GRADER SEM 915

**G**mmco and Caterpillar launched the new generation motor Grader SEM 915 on January 20, 2021. The event was hosted online and had enthusiastic participation from customers. SEM 915 and other SEM models were showcased along with their features.

V Chandrashekar, Managing Director & CEO, Gmmco Ltd, said, "We have been selling SEM machines since 2011. We are successful with wheel loaders SEM 656D and SEM 636, dozer SEM 816 and the motor grader SEM 919. Now, we are expanding our portfolio with the addition of SEM 915 motor grader," commenting on the growth of SEM products.

Prashant Harisingh Bisen, Senior



VP – Construction of Gmmco Ltd said, "We have also continuously expanded our service offerings to ensure that your SEM machines gets the right care. The machines are bundled with extended warranty plans, value agreements and competitive finance schemes. We have over 100 offices, 60 warehouses and six workshops to support you. All this will make your ownership experience smooth" commenting on the convenience of owning SEM machines through Gmmco.

Hamid Lavassani, Global Sales & Distribution Manager (SEM) of Caterpillar Inc said, "We understood the customer need for a 150 HP Motor Grader in India. Hence, we designed the SEM 915, specifically for India, focusing on improved reliability and reduced operating costs. SEM will be a reliable partner in our customer's journey by offering minimum disturbance and lowest cost," showcasing SEM's commitment to continued growth in India.

Sam Vedakumar, Worldwide Product Manager, CAT & SEM Motor Graders; EC Manohar, District Manager, Caterpillar India; Bhansi Phansalkar- Country Manager, Caterpillar India; and Sankaranarayanan, Country Sales Manager, SEM were also present.

# NEW FLAT-TOP CRANES FROM COMANSA

**C**OMANSA adds two new models to its successful 21LC series, as an evolution of the 21LC550 model, with two options: 20 and 25 tonne maximum load, which can be assembled with ranges of between 30 and 80 metres with configurations every 5 metres, allowing a maximum point load of up to 4.95 tonne Both models incorporate an optional boom configuration that allows the total range to be extended to 85 metres at the tip. Compared with the 21LC550 model, load capacities are on average 16 per cent higher for the 21LC600 and 23 per cent higher for the 21LC650.

The first of the new features in these models is that they have a shorter, modular counter-jib, ranging from 24.4 to 16.4 metres and having up to 5 possible configurations. This



concept has a precedent in models 21LC750 / 21LC1050 / 21LC1400 and offers greater adaptation to the work configuration in reduced spaces.

Another of the strong points of these models is the improved access to the turntable and the rotating part: the cathead has been redesigned to facilitate the passage of lifting cables, including a welded ladder that allows access to the highest part without the need for the cab platform. Access to the cab platform is now direct via the turntable thanks to the folding ladder, preventing falls while working on the upper level and also

being easier to transport.

As a standard feature, both crane models offer the double trolley system with automatic changeover (called DT in the data sheets), and incorporate, as a novelty, the optional availability of single trolley (ST) which simplifies maintenance work while increasing load capacity in short boom lengths.

The height, which is self-supporting with a built-in base, can reach up to 85.8 metres. Also, the tower sections are 2.5 square metres for both models.

Taking advantage of the launch of the new cranes, a new climbing cage is presented: J3A-11, which follows the concept of the J3-20, with greater length and distance between rollers, a saving in scale recovery time, thanks to the auxiliary hoist included, which can also be transported in standard containers or trucks.

# KOMATSU'S NEW VERSION OF SMALLEST EXCAVATOR

**K**omatsu has launched an updated version of the PC210LCi-11, its smallest excavator equipped with intelligent Machine Control (iMC), the company's fully-integrated system for semi-automatic grading functions. The update brings the new, second-generation version of iMC to the machine, making it the first Komatsu excavator to hit the market with iMC 2.0 on board. Komatsu unveiled iMC 2.0 at ConExpo 2020 where it was featured as part of a preview of the D71PXi-24 dozer.

The PC210LCi-11 weighs between 51,397 and 53,388 pounds and is designed for precise digging as called for on such tasks as footings, retention ponds and utility work, the company says. The mid-sized excavator runs on a 165-horsepower Komatsu engine and has bucket capacities of .66 to 1.57 cubic yards.

The factory-integrated iMC 2.0



system prevents over-digging and keeps operators on grade. Komatsu bills it as a way "to quickly lessen the skill gap between new and experienced operators." The company says it also increases productivity. The 3D GNSS machine guidance and sensor technology automatically controls the bucket's angle to the design surface. This allows operators to perform finish grading by only controlling the

excavator's arm, while the boom automatically adjusts bucket height.

An auto-tilt bucket control automatically aligns the bucket parallel to the slope, which means the operator doesn't have to align the excavator with the target surface. The system is controlled by a 12-inch touchscreen display. The sensors and stroke-sensing hydraulic cylinders provide real-time position display.

## LABOUNTY MOBILE HYDRAULIC PULVERIZER

**L**aBounty's new mobile hydraulic pulverizers can pick up, crush and separate rebar faster than previous models, the company says. The MHPs are able to do this thanks to a new design that delivers faster cycle times, high-tip forces and larger jaw sizes, according to LaBounty, a subsidiary of Stanley Infrastructure. The company says the pulverizers have "industry-leading power-to-weight ratio and large jaw capacities."

The MHPs are designed for excavators weighing 13 to 65 metric

tons performing secondary demolition and concrete recycling. LaBounty says the pulverizers have a unique shape to better separate rebar from concrete on the ground.

### LaBounty MHP 390

- Reverse cylinder with internal hydraulic lines to protect components from debris
- Pass-through lower jaw for rebar separation
- Bucket-style, interchangeable teeth for sorting materials
- Serrated blades for cutting rebar

## CARER'S NEW A160-200X ELECTRIC FORKLIFTS

Electric power, autonomy and reliability is here with Carer's new A160-200X. This new model, with capacities ranging from 35,000 to 44,000lbs at a 48-inch load center, is able to directly compete for performance and autonomy with diesel forklifts. Unique specifications, cost savings, and its electric profile make it the leading contender in challenging outdoor applications, such as lumber facilities, steel mills, ports, and cement factories.



No	Event	Description	Month/Date	Location	Organiser/Contact
1	Cement Expo Plus 2021	Cement industry exhibition, conference and awards	Mar 4-5, 2021	Virtual	"ASAPP Info Global Services Tel: +91-22-24193000"
2	Intermat India	International trade show for construction machinery and materials.	Mar 4-6, 2021	Mumbai	"Comexposium Tel: 022 66450123"
3	6th Smart Cities India 2021 Expo	Promoting India's Smart Cities mission	Mar 24-26, 2021	New Delhi	"Exhibitions India Group Mob: +91-7827855273 Email: aruns@eigroup.in"
4	ACMA Autom-echanika New Delhi	Automotive components and service	Apr 22-25, 2021	New Delhi	"Messe Frankfurt Trade Fairs India Tel: +91 11 6676 2300 Email: info@india.messefrankfurt.com"
5	bauma CTT RUSSIA	International trade fair for construction equipment and technologies	May 25-28, 2021	Moscow, Russia	"Messe München GmbH Tel: ++49/89/949/21482 Email: Johannes.manger@messe-muenchen.de"
6	India Warehousing Show 2021	Exhibition and conference on warehousing, supplychain and logistics industry	Jul 23-25, 2021	Delhi-NCR	"Reed Exhibitions Tel: 9999686007 Email: janish.jafri@reedmanch.com"
7	Automation Expo 2021	International trade fair for industrial automation and controls	Sep 23-25, 2021	Mumbai	"IED Communications Tel: +91-9820093667 / 9920489667 Email: jyothi@iedcommunications.com"
8	IREE 2021	International Exhibition on Railway Equipment	Oct 21-23, 2021	Aerocity, New Delhi	"Confederation of Indian Industry (CII) Tel : +91-124-4013875 E-mail : rajesh.wadhwa@cii.in"
9	IME 2021	International exhibition and conference on mining machinery and materials	Oct 26-29, 2021	Kolkata	"Tafcon Projects India Tel: +91-11-49857777 Email: miningexpo@tafcon.in"
10	EXCON 2021	International exhibition and conference on construction, mining and material handling equipment	Dec 7-11, 2021	Bengaluru	"Confederation of Indian Industry (CII) Tel: +91-44-42444520 Email: excon@cii.in"







Construction World and Swarajya join hands together to bring you a series of eight webinars to help you decode the Government's Master Plan for economic recovery through infrastructure. These eight webinars will be held between 15<sup>th</sup> February and 15<sup>th</sup> March 2021.

## KEYNOTE SPEAKERS



**SHRI NITIN GADKARI**  
Union Minister of Roads,  
Highways, Ports & Shipping  
Government of India



**Dr. T.V. SOMANATHAN**  
Secretary (Expenditure)  
Ministry of Finance,  
Govt. of India



**SHRI HARDEEP SINGH PURI**  
Minister of State for  
Housing & Urban Affairs  
Government of India

Expected Speakers from organisations such as MMRDA, MSRDC, DMRC, Maha Metro, Smart Cities Mission, Jal Jeevan Mission, Namami Gange, SBI, L&T, Tata Projects, AFCONS, NIIF, DFCCI, DMICDC, HUDCO, HDFC, IRCON, RITES, etc.

### SESSION TOPICS:

1. National Infrastructure Pipeline (2021-22)
2. Financing Infrastructure
3. Supersonic Roads
4. Railways on Fast Track
5. Metro Vision
6. Corridors of Connectivity
7. Housing For All
8. Smart Sustainable Cities

Mr. NIKET MEHRA  
Mob: +91 810 828 8300  
Niket.M@ASAPPmedia.com

#### FOR GENERAL QUERIES

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Ms. SHWETA VIRDIKAR  
Mobile: +91 810 836 6300  
Shweta.V@ASAPPmedia.com



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Head Office  
Kesar Solitaire, 25th & 26th floor,  
Plot no 5, Sector – 19, Sanpada,  
Navi Mumbai – 400705, India  
Phone: +91 22 61767 516  
E-mail: [ghananeel.molankar@liebherr.com](mailto:ghananeel.molankar@liebherr.com)  
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